

Threatened Trapdoor Spiders of the Avon

Includes information on what they (and their burrows) look like, how to identify them, likely habitat and what to do if you think you have seen one...



*Photo: Aganippe sp. 'pincushion'
trapdoor spider emerging from
burrow. DEC/Hayden Cannon.*

What is a Trapdoor Spider?

Trapdoor Spiders belong to an ancient group of spiders called Mygalomorphae. Some of the largest, most poisonous and most aggressive belong to this sub-order.

They are largely nocturnal feeders and maters and are very hardy creatures. When prey is scarce, adult Myglamorphs have been known to fast for over a year.

They dig burrows down into the ground, which they live in. The burrow is sealed with a lid or 'trapdoor,' which the spiders can emerge from to feed. Some species have a simple soil door. Others make a door of litter fragments and some attach a fan of twig lining to the rim of the burrow. They are ambush predators, relying on crawling insects such as ants and beetles to follow their trip lines (usually made from twigs or leaves that radiate out from the burrow lid) into their capture range, or ideally right into their burrows.

Although they superficially resemble funnel web spiders in shape, they are not plain black in colour, but more often brown or yellow with markings across their abdomen.

Why are they threatened?

Much of these spider's habitat has been modified through land clearing. They are also quite vulnerable to disturbance, as they are sedentary creatures, with poor dispersal ability. Activities which disturb the soil such as clearing, the creation of gravel pits and environmental modification for roads, water and power are some of their key threatening processes.

What should I look for?

-HABITAT: Trapdoor spiders live in stable environments that are in good condition. For trapdoor spiders, this means there is often shade, moisture and food (not unlike humans, for that matter). Different species of trapdoors utilise different habitats, which will be discussed later on.

The most suitable habitat is one that has had minimal disturbance from humans, which also supports the spiders prey. Ants, beetles and other soil borne invertebrates are bountiful in places with deep leaf litter and low levels of erosion. Nature Reserves, Water Reserves, Abandoned Gravel Pits, Cemeteries and Rail reserves are some of the least disturbed habitats within the wheatbelt, and so are considered some of the most valuable habitats for these and other threatened species.

Conversely, bushland habitats that have been disturbed by clearing, earthworks, vehicles, feral animals or inappropriate fire regimes are often poor in invertebrate fauna, have less shade than undisturbed areas and may receive less surface water as a result of micro-topographical changes. All these factors contribute to less suitable habitat for trapdoor spiders, leading to a reduction, or total loss, of trapdoor spider populations. Obviously clearing has had a significant effect on the available habitats for trapdoor spiders in the wheatbelt.

-BURROWS: All threatened trapdoor spiders in the Avon have most, if not all of their burrow underground. The exception is the Tree Stem Trapdoor Spider whose burrow can extend up from underground along the trunk of a tree.

The burrows can be up to 30 - 40cm deep, occasionally deeper and the burrow lid helps to keep a constant climate for the spider inside, as well as being the primary defense for the animal inside. Some species 'cement' them shut after breeding, increasing the spiders' likelihood of surviving extreme events. In the field, it is the burrow lid and its surrounding formation that is essential to identification of threatened trapdoor spiders in the Wheatbelt. Formal identification requires the animal to be excavated and identified under a microscope, where the eyes, hairs and spines on the legs, as well as the structure of the sexual organs are used to determine an identity.

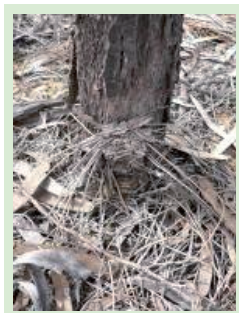


Photo: Aganippe castellum on She oak (Allocasuarina sp) trunk. DEC/Rowan Inglis

As with a majority of threatened trapdoor spiders in the Avon, the larger the burrow, the older the spider. As the females outlive the males, they create larger burrows to accommodate their size as they get older. Some species may live for well over ten years.

-INDIVIDUALS: The females of the species live their entire lives within their burrows and as a result are very rarely seen. The males however, leave their burrows (especially after rain) to search for mates. Although both take many years to mature, the males rarely survive long after emerging from the burrow, and are often fed upon by a female within the burrow, or birds, goannas or centipedes or other predators while moving on the surface.

What should I do if I think I have seen one?

If you think that you have seen a Threatened trapdoor spider or burrow, please report it to Department of Environment and Conservation on (08) 9041 2488 or WWF – Australia on: (08) 9387 6444.

Any other details that you can collect, provides valuable information for confirming the sighting. This includes information such as: date of sighting, location (GPS preferable, or nearest road/landmark), weather conditions, type of habitat (trees & soil) etc.

As always, if you can take a photo this is the most reliable form of evidence.



*Photo: Idiosoma nigrum burrow with twiglines.
DEC/Rowan Inglis*

What is currently being done?

Organizations such as WWF and the Department of Environment and Conservation, through the support of the Avon Catchment Council are working towards conserving these species through preserving their known habitat, conducting searches for new populations and educating the public regarding the ecological importance of this species.

How can I be further involved?

There are long-term monitoring sites set up at a range of locations throughout the Avon. Get in touch with DEC to see whether there is one in your area or whether it would be possible to set one up in your patch.

In the past, WWF & DEC have also run events called Spiderblitz, where participants are trained in identifications and monitoring techniques of these threatened species over an intensive 24-hour period. Contact WWF for more information. Report further sightings and promote awareness within your community.



*Photo: Participants at the 2008 Spiderblitz,
Minnivale Nature Reserve. WWF/Michael Roache.*

Minnivale TDS *Teyl* sp

Status: Critically Endangered

Illustration of male (top) and female (bottom) spiders
DEC/Brad Durrant



Spider description: The Minnivale trapdoor spider has a tan body, with a length of 11-14mm and long, sparsely haired legs.

Burrow Description: The burrow is very cryptic, as its circular lid is made of compacted soil and fits neatly into the rim of the burrow. It looks like a five cent coin trodden into the ground. It is interesting in its formation, as in addition to the standard vertical burrow that trapdoor spiders have, this one also has a blind side shaft, closed by a door into the main burrow. Both burrow lids are circular and flat, with the underside rounded and covered in silk.

Habitat Description: These spiders build their circular and flat trapdoor burrows near perched swamps on high terrain.

Shield-backed

TDS *Idiosoma nigrum*

Status: Vulnerable

Photo: University of Western Australia/ Barbara York Main



Spider description: The female (pictured) has a body length of about 20mm with a ridged abdomen. It is believed that the hard abdomen aids with its survival in arid environments by reducing evaporation. Sometimes the spider will sit face down in the burrow and plug it with its hard abdomen, which protects it from predators, such as goannas.

Burrow Description: Its burrow can be identified through twigs that are arranged in a moustache-like fashion, with leaves and twigs radiating from the CENTRE of the burrow rim. Its burrow entrance is cup shaped with a large opening at the top, before narrowing significantly.

Habitat Description: These spiders are most likely to be found on granitic and loam soils in eucalypt woodlands. You will often see them in small bare patches in the leaf litter. They tend to avoid areas with heavy leaf litter because the juveniles are unable to dig their initial hole through the dense leaf litter.

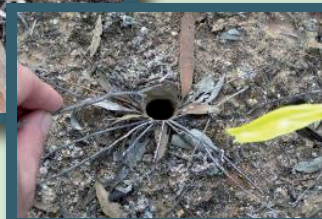
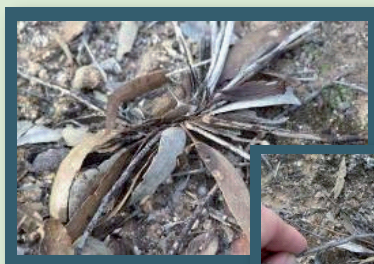


Photo: GAWA/Tim Gamblin

Yorkrakine TDS

Kwonkan *eboracum*

Status:

Critically Endangered

Photo: University of Western Australia/Barbara York-Main



Spider description: A female Yorkrakine Trapdoor Spider (pictured) may grow to have a carapace length of 7mm in size and is shiny yellow in colour with prominent dark brown bands on its abdomen.

Burrow Description: A shallow (less than 20cm deep) vertical burrow lined with silk, like a stocking with a collapsable collar-like entrance.

Habitat Description: This spider prefers Eucalypt woodland with a shrub and grass understorey. The burrows usually occur in the litter under hummock-like shrubs.

Tree Stem TDS

Aganippe castellum

Status: Endangered

Illustrations of a female (top) and male (bottom).
Illustrations DEC/Brad Durrant.



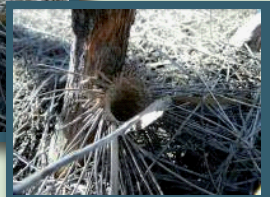
Spider description: Its body shape is designed to complement its ability as an ambushing spider. Its overall body colour is dark, with the abdomen black and the thorax, slightly lighter in colour. The female is the larger, as she is longer lived and requires more energy for egg production.

Burrow Description: This spider burrows are usually built up against the base or trunk of a tree, usually She oaks or *Allocasuarina* sp, (see the fine needle-like modified stems, below) but have also been found supported by fallen logs, twigs and in some rare cases, blades of grass.

They extend approximately 1cm to 10cm above ground, and commonly make their burrow lid and surrounding triplines from the leaves and bark of the host plant. The twiglines or triplines hang down on both sides of the burrows entrance and down the sides of the burrow to the bush floor.

The twiglines provide a pathway for insects moving up and down the stem of the host plant. The spider is able to seize the prey as it passes the burrow rim.

Habitat Description: This spider builds its distinctive burrow in sandy loam or loamy gravel soils against trees such as Boom brush, She oaks and other shrubs. They are also very common where there is nodulated soil near gravel pits and granite outcrops.

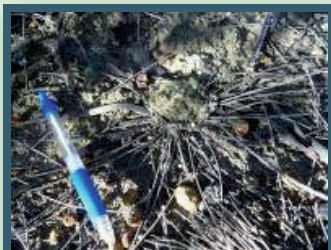


Photos:
WWF/Michael Roache

Gaius villosus

Other commonly seen (not currently listed as threatened)

Photos: WWF/Michael Roache



Status: Not threatened, but easily confused with those that are.

Burrow Description: Gaius build a large slightly ovoid lid (up to about 55mm in diameter) with any litter material laid flat.



Habitat Description: Unlike the threatened trapdoor spiders, Gaius do not seem particular about the habitat in which they build their burrows. They occur in a variety of different habitats from Acacia and Sheoak shrublands to Eucalyptus woodlands, often in loamy or clay soils.

Aganippe spp.

Other commonly seen (not currently listed as threatened)

Aganippe sp 'pincushion' burrow.

DEC/Hayden Cannon.



Status: Not threatened, but easily confused with other twig-lining *Aganippe* spp.

Burrow Description: These are other twig-lining *Aganippe* spp. that occur throughout the Wheatbelt and Goldfields and may be confused with (*Idiosoma nigrum*). Spiders of some populations arrange twigs on the door in a pincushion fashion.

Habitat Description: The habitat is variable from both sandy loam to nodulated soil, so it is not uncommon to see them where there are also the threatened Tree-stem and Shield-backed trapdoor spiders located.

Contact Details

Northam 9622 8940

Merredin 9041 2488

Narrogin 9881 9200

DEC and WWF would like to acknowledge the support that Professor Barbara York Main continually offers to this project and the cause of trapdoor spiders in the Wheatbelt. Her knowledge is paramount and we thank her for sharing it with us and others.



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