

Australian Capital Territory

Nature Conservation (Pink-tailed Worm-lizard) Conservation Advice 2020

Notifiable instrument NI2020–568

made under the

Nature Conservation Act 2014, s 90C (Conservation advice)

1 Name of instrument

This instrument is the *Nature Conservation (Pink-tailed Worm-lizard) Conservation Advice 2020*.

2 Commencement

This instrument commences on the day after its notification day.

3 Conservation advice for Pink-tailed Worm-lizard

Schedule 1 sets out the conservation advice for Pink-tailed Worm-lizard (*Aprasia parapulchella*).

Arthur Georges
Chair, Scientific Committee
4 September 2020

Schedule 1

(see s 3)



ACT
Government

Environment, Planning and
Sustainable Development



ACT Scientific
Committee

CONSERVATION ADVICE

PINK-TAILED WORM-LIZARD – *Aprasia Parapulchella*

CONSERVATION STATUS

The Pink-tailed Worm-lizard *Aprasia parapulchella* Kluge, 1974, is recognised as threatened in the following jurisdictions:

National	Vulnerable , <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
ACT	Vulnerable , <i>Nature Conservation Act 2014</i>
NSW	Vulnerable , <i>Biodiversity Conservation Act 2016</i>
VIC	Threatened , <i>The Flora and Fauna Guarantee Act 1988</i> Endangered , Advisory List of Threatened Vertebrate Fauna in Victoria 2013

ELIGIBILITY

The factors that make the Pink-tailed Worm-lizard eligible for listing as Vulnerable in the ACT Threatened Native Species List are included in the Listing Background section below.

DESCRIPTION AND ECOLOGY

The Pink-tailed Worm-lizard is a small worm-like legless lizard, with a thin body, blunt head and has pinkish to reddish-brown colouring on a round-tipped tail. The Pink-tailed Worm-lizard is part of the Pygopodidae family, a group of lizards that lack forelimbs and hind limbs reduced to small vestigial flaps, which is a key characteristic to distinguish them from juvenile snakes. The lizard is typically grey-brown in colour, with a slightly darker head and paler underside. The dorsal scales each have a short median longitudinal dark bar creating the impression of dark dots forming longitudinal lines along the body coming together at the tail. The Pink-tailed Worm-lizard lacks external ear openings (Cogger 2014). The species can grow to a total length of approximately 24cm (Osborne and Jones 1995).

The Pink-tailed Worm-lizard typically lives in the burrows of ant nests in the soil underneath rocks, preying on the eggs and larvae of the ants with which they cohabit (Webb and Shine 1994).

Laboratory observations suggest that the Pink-tailed Worm-lizard is diurnal, and whilst most of its time is spent underground, it has been observed basking on rocks and traversing through terrain (Wong et al. 2011). Observations also suggest that, like many reptiles, the species uses thigmothermy (drawing heat from the underside of surface rocks) as a strategy for thermoregulation (Wong et al. 2011). It is thought that ant



Pink-tailed Worm-lizard (Matthew Frawley - Canberra Nature Map)

burrows provide a thermally stable environment with the species burrowing deeper in hotter weather (Wong et al. 2011).

The species is oviparous (egg laying) and has a clutch size of two (Osborne and Jones 1995). It is thought the species is relatively long-lived as it reaches sexual maturity relatively late, with males sexually mature around their third year of life and females around four years (Jones 1999). There is little information on longevity. Similarly, there is little known on hatching dates, though they are thought to occur mid-to-late summer (Wong et al. 2011).

DISTRIBUTION AND HABITAT

Pink-tailed Worm-lizards seem to be largely restricted to rocky landscapes and are sporadically distributed along the foothills of the western slopes of the Great Dividing Range between Gunnedah in New South Wales and Bendigo in Victoria (Wong et al. 2011). They occur along a wide altitudinal and longitudinal range, from 180m ASL at Whipstick, Victoria, to 815m ASL at Mount Taylor in the ACT (Wong et al. 2011). Populations across this range are highly fragmented, with known populations in Victoria largely centred around Bendigo and known populations in New South Wales highly isolated from one another (Wong et al. 2011).

The occurrence and distribution of the Pink-tailed Worm-lizard is best known in the ACT, where there have been significant localised assessments and survey efforts (Wong et al. 2011). The species is mostly distributed along the Murrumbidgee and Molonglo River Corridors, their surrounding areas and along some adjacent hills found within the Canberra Nature Park system including Mount Taylor, Cooleman Ridge, Urambi Hills, The Pinnacle and Farrer Ridge (Osborne and Jones 1995; Wong et al. 2011). Other sites include Oakley Hill, Kama Nature Reserve and Black Mountain Nature Reserve (Wong et al. 2011). Whilst most of the sites where the species is found occur within nature reserves, there are records of the species on leasehold land, urban spaces and natural remnant ecosystems, all of which are typically surrounded by urban developments that separate populations from one another (ACT Government 2017a). The largest known populations and highest densities have been recorded in the Lower Molonglo Valley (Wong and Osborne 2010) and Mount Taylor (Osborne and McKergow 1993; Osborne and Wong 2012), however, this may be as a result of a lack of research in other locations within the species' ACT range.

Rocks are key habitat for Pink-Tailed Worm-lizards, providing shelter from predators and extreme weather and a thermally stable environment for thermoregulation. The Pink-tailed Worm-lizard typically inhabits rocky areas within Natural Temperate Grassland (a critically endangered ecological community), open grasslands, woodland communities, and grasslands formed by vegetation clearing (Robertson and Heard 2008; Wong et al. 2011). In the ACT region, the species generally inhabits locations that tend to have scattered surface rocks which are partially embedded in well-drained late-Silurian volcanic soil along mid-slope or ridge top sites (Osborne and Jones 1995; Wong et al. 2011). The grasslands in which this species is found generally have a cover predominantly consisting of native grasses, which is an indicator of low disturbance (Jones 1992; Osborne and Jones 1995). More specifically, *Themeda triandra* (kangaroo grass) is a key characteristic of sites where the species occurs (Jones 1992).

Observations indicate that some individuals are faithful to the same homesite rock over long periods of time, with the same lizards being found under the same rock on numerous occasions or the presence of shed skin which is an indicator of longer-term residency (Osborne and Jones 1995).

THREATS

In addition to its low population densities and reproduction rates, the specialised habitat requirements of the Pink-tailed Worm-lizard make the species more vulnerable to changes in the condition of its habitat and disturbance events that lead to further degradation, fragmentation and destruction. Major broad-scale perceived threats to the survival of the species are (ACT Government 2017a; TSSC 2015):

- Habitat degradation, fragmentation and loss through:
 - urban development and associated infrastructure
 - inappropriate/incompatible land management practices including:
 - overgrazing and compaction caused by livestock
 - improved pastures and cropping
 - invasive weeds
 - altered hydrological regimes.
 - removal of rocks
 - increased biomass and litter impacting thermal properties of rocks and consequential thermoregulation (basking) opportunities.
- Inappropriate fire management regimes and burning practices impacting vegetation structure (Osborne and Jones 1995).
- Predation (particularly introduced predators).
- Climate change impacts favouring invasive weed species that may compete with native species and smother habitat.

These threats have led to isolation of subpopulations causing the reduction in gene flow and genetic diversity, exacerbating the species' vulnerabilities. In 2014, a habitat restoration project commenced in the Molonglo Valley, using salvaged rock to artificially create 11 rock habitat refugia (stepping-stones) across 800m connecting two genetically distinct populations of Pink-tailed Worm-lizard aiming to mitigate the effects of habitat fragmentation and protect the species from encroaching suburbia and increase population numbers (McDougall et al. 2016) . Subsequent surveys of the site indicate that there has been an increase in observations which may correlate to an increase in numbers and connectivity between subpopulations. Within one year of rock placement, Pink-tailed Worm-Lizards began colonising stepping-stones and all 11 habitat refugia within six years (Milner et al. 2020). This restoration approach focusing on abiotic habitat features in restoring connectivity not only is likely to improve population dysconnectivity and genetic diversity but also benefit a range of other threatened and non-threatened species dependent on rocky grassland habitat.

MAJOR CONSERVATION OBJECTIVE

The major conservation objective in the ACT is to ensure the long-term viability of wild populations of the Pink-tailed Worm-lizard. The Pink-tailed Worm-lizard is a significant indigenous species to the ACT region and their protection is important to both regional and national conservation agendas (ACT Government 2017a). It is important to preserve sufficient genetic diversity to promote population resilience.

CONSERVATION PRIORITIES

Priorities for conservation of the Pink-tailed Worm-lizard in the ACT, as detailed in the Action Plan (ACT Government 2017a) include to:

- conserve all populations in medium to large habitat areas and in defined landscape corridors that comprise important linking habitat
- protect all other sites from unintended impacts

- manage the species and its habitats to maintain and foster genetic diversity
- enhance the long-term viability of populations through management of buffer zones that surround occupied habitat and through rehabilitation of habitat in corridor areas that will increase connectivity between populations.

OTHER RELEVANT ADVICE, PLANS OR PRESCRIPTIONS

- Commonwealth Conservation Advice – Pink-tailed Worm-lizard (TSSC 2015)
- ACT Action Plan – Pink-tailed Worm-lizard (ACT Government 2017a)
- ACT Native Grassland Conservation Strategy and Action Plans (ACT Government 2017b)
- ACT Native Woodland Conservation Strategy and Action Plans (ACT Government 2019)

LISTING BACKGROUND

The Pink-tailed Worm-lizard was listed in the ACT as a Vulnerable species on 27 March 2008 in accordance with section 38 of the *Nature Conservation Act 1980*. At that time, the Flora and Fauna Committee (now the Scientific Committee) concluded that the assessment satisfied the following criterion:

- 2.1 Species is known or suspected to occur in the ACT region and is already recognised as vulnerable in an authoritative international or national listing.

Evidence also indicated a significant population decline in the ACT and region. The Pink-tail Worm-lizard is eligible for listing as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as, prior to the commencement of the EPBC Act, it was listed as Vulnerable under the *Endangered Species Protection Act 1992* (Cwlth). The main reasons that the species is eligible for listing in the Vulnerable category are the restricted and highly fragmented nature of its distribution and the continuing loss, fragmentation and degradation of its habitat (Threatened Species Scientific Committee (TSSC) 2015)

In the *Action Plan for Australian Lizards and Snakes 2017* (Chappel et al. 2019) it is proposed that the Pink-tailed Worm-lizard be delisted as “recent records have significantly expanded the species’ range and as such it is no longer thought to be at immediate risk of extinction”. However, section 186 2A and 2B(b) of the EPBC Act is likely to apply (that is, where listing is contributing to the species’ survival) and it is, therefore, likely to be retained in the Vulnerable category.

REFERENCES

- ACT Government 2017a. *Action Plan Pink-tailed Worm-lizard *Aprasia parapulchella**. Environment Planning and Sustainable Development Directorate, Canberra.
https://www.environment.act.gov.au/_data/assets/pdf_file/0008/1068281/Pink-tailed-Worm-lizard-Aprasia-parapulchella.pdf
- ACT Government 2017b. *ACT Native Grassland Conservation Strategy and Action Plans*. Environment, Planning and Sustainable Development Directorate, Canberra.
- ACT Government 2019. *ACT Native Woodland Conservation Strategy and Action Plans*. Environment Planning Sustainable Development Directorate, Canberra.
- Brown G 2010. *DRAFT National Recovery Plan for the Pink-tailed Worm-lizard *Aprasia parapulchella**. Department of Sustainability and Environment, East Melbourne.
- Chappel DG, Tingley R, Mitchell NJ, Macdonald SL, Scott Keogh J, Shea GM, Bowles P, Cox NA and Woinarski JCZ 2019. *The Action Plan for Australian Lizards and Snakes 2017*. CSIRO Publishing, Clayton.
- Cogger H 2014. *Reptiles and Amphibians of Australia*. Seventh Edition ed. CSIRO Publishing, Collingwood.

- Jones S 1992. Habitat relationships, diet and abundance of the endangered pygopodid, *Aprasia parapulchella*. B. App. Sc (Honours) Thesis. University of Canberra, Canberra.
- Jones S 1999. Conservation biology of the Pink-tailed Legless Lizard (*Aprasia parapulchella*). Unpublished PhD thesis. Applied Ecology Group University of Canberra, Canberra.
- Kluge A 1974. A taxonomic revision of the lizard family Pygopodidae. Miscellaneous Publications of the Museum of Zoology, University of Michigan 47: 1–221.
- McDougall A, Milner R, Driscoll DA and Smith AL 2016. Restoration rocks: integrating abiotic and biotic habitat restoration to conserve threatened species and reduce fire fuel load. *Biodiversity and Conservation* 25: 1529–1542. doi:<https://doi.org/10.1007/s10531-016-1136-4>
- Milner RN, Le Roux D, Reeve R, and Osborne W 2020. 'Stepping-stones' improve connectivity for threatened, rock dwelling Pink-tailed Worm-Lizard *Aprasia parapulchella*. Unpublished Research Manuscript.
- Osborne W and Jones S 1995. *Recovery plan for the Pink-tailed Worm-lizard (Aprasia parapulchella)*. ACT Parks and Conservation Service Technical Report 10. Department of Environment, Land and Planning, Tuggeranong.
- Osborne W and McKergow F 1993. *Distribution, population density and habitat of the Pink-tailed Legless Lizard Aprasia parapulchella in Canberra Nature Park, ACT*. ACT Parks and Conservation Service Technical Report 3. Department of the Environment, Land and Planning, Canberra.
- Osborne W and Wong D 2010. *Extent of potential Pink-tailed Worm-lizard (Aprasia parapulchella) habitat in the Stage 2 Investigation Area- East Molonglo*. Report Commissioned by ACT Planning and Land Authority, ACT Government. Institute for Applied Ecology, University of Canberra, Canberra.
- Osborne W and Wong D 2012. *Examining the long term survival of Pink-tailed Worm-lizards (Aprasia parapulchella) in Canberra Nature Park: a case study in an urbanised landscape*. Habitat distribution and abundance in the Mount Taylor Reserve. Report Commissioned by Environment and Sustainable Development Directorate, ACT Government. Institute for Applied Ecology, University of Canberra, Canberra.
- Robertson P and Heard G 2008. *Report on field-surveys for the Pink-tailed Worm-lizard (Aprasia parapulchella) in the Bendigo region, Central Victoria: Distribution, habitat associations and population attributes*. Wildlife Profiles Pty Ltd, Hurstbridge.
- Threatened Species Scientific Committee (TSSC) 2015. *Conservation Advice Aprasia parapulchella Pink-tailed Worm-lizard*. Department of the Environment, Canberra.
- Webb J and Shine R 1994. Feeding Habits and Reproductive Biology of Australian Pygopodid Lizards of the Genus *Aprasia*. *Copeia* 1994(2): 390–398.
- Wong D, Jones S, Osborne W, Brown G, Robertson P, Michael D and Kay G 2011. The life history and ecology of the Pink-tailed Worm-lizard *Aprasia parapulchella* Kluge – a review. *Australian Zoologist* 35(4): 927–940.

FURTHER INFORMATION

Further information on the related Action Plan or other threatened species and ecological communities can be obtained from: Environment, Planning and Sustainable Development Directorate (EPSDD).

Phone: (02) 132281, EPSDD Website: <http://www.environment.act.gov.au/cpr>