

Intense fires threaten conservation-significant trapdoor spider

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A new Curtin University study has found trapdoor spiders do not survive intense bushfires but have high survival rates in low-intensity fires, in a finding that may have important implications for conservation management practices.

The [research](#), published in journal *Austral Ecology*, also found that spiders in burnt areas were more likely to fall victim to predators than

those in unburnt areas.

Lead author Ph.D. student Leanda Mason, from Curtin University's School of Molecular and Life Sciences, conducted a survey before and after prescribed burns in two Perth bushland patches, which are both part of a southwest Australian global biodiversity hotspot located at Kings Park and Bold Park.

"Bushland remnants within cities are like islands of habitat, surrounded by inhospitable or deadly urban seas where only very few [native species](#) are able to survive," Ms Mason said.

"The more specialised the [spider](#) species, the less likely it will be able to adapt to [urban environments](#) and therefore it will be restricted to the bushland remnants.

"Due to them being highly specialised for their habitat, having low mobility and being restricted to a limited area, once [trapdoor spiders](#) are locally extinct in an urban bushland remnant, there is almost no chance of re-colonisation."

The urban ecology study monitored spider survival for a year after both high and low-intensity fires. Of 257 burrows found, 115 spiders initially survived after an intense fire and none were confirmed alive after 12 months. In contrast, only one spider of 103 burrows was confirmed dead after a low-intensity prescribed fire.

Using clay models, researchers also assessed predation rates as a secondary effect of fire. While they found higher rates of predation in burnt areas, with burnt burrow lids exposing burrow shafts, predation was strongly influenced by site and predator type.

The trapdoor spider is part of the mygalomorph group of spiders, which

constitutes about 13 per cent of known species of spiders. Of the 330 identified Australian mygalomorph species, 323 are endemic, meaning they are native and restricted to a certain place. Many are protected under state and federal environmental laws.

Research co-author Associate Professor Grant Wardell-Johnson, also from Curtin's School of Molecular and Life Sciences, said the study's findings could inform conservation management practices.

"The introduction of numerous weeds in urban remnants has led to increased flammability, leading to a downward spiral for biodiversity conservation, as we reported in another recent paper from the same study," Professor Wardell-Johnson said.

"Alternative fuel management is a priority. However, where prescribed fire is implemented, it needs to be at a micro scale and accompanied by weed control. In the presence of weeds we need less [fire](#) rather than more in urban remnants."

More information: Leanda Mason et al. Ashes to ashes: Intense fires extinguish populations of urban short-range endemics, *Austral Ecology* (2018). [DOI: 10.1111/aec.12685](https://doi.org/10.1111/aec.12685)

Provided by Curtin University

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