Trapdoor Tally – Summary Update

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**Summary**

The first Trapdoor Tally was run by Wirambi Landcare, between December 2023 and January 2025. The intention is that the Tally be run as an annual survey, allowing reporting rates of burrowing activity to serve as an indicator of the presence of trapdoor spiders, as well as an indication of changes in abundance at particular sites. A total of 86 surveys were completed by 56 community volunteers, across 69 sites (Table 2). Of these, 21 (30%) were occupied by trapdoors, and across these 21 sites, the average number of burrows recorded per survey was 3.2. The presence of small burrows (<15mm diameter), indicates that recruitment of young spiders is occurring at some sites. The highest density of burrows occurred at Lowlands nature Reserve, with an average of 10 burrows per hectare.

**Background**

(thanks to Dr Leanda Mason, ECU)

Trapdoor spiders belong to the Mygalomorph group, which includes the tarantulas and funnel web spiders. Many are short-range endemic species, that occur in small, restricted areas of undisturbed native vegetation with shady areas, a mix of low shrubs, woody debris, leaf litter and bare earth. They don’t like dense weed cover, and are indicators of healthy bushland with an intact ground, invertebrate community.

The Trapdoor Tally focuses on trapdoor species with open burrows (no lid), that are more easily seen. There are two relatively common species in the Perth Region; the Wishbone Spider (*Aname mainae*), that has round, vertical burrows, without much web,that are easily seen in open, sandy areas, during winter. Wishbone spiders are less active over summer, when they appear to cover their burrows with leaves, and when the males are vulnerable to wildfire, as they disperse to find females and new territories.

The other relatively common trapdoor on the in the Perth Region, is the Lidless Banksia Trapdoor Spider(*Proshermacha tepperi*). These have large, easy to see, web funnels, often raised above ground, within low, dense vegetation. The females put their webs out and make them look nice in the summer months (Doilies), to attract males, and disperse in the winter/autumn. They are larger than the *Aname*, able to eat small lizards (baby skinks). Note that the Shield-backed Trapdoor Spider (*Idiosoma nigrum*), which occurs in the WA Wheatbelt, is listed as Threatened.

**Objectives of the Trapdoor Tally**

* To establish a set of monitoring sites where trapdoor burrows are counted annually using a robust, repeatable method.
* To capture data about Trapdoor Spiders, that can be used as a reference for population trends, future planning decisions and conservation projects.
* To provide data on the distribution and abundance of Trapdoor Spiders in the Greater Perth Region.
* To raise awareness in the community about Trapdoor Spiders, some of which are endangered.
* To engage the community in citizen science to assist with Trapdoor Spider conservation.

**Survey Method**

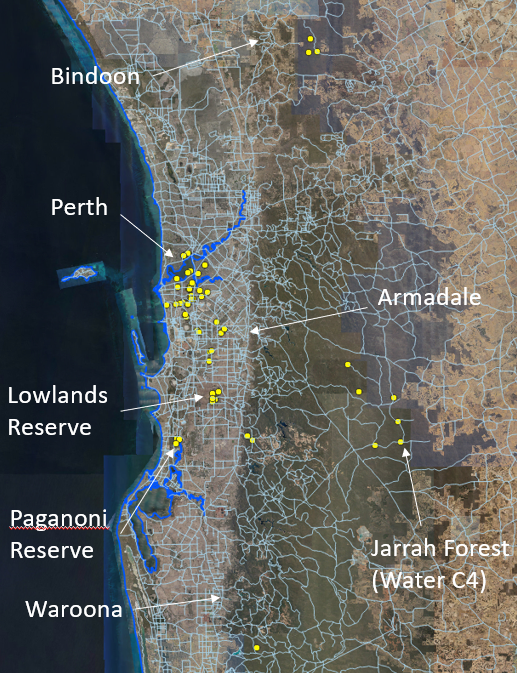
A 20-minute area search method was used, with the observer walking slowly, looking at the ground, recording any burrows seen (usually within 2m of the observer). A metric ruler is used to measure the diameter of a sub-sample of burrows (without disturbing the entrance, see survey sheet in Appendix for further details).

**Trapdoor recruitment**

An indication of whether trapdoor populations are self-sustaining, and replacing themselves, can be gauged by recording the diameter of the burrows. If there are small (<15mm diameter), as well as, large burrows (>20mm diameter), the population contains both mature adults and juveniles. By tracking the proportion of small holes over time, changes in the recruitment rate of juveniles can be identified.

**Population Density**

A GPS tracker is used to plot to calculate the distance walked during the 20-minute survey. The average distance from the observer to the burrow, when initially sighted, was recorded at a subset of sites. This average distance was 1.15m (max=2m, min=0.5m, n=66 sightings). Based on this figure, it is assumed that all visible burrows, were recorded within 2.5m of the observer. This measure (average transect width = 2.5m), combined with the average length of the transect for a given survey, provide an estimate of the area surveyed, which can be used to estimate the density of burrows at a particular location. To calculate density, the average number of burrows per survey, was divided by the average area (ha) of the strip transect surveyed, then multiplied 10,000 to convert the measure to burrows per hectare. Density estimates in this report, were calculated for sites at three locations (Table 3), where at least two burrows were recorded (a strip transect width of 5m was assumed, and estimates of the average transect length may have been based on surveys in adjacent sites).



**Figure 1:** Location of 69 Trapdoor Tally survey sites (yellow dots)

**Table 1:** The 17 trapdoor species occurring in the Perth Region (Atlas of Living Australia):

|  |  |
| --- | --- |
| **Common Name** | **Scientific name** |
| Black Wish-bone Spider | *Aname mainae* |
| Wish-bone Spider | *Aname maculata* |
| Sand curtain spider | *Cethegus fugax* |
| Inornate Trapdoor Spider | *Euoplos inornatus* |
| (Armored) Trapdoor Spider | *Gaius villosus* |
|  | *Idiommata blackwallii* |
| (Armored) Trapdoor Spider | *Idiosoma jarrah* |
| (Spiny, Armoured) Trapdoor Spider | *Idiosoma rhaphiduca* |
| SCP Shield-Backed Trapdoor Spider\* | *Idiosoma sigillatum* |
| (Armored) Trapdoor Spider | *Idiosoma subtriste* |
| Mouse Spider | *Missulena granulosa* |
| Hogg’s Mouse Spider | *Missulena hoggi* |
| Red-headed Mouse Spider | *Missulena occatoria* |
|  | *Proshermacha auropilosa* |
| Lidless Banksia Trapdoor Spider | *Proshermacha tepperi* |
| Barking Spider | *Selenocosmia stirlingi* |
| Michaelsens Brush-footed Trapdoor | *Synothele michaelseni* |

\*DBCA Priority 3 species

**Project Results**

**Table 2:** Summary of Trapdoor Tally data across all years (Dec 2023 to Jan 2025)

|  |  |
| --- | --- |
| Total number of surveys | 86 |
| Total number of active Trapdoor burrows recorded | 75 |
| Total number of volunteers involved  (volunteers from Murdoch Uni and Mandurah Tafe, Friends of Booragoon and Blue Gum Lakes and the Rehabilitating Roe 8 group) | 56 |
| Total number of sites surveyed | 69 |
| Avg number of surveys per site | 1.3 |
| Avg number of Trapdoor burrows per survey, across all sites | 0.86 |
| Number of sites with Trapdoor burrows present | 21 (30%) |
| Avg number of Trapdoor burrows per survey, in sites where Trapdoors were recorded as present | 3.2 |
| Average diameter of the burrows (n=67) | 18.6 (mm) |
| % burrows >20mm diameter (n=16 burrows) | 24% |
| % burrows 16-19mm diameter (n=42 burrows) | 63% |
| % burrows<15mm diameter (n=9 burrows) | 13% |
| Average distance from observer to burrow, when first sighted (n=66) | 1.2(m) |

**Table 3:** Density of Trapdoor burrows, at three locations (see Figure 1), where at least two burrows were recorded (number of burrows counted was converted to a density, assuming strip transect width of 5m. Also, average estimates of transect length may be based on transect surveys in adjacent sites)

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| --- | --- | --- | --- | --- | --- | --- |
| **Location** | **#Transect Code** | **#Surveys** | **Avg length of transect (m)** | **Avg area of transect (m2)** | **Avg # burrows per survey** | **Avg # burrows per Hectare** |
| **Lowlands**  **Nature Reserve** | LowTrapdoor  1 to 6 (n=6) | 16 | 763 (n=8) | 3,815 | 3.8 | 10 |
| **Jarrah Forest**  **(northern)** | Water C4  (n=1) | 2 | 835 (n=4) | 4,178 | 1.0 | 2.4 |
| **Paganoni Bushland** | PagTrap1&4  (n=2) | 2 | 980 (n=2) | 4,900 | 2.5 | 5.1 |

**Appendix: Trapdoor Tally – Data Sheet**

Trapdoor spiders belong to the Mygalomorph group, which includes the tarantulas and funnel web spiders. Many are short-range endemic species, that occur in small, restricted areas of suitable habitat. We know they need undisturbed native vegetation with shady areas, a mix of low shrubs, woody debris, leaf litter and bare earth. They don’t like weeds and are indicators of healthy bushland with an intact ground, invertebrate community.

The Trapdoor Tally will focus on trapdoor species with open burrows (no lid), that can be more easily seen. Examples include the Wishbone Spider (*Aname mainae*), and another, relatively common trapdoor on the Swan Coastal Plain, the Lidless Banksia Trapdoor Spider(*Proshermacha tepperi*).

These trapdoor burrows are circular, tend to be vertical and located at the base of a tree, shrub or tuft of grass. Please take a ruler with you and measure the diameter of the burrow (without disturbing the entrance). If small as well as large burrows are present, there is recruitment of young spiders into the population.

If you see a different type of burrow, with a lid, it could belong to one of fifteen or so, other trapdoor spider species, that occur on the Swan Coastal Plain. Please take a photo and record the location.

If you think you might have trapdoors in your local reserve and would like to do a count for us, please get in touch with Dr Geoff Barrett, Department of Biodiversity, Conservation and Attractions ([geoff.barrett@dbca.wa.gov.au](mailto:geoff.barrett@dbca.wa.gov.au)).

|  |  |
| --- | --- |
| Trapdoor Spider burrow (possibly *Aname tepperi*) | Trapdoor burrow (possibly *Aname tepperi*) |
| A close-up of a spider  AI-generated content may be incorrect.  Black Wish-bone Spider (*Aname mainae*)  (image from the Atlas of Living Australia) | The type of habitat trapdoors like |

**Trapdoor Tally Survey Method**

* Choose a patch of bushland that is in good condition, where you think trapdoor spiders occur.
* Record the location of the search area, date, and time of survey.
* Walk slowly through the bush for 20 minutes, looking at the ground in front of you (within 2-3m),
* Mark the start of the survey with your GPS unit and stay within 200 metres of this point.
* Try not to cover the same ground twice.
* If you find a trapdoor burrow, record it and measure the diameter of the entrance.
* Only count burrows that you are sure belong to a spider, having clearly visible web around the entrance.
* Take a photo if you are unsure.
* Trapdoor burrows will tend to cluster, so if you find one, look nearby for others.
* Target areas with patches of bare sand and leaf litter, low shrubs, shade, logs, and woody debris.
* Careful not to count the same burrow twice.
* If you don’t find any burrows, please record this, and send your data sheet in (zero counts are important).

|  |  |  |  |
| --- | --- | --- | --- |
| Name of site: |  | Date: | Time Start:  (20-minute survey) |
| Name and contact number of main observer(s):  Number of people searching: |  | Main forest type  Quenda Diggings present (Y/N) | (e.g. Banksia Woodland, jarrah forest) |
| Site description:  Has there been a fire recently, of so,  how long ago? |  | Latitude:  Longitude: |  |
| Diameter of burrow (mm)  or ‘Not measured’ | Does the burrow have a lid (Yes or No). If yes, please take a photo. | Does the burrow look active (with fresh web) Yes or No | Comment |
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|  |  |  |  |
|  | **Total number of Active** | **Burrows (with web):** |  |