

NEWS RELEASE

UP researchers involved in discovery of nine trapdoor spider species



Stasimopus (male), one of nine trapdoor spider species discovered in the Great Karoo (Photo credit: Ian Engelbrecht)

Nine new trapdoor spider species have been discovered in the Great Karoo by researchers at the University of Pretoria's (UP) Department of Zoology and Entomology, and the Agricultural Research Council (ARC). This brings the count of members of the Stasimopus genus, which is endemic to Southern Africa, to 56 distinct species.

News about the discoveries was announced in the journal Zootaxa.

“A distinguishing feature of trapdoor spiders is the way in which they cover their underground burrows with a trapdoor-like lid made of soil, silk and plants,” explains lead author Dr Shannon Brandt, a recent PhD graduate from UP. “These burrows can be up to 30 centimetres deep. Depending on the species, some burrows are wide enough for a R5 coin to fit in, while a smallish orange could easily be dropped into others.”

Once sexually mature, males leave their burrows to mate. Females and immature males generally remain within the burrows, from which they pounce within a millisecond on passing prey such as grasshoppers, beetles and even small frogs, and inject them with venom (which is not harmful to humans).

The exemplars used to describe the new species were collected across the Great Karoo during 2018 and 2019. Fieldworkers focused on drainage lines, as these are favoured by trapdoor spiders. Survey work took place at 79 sites on farms in the Northern Cape, Western Cape and the Eastern Cape, around towns such as Beaufort West, Richmond, Murraysburg, Jansenville and Willowmore. All the samples are being kept in the National Collection of Arachnida at the ARC in Pretoria.

Thanks to subsequent genetic and taxonomic work by Dr Brandt, the tally of trapdoor spider species known to be found in the Great Karoo is now 23 species. Experts believe it is possible to find more new species in the arid region.

The survey work was supported through the Karoo BioGap project, which was led by the South African National Biodiversity Institute in the late 2010s and funded through the National Research Foundation. It saw researchers from a host of South African research institutes, including UP, pool their efforts to survey and research the plants and animals of the Great Karoo region. The aim was to better understand the interconnected ecosystems and sensitive habitats of this notoriously under-surveyed arid region. The endeavour has not only led to the description of various new species of trapdoor spiders, but of scorpions, aloes and freshwater fish new to science too.

“Through projects like the Karoo BioGap Project, we are able to truly start understanding South African biodiversity,” says Robin Lyle of the ARC, who led spider research during the project. “It’s important to know as much about the region’s biodiversity as possible, given the potential that shale gas fracking, mining, farming and general land-use changes could have on the environment. This foundation biodiversity data could eventually help to understand the impact of climate change within the region.”

In recognition of the impetus that Karoo BioGap gave to the study of spiders, the researchers involved in the Zootaxa paper named one of the new species *Stasimopus Karooensis*, specimens of which they collected in the Eastern Cape part of the Karoo, around the towns of Jansenville and Pearson.

Another new species was named *Stasimopus venterstadensis* – The only known specimens of the species were collected in 2018 near Venterstad in sandy soil among buffalo grass and Karoo shrubs.

A male sample of *Stasimopus ignis* was serendipitously collected from under a doormat at Toonbothasfontein, a farm near Richmond, where the survey team slept during one of their collection trips. A female specimen was found near Hanover, also in the Northern Cape.

“‘Ignis’ refers to the Latin word for fire or flame,” Dr Brandt explains. “The word alludes to the increased frequency of fire in the Nama Karoo. Such events were historically rare, but are likely increasing because of climate change. It also refers to the fact that the female’s body is much redder than that of most other species.”

Dr Brandt’s interest in trapdoor spiders began during her time as an honours student at UP. She received a PhD degree in Zoology at UP in 2023, and has since taken up a postdoctoral position in Bordeaux in France at INREA, a public research institution that focuses on agriculture, food and the environment. She has published four papers on the trapdoor spiders of the Great Karoo, including one in Evolutionary Biology, in which she sets out guidelines on how to use the relative size and position (called the average ocular pattern) of trapdoor spiders’ eyes to distinguish between Karoo species.

She named *Stasimopus dylani* after her husband, Dylan, in recognition of his support and encouragement during the course of her postgraduate studies. The species was collected in sandy soils around Murraysburg,

Jansenville and Willowmore, and is thought to be widespread across the Western Cape and Eastern Cape parts of the Karoo.

Stasimopus theaei is named after Lyle's eight-year-old daughter, Thea, while *Stasimopus finni* was named after Finn Pirk, the three-year-old son of co-author [Professor Catherine Sole](#) of UP's Department of Zoology and Entomology. Prof Sole, who was also Dr Brandt's PhD supervisor, says her son loves "all creepy crawlies". Examples of both species were first collected around Somerset East, in an area dominated by low shrubs and aloes.

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>> [Click here to watch a video of a trapdoor spider catching its prey](#)

>> [Read this infographic to learn some facts on these spiders](#)

>> [Click on this gallery to see how they burrow under their trapdoors](#)

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ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on its Hatfield Campus in Pretoria. This 115-year-old institution is also one of the largest producers of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the Gordon Institute of Business Science (GIBS). It is the only university in the country with a Faculty of Veterinary Science, which is ranked the best in Africa. UP has 120 academic departments and 92 centres and institutes, accommodating more than 56 000 students and offering about 1 100 study programmes. It has the most academic staff with PhDs (70%), NRF-rated researchers (613).

The [2024 Times Higher Education subject rankings](#) placed UP first in South Africa in the fields of Law, Veterinary Science, Accounting and Finance; Agriculture and Forestry and Electrical and Electronic Engineering. Quacquarelli Symonds (QS) ranked the University among the top five in Africa, as part of their [2024 World University Rankings \(WUR\)](#). UP was the only South African university featured in the [2023 World University Rankings for Innovation \(WURI\)](#), falling within in the 101-200 range of innovative universities.

For more information, please go to www.up.ac.za