



## Pink-tailed Worm-lizard Monitoring 2022

Ginninderry Conservation Trust  
&  
Woodlands and Wetlands Trust

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## 1. Executive Summary:

The Ginninderry Conservation Trust worked together with the Woodlands and Wetlands Trust to survey the whereabouts and relative abundance of *Aprasia parapulchella* – Pink-tailed Worm-lizards (PTWL) within the Ginninderry Conservation Corridor. Staff from both Trusts worked together along with volunteers from the community to turn rocks in medium-high quality habitat. Throughout each surveying site, several PTWLs were processed, and a DNA sample was taken as part of research being conducted by the Australian National University (ANU). In 2022 we detected 2.84 lizards per hour of sampling effort, which is a significant increase from 2020 survey results.

## 2. Introduction:

The Ginninderry Conservation Trust (GCT/The Trust) developed as a strategic initiative of the Ginninderry Joint Venture (the JV), to manage, enhance and conserve the Ginninderry Conservation Corridor (the Corridor), to deliver Environment Protection and Biodiversity Conservation Act (EPBC) commitments and restore the landscape. The EPBC Act approval for the Ginninderry urban development program includes a raft of commitments to protect, enhance and offset the vulnerable Pink-Tailed Worm Lizard (PTWL).

The [Program Report](#) - by AT Adams Consulting (2017) - commits to the protection of 146.4 ha of high-quality/ suitable PTWL habitat be conserved in the Conservation Corridor. Approval condition 11 required the resurveying of PTWL habitat within the ACT and NSW portions of the Corridor and Program area. Capital Ecology (2019) revised the PTWL habitat across the whole of the Ginninderry project area (both in NSW and ACT) and determined that there is a total of 188.3 ha of PTWL habitat, comprising of 175.5 ha of suitable habitat (moderate and high-quality habitat combined as a mapping unit) and 12.8 ha of low-quality habitat (highly disturbed and degraded habitat that is likely to no longer support the species) within the Project area (**Error! Reference source not found.**). Of that, 167.5 ha is retained and conserved within the Ginninderry Conservation Corridor (which is 21.1 ha more than the original stated Program Report) with 20.8 ha (14.5 ha of suitable habitat and 6.3 ha of low-quality habitat) located within development area, with some of it already being cleared. The PTWL inhabiting this development area have been and will continue to be caught and translocated to alternative suitable habitat in the Corridor. Monitoring requirements are to be undertaken in accordance with the [Ecological Monitoring Framework](#) for the Ginninderry Conservation Corridor.

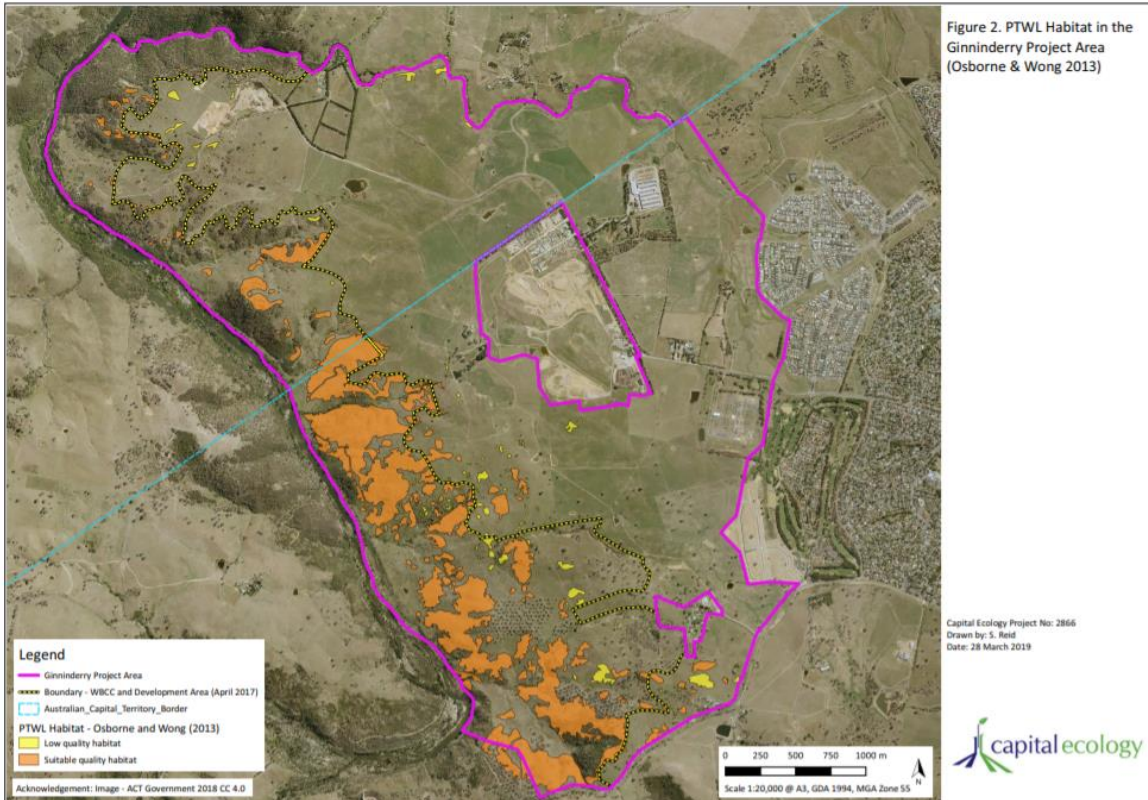


Figure 1: PTWL Suitable and Low-Quality Habitat in the Ginninderry Project Area as documented by Osborne & Wong 2013

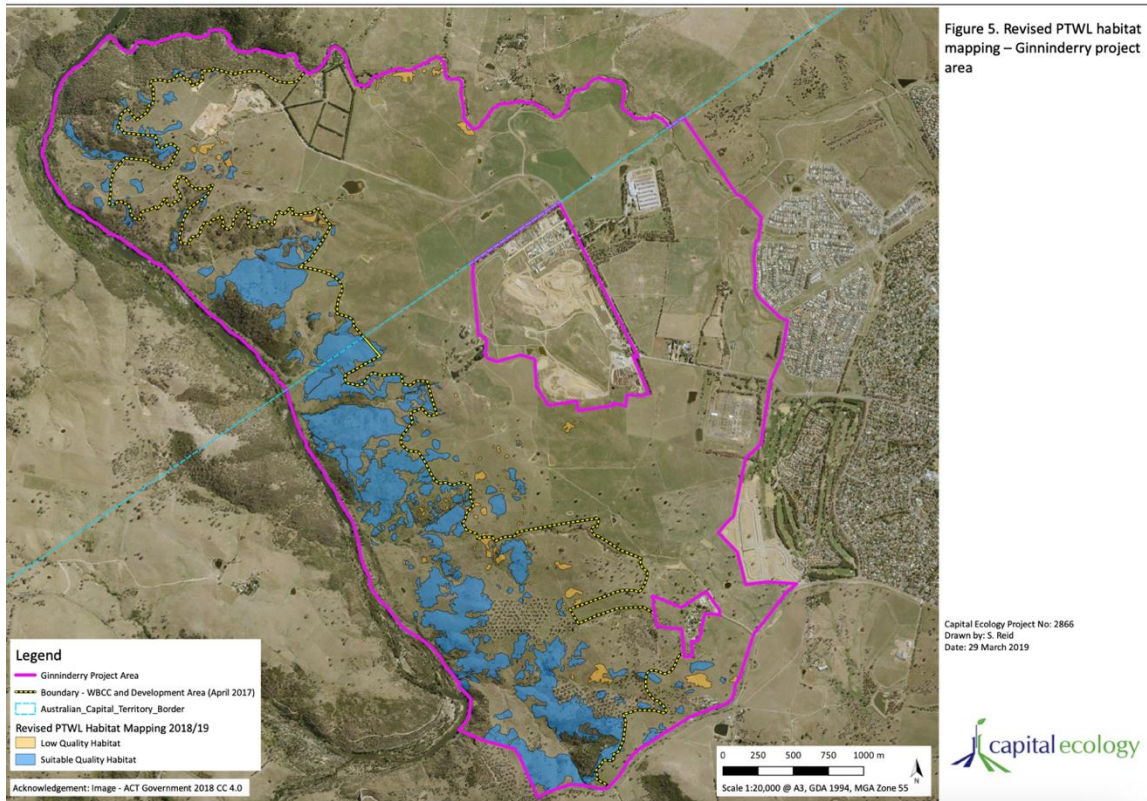


Figure 2: Updated map of PTWL habitat as documented by Capital Ecology 2019

## 2.1. Scope

The purpose of the study was to monitor the population via a presence or absence survey of PTWL throughout the determined habitat area, previously mapped by Osborne and Wong (2013) and Capital Ecology (2018/19).

## 3. Methods

The surveys were undertaken over a period from early October to early November from 8-12 am. The minimum temperature and maximum over the duration of the study was 6.3°C and 23°C. (Bureau of Meteorology records for nearest weather station, Canberra Airport).

Prior to the surveys being conducted, the potential and confirmed PTWL habitat aerial maps were consulted and portioned off into sections to be surveyed on each day. These sites were given an ID so PTWL that were processed for DNA sampling could be identified within their location. To help with the monitoring effort, GCT engaged local community members. The survey sites focused on 31.23 ha of suitable PTWL habitat (moderate and high quality) within the Conservation Corridor as identified by Osborne and Wong (2013).

Rocks small enough to be lifted without strain (“football-sized” or smaller) were turned to search for PTWL. Volunteers were trained on best practice for safety to turn the rocks towards the body in case a venomous snake was found. Rocks between the size of 10-40cm were targeted.

When located, the *Survey 123* application was used to map the individual PTWLs location. Information recorded was estimated rock size, temperature, vegetation cover, vegetation type, average vegetation height, location, date & time, number of PTWL in that location and an option to upload an image. The detection of skins was also recorded.

At each site, a number of PTWL were selected for DNA sampling. The PTWL were selected across different sections of their site to get the best distribution of samples.

The PTWLs were placed into a clear bag to conduct the following:

- Full body measurement
- Vent to snout measurements
- Tail snip for eDNA

The tail snip was required for ANU’s genetic research into the population genetics of the species. As per the ANU ethics approval guidelines, 5mm portion of the tail was sampled. It was cut with ethanol sterilised surgical scissors, and stored in a small tube with ethanol, to preserve the sample. The wound was treated with Tri-solfen to keep it clean and reduce the pain. Once processing was complete, animals were released next to the rock they were found under.

#### 4. Results

During the whole survey period, 70 individual PTWL and 1 skin shed (sloughs) were recorded during the survey, all found under rocks. The number of lizards found proved high in comparison to previously conducted surveys. It is important to note that this survey had less hours spent surveying with less volunteers in comparison to previous studies. (See Table 1, Table 2 and Figure 3). It is also important to note that the sites that had the most PTWL finds were on steep slopes with good drainage and had good presence of native grasses and forbs. Feedback from other studies have indicated a reduction in PTWL numbers due to ground saturation from 3 years of a La Nina weather event. Other surveying conducted in the Corridor to detect PTWL under artificial shelters have indicated the same issue.

Table 1. number of PTWL found on each survey

Survey year	2009	2013	2018/19	2020	2022
PTWL found	66	96	57	81	71

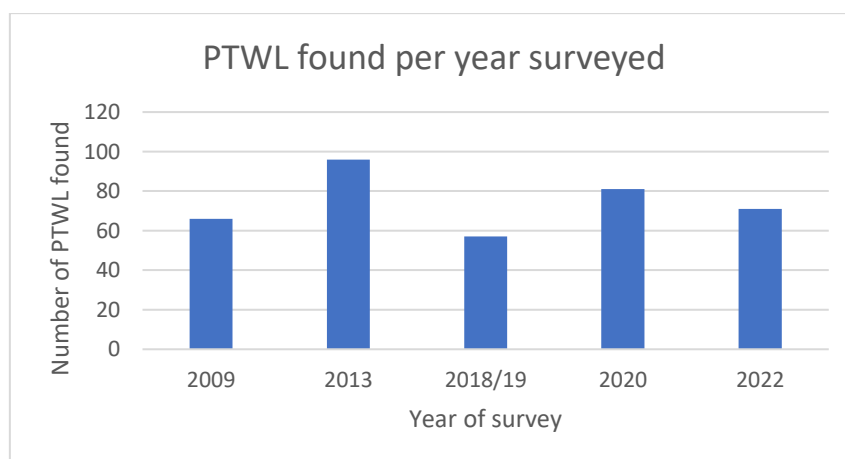


Figure 3 Number of *A. parapulchella* found in each survey year. Data from Osbourne & Wong (2013), Capital Ecology (2019), GCT survey (2020) and this study (2022).

The 2022 survey proved to have a higher number of lizards sighted per hectare in comparison to the 2020 survey conducted by the Trust. There was also significantly less hours spent surveying in 2022 compared to 2020, with a higher detection rate per hour. (See Table 2).

Table 2. Number of PTWL found per hectare per survey undertaken by the Ginninderry Conservation Trust.

Year of survey	2020	2022
Number of PTWL found	81	71
Number of hectares surveyed	36	31.23
Average number of PTWL found per hectare	2.25	2.27
Number of man hours spent	150	25
Number of PTWL detected per hour	0.54	2.84

#### 4.1. Habitat selection

All PTWL were found in moderate to high quality habitat as previously mapped by Osborne and Wong (2013). Areas with a higher density of native grasses proved to be preferable to PTWL than areas of introduced grasses. Rocks covered in a thick layer of grass did not have PTWL present underneath, this potentially indicates rocks need to be in full sun to heat up enough for a PTWL to bask under it. Rock size varied from <20cm – 40-60cm. 69% of finds were found under rocks less than 20cm. No rocks were lifted that were too thick to prevent injuries - these would require higher temperatures to heat up enough for the PTWL to use.

#### 4.2. Cohabiting

Interestingly, there were 3 occasions where 4 PTWLs were found under one rock. There were 2 occasions where 4 PTWL were found under rocks <20cm and 1 occasion where 4 PTWL were found under rocks between 20-40cm. Furthermore on 1 of those occasions the 4 PTWLs were found to cohabitate with a Copper-tailed Skink (*Ctenotus taeniolatus*). On 5 different occasions two PTWL were found under the same rock. 66% of finds were of 1 PTWL under the rock. Other species recorded using the same habitat during the survey were various wolf spider species (family: *Lycosidae*), Native cockroaches (order: *Blattodea*), various centipedes (*Cormocephalus sp.* and *Scolopendra sp.*), Smooth Toadlet (*Uperoleia laevigata*), Black Rock-Scorpion (*Urodacus manicatus*), Olive legless-lizard (*Delma inornata*) and excitingly a Burtons Legless-lizard (*Lialis burtonis*) which is the first ever recording of their presence in the Corridor.



Figure 4: Smooth Toadlet (*Uperoleia laevigata*)



Figure 5: Burtons Legless Lizard (*Lialis burtonis*)

#### 4.3. Size:

The surveying did not record the size of each PTWL, however of the 23 PTWLs that were processed for DNA sampling, snout to vent length and total PTWL length were recorded. Anecdotally, the 3 occurrences where 4 PTWL were found under one rock there was a range of sizes including large, medium, and juvenile PTWLs.

Sample ID	Snout to Vent length (mm)	Total PTWL length (mm)	Surveying site
PT81	NA	170	1C
PT82	108	149	1C
PT83	130	189	1C
PT84	114	182	1C
PT85	121	166	1C
PT86	108	171	1C
PT87	65	115	1C
PT88	103	145	1C
PT89	85	128	1C
PT90	NA	185	1C
PT91	100	130	1B
PT92	130	160	1B
PT93	105	135	1B
PT94	120	150	1B
PT95	105	155	1B
PT96	120	200	1B
PT97	110	170	1B
PT98	120	180	1B
PT99	110	180	1B
PT100	103	150	1B
PT105	119	143	3
PT106	95	165.2	2B
PT107	50.5	81.5	2B



## 5. Discussion

During the 2022 surveys a higher number of PTWL were found within the ACT portion of the Conservation Corridor. More PTWL were found per hectare in this survey in comparison to other surveys conducted in the past. During the 2022 survey, a higher number of PTWL were found on the steep, well drained areas with greater occurrences of native grasses and forbs compared to other areas surveyed. Site 3 had higher levels of biomass compared to the other sites which may be the cause of lower detection rates. With the Corridor receiving above average rainfall for the last 3 years caused by the La Nina event, many of the lower lying sections of the Corridor are experiencing soil saturation. As recommended under the Ecological Monitoring Framework and the 2020 monitoring report, 4 artificial habitat plots (comprising 100 bricks in each plot) have been established around the Corridor. All the artificial habitat plots occur in lower lying sections of the Corridor and were soil saturated. Surveying results of these have indicated that the La Nina event has impacted the recruitment of ants and therefore reducing the likelihood of PTWL. No PTWL were detected during monitoring of artificial habitat plots, including the scrape and sow site.

The results of the DNA collection have yet to be processed by ANU and will be provided to the Trust upon completion.

## 6. Recommendations

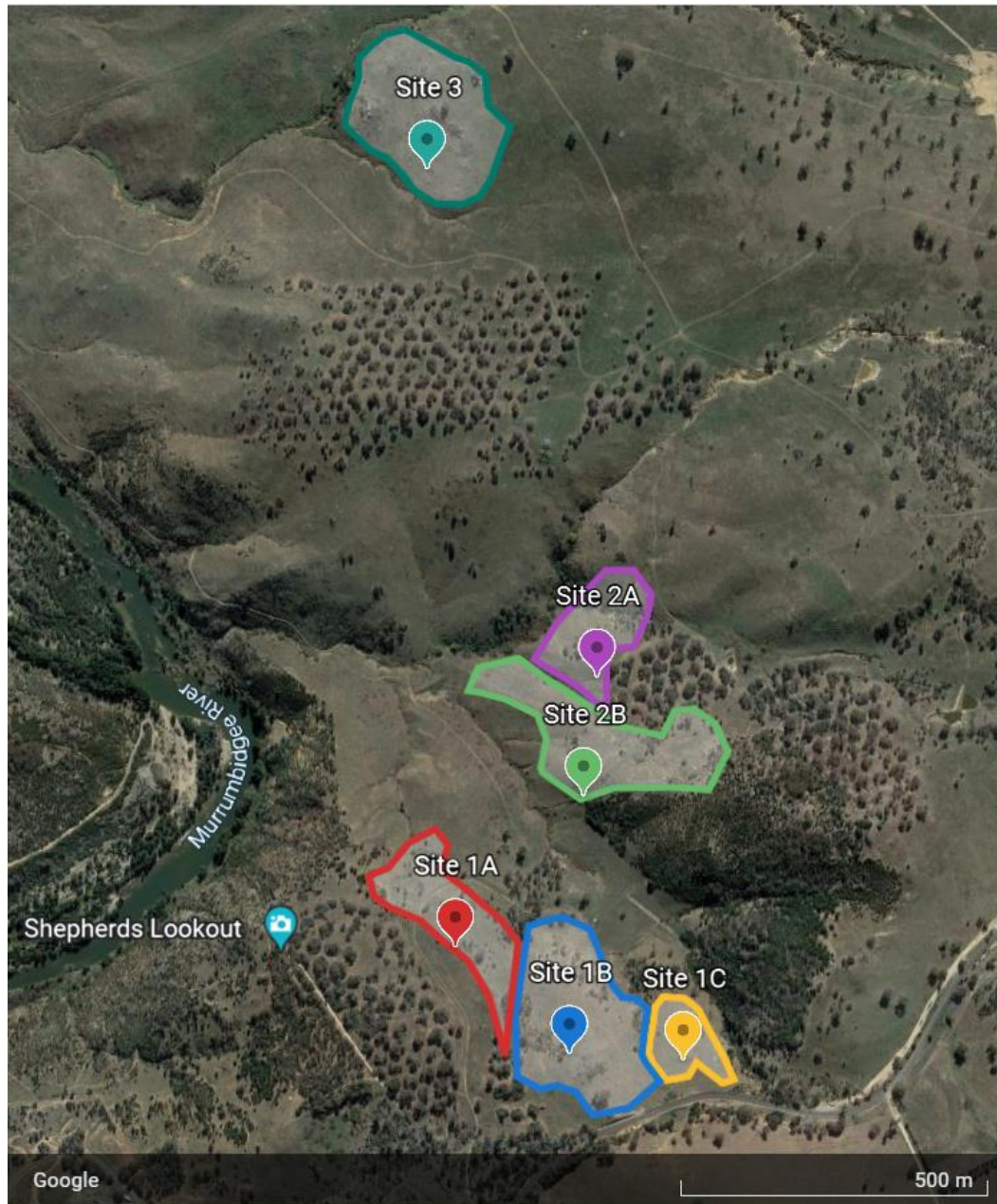
- Future surveying measurements should include dominant plant species found around site, tail length, soil and burrow temperature, underside rock temperature, rock size (length x height x width) and the presence/ absence of ants (recommendations from Osbourne & McKergow report 1993).
- Frequency of rock-turning surveys. It is recommended this type of survey only be conducted at a minimum of every five years due to the potential impact of this activity on the species. In the meantime, additional artificial habitat plots should be established and monitored.
- Rocks collected for habitat expansion should be between 10-40cm or around the size of a football. Rocks should cover approximately 30% of ground cover in expansion areas.
- Exotic grasses should be controlled across PTWL habitat (both natural and artificial).

## 7. References

- Capital Ecology (2018). Ginninderry – Pink-tailed Worm-lizard survey and habitat mapping. Project 2772. 29 May 2018.
- Capital Ecology (2019). Ginninderry – Pink-tailed Worm-lizard survey and habitat mapping of NSW Land. Project 2866. 02 April 2019
- McDougall A, Milner R, Driscoll D and Smith A, (2016) 'Restoration rocks: integrating abiotic and biotic habitat restoration to conserve threatened species and reduce fire fuel load. *Biodiversity Conservation*. 25, pg 1529–1542.
- Osbourne W and McKergow F (1993). Distribution, population density and habitat of the Pink-tailed Legless Lizard *Aprasia parapulchella* in Canberra Nature Park. Department of the Environment, Land & Planning, ACT Government.
- Osborne W and Wong D (10 May 2013). The extent of habitat for the vulnerable Pink-tailed Worm Lizard (*Aprasia parapulchella*) in the West Belconnen-Ginninderra Creek investigation areas – confirmatory distribution surveys and mapping. Institute for Applied Ecology, University of Canberra. Report commissioned by The Riverview Group Pty Ltd.
- SMEC Australia Pty Limited (October 2018). Ginninderry Development Offset Management Plan. Prepared for The Riverview Group (ACT) Pty Ltd.
- TRC Tourism Ltd (September 2018). Ginninderry Conservation Corridor 2018- 2023 Management Plan. Prepared for The Riverview Group (ACT) Pty Ltd.

8. Appendix:

8.1. PTWL surveying sites 2022



## 8.2. Location of PTWL found across surveying sites

*Note: this is not an indication of the amount of PTWL found as multiple PTWL were recorded at one rock.*

