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Wildfires take toll on desert tortoise

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Heading into the summer, it looked like a good time to be a desert tortoise. After several years of below-average precipitation, a wet winter and spring brought a bumper crop of desert grass and wildflowers, the tortoises' favorite foods. The new vegetation helped tortoises gain weight and store additional moisture before the long, dry summer.

'The tortoises this year were fat and happy,' said Ron Marlow, a University of Nevada, Reno biologist who studies desert tortoises.

But for all their fortune and fabled toughness (they can live up to a year without water and survive in ground temperatures up to 140 degrees), many tortoises in Southern Nevada may have met their match in recent wildfires.

More than a dozen major blazes, most in the Mesquite area, have consumed about 1,400 square miles in the state so far this summer; a significant portion of those blazes burned low wilderness areas populated with creosote and desert grasses, areas considered prime tortoise habitat.

Experts say that some tortoises may have been caught on the surface by wind-fueled fires sparked by lightning. But tortoises spend most of their time underground, particularly in the summer, which may have protected many from the initial blaze.

'Tortoises are made to hunker down, and most of them were probably down below while the fire passed overhead,' Marlow said. But Marlow said that no one really knows how well tortoises fare in wildfires, and anecdotal evidence from this summer's fires suggest that many tortoises may have been killed.

The Red Cliffs Desert Reserve north of St. George, Utah, is home to an estimated 1,800 desert tortoises and has some of the most dense tortoise populations in the world. In June, a fast-moving wildfire burned a small tortoise study area in the reserve, killing three of eight tortoises.

Biologist Lori Rose, who oversees habitat conservation at Red Cliffs, said other tortoises have been found killed after the fires burned 7,000 acres in the area, although complete surveys will not be done until after the summer fire season. New fires started by lightning Wednesday in the reserve had burned an additional 8,000 acres by Friday evening.

'I'm assuming right now that about half our tortoises were immediately impacted by the fires,' Rose said.

But for surviving tortoises living in burn areas, Rose and others say the challenges have just begun.

'They may live through the fire, but what are they going to eat when it's done?' asked biologist Betty Burge, who runs the nonprofit Tortoise Group in Las Vegas, which helps protect desert tortoises.

The destruction of food sources, experts say, will weaken a tortoise population already in serious decline; about 50 percent of desert tortoises have died off since the 1980s, largely due to urban sprawl, roadway deaths, predators and poaching, according to Marlow. Other scientists believe the number is more than 80 percent.

'It's a tough life for tortoises in the best conditions, but this kind of thing makes it even worse,' said Peter Galvin, director of conservation at the Center for Biological Diversity in Tucson, Ariz. The U.S. Fish and Wildlife Service added the desert tortoise to the federal threatened species list in 1990.

It is impossible to know how many tortoises in Nevada were affected by recent fires; the tortoises' underground living quarters and remote locations defy survey. But experts say that, depending on altitude and other factors, there are about 50 tortoises per square mile in rural Southern Nevada. With the immense acreage burned this year, more than 40,000 tortoises in Nevada may be affected, according to Marlow.

Galvin and others agree that although surviving tortoises might live without food until spring, the next generation probably will suffer. Healthy

female tortoises typically lay between four and eight eggs a year. However, it is less probable that tortoises weakened by a lack of food and moisture will produce viable offspring.

'They're not going to have the energy to lay eggs, they may not lay as many eggs, or they may not lay at all,' Burge said.

Marlow believes that the lack of shade in immense burn areas can also devastate an animal that typically lives within a single square mile of desert.

'It's possible that they'd survive the fire and not eating for nine months, but if there's no shade they'll die in the sun,' Marlow said.

The extent of the long-term damage to the Nevada tortoise population may depend largely on monsoon rains. If recent storms in Southern Nevada are the beginning of a wet monsoon, burned vegetation should regrow quickly and help tortoises rebound. But this year's monsoon has arrived late, and some meteorologists are forecasting a dry monsoon.

But whatever the weather, invasive grass species, particularly red brome and cheat grass, may be more to blame for tortoise deaths than the fire itself. Desert ecologists say that domesticated animals have spread non-native grasses in Southern Nevada and throughout North American deserts. These grasses now thicken formally sparse vegetation and help bigger, more frequent wildfires burn in the low desert.

Evolutionarily speaking, the change has caught the desert tortoise off guard.

'What we have is a cause and effect, where the vegetation component of the desert has been dramatically changed by human activity over the last hundred years, particularly due to livestock grazing,' Galvin said.

Galvin said that tortoises lack adaptations needed to survive in burned areas, characteristics he said are typical among species living where frequent wildfires predate human populations.

'Fires are bad news for tortoises because they have not evolved in a fire-prone environment,' Galvin said.

U.S. Fish and Wildlife biologist Michael Burroughs oversees a handful of areas in Southern Nevada set aside as protected tortoise habitat. He says only a small percentage of three of those areas, which total about 1.1 million acres, were affected by three separate fires in recent weeks.

'We have seen some mortality, but the question really is how many of the tortoises survived,' Burroughs said.

Due to the unprecedented size of recent Southern Nevada fires, representatives of the U.S. Forest Service, Bureau of Land Management, U.S. Fishand Wildlife Service, and other agencies are holding a series of meetings in Mesquite to complete an emergency fire restoration plan. Burroughs says that the plan will include a proposal for seeding burned tortoise habitat.

'Tortoises living in burn areas may be able to find some food and moisture in pockets of vegetation the fire missed. 'But there are energetic limits to that,' Galvin said.

Although it may be months before anything concrete is known about how well tortoises survived the fires, scientists agree that wildfires should be studied by those trying to preserve the desert tortoise.

'Everyone was looking at predators and disease as the primary threats to tortoise recovery, and all of a sudden wildfires are right at the top of that list,' Rose said.