

CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA



Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 2019

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

To transfer *Zyromys pedunculatus* from CITES Appendix I to CITES Appendix II in accordance with Resolution Conf. 9.24 (Rev CoP17) Annex 4 precautionary measures A.1 and A.2(a)(i).

B. Proponent

Australia*:

C. Supporting statement

1. Taxonomy

1.1 Class: Mammalia

1.2 Order: Rodentia

1.3 Family: Muridae

1.4 Genus, species or subspecies, including author and year: *Zyromys pedunculatus* (Waite, 1896)

1.5 Scientific synonyms: *Conilurus pedunculatus* (Waite, 1896)

1.6 Common names:

English:	Central Rock-Rat, Central Thick-tailed Rock Rat, Macdonnell Range Rock-rat, Antina
French:	Rat à grosse queue
Spanish:	Rata coligorda

1.7 Code numbers:

2. Overview

At the 29th meeting of the Animals Committee (AC29 Com 7 Rev) the Committee selected *Zyromys pedunculatus* (Central Rock Rat) for review between CoP17 and CoP19 in accordance with Resolution Conf. 14.8 (Rev. CoP17) Periodic Review of the Appendices. Parties were notified of the Animals Committee's selection in Notification 2017/069. Australia's review was provided to the 30th meeting of Animals Committee, and the Committee asked the Secretariat to invite the proposal to be submitted to the 18th meeting of the Conference of the Parties.

* The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.

Zyomys pedunculatus was listed on CITES Appendix I on 1 July 1975. The primary threat to *Z. pedunculatus* is extensive fires and predation by feral cats (TSSC 2018). The species is recorded in Tjoritja National Park in the West MacDonnell Ranges and is protected nationally. The CITES trade database reports no trade in this species.

Resolution Conf. 9.24 (Rev CoP17) resolves that, when considering proposals to amend Appendix I and II, species that *are or may be affected by trade* should be included in Appendix I if they meet at least one of the biological criteria listed in Appendix I. A species "is or may be affected by trade" if:

- i) it is known to be in trade (using the definition of 'trade' in Article I of the Convention), and that trade has or may have a detrimental impact on the status of the species; or
- ii) it is suspected to be in trade, or there is demonstrable potential international demand for the species, that may be detrimental to its survival in the wild.

There is no known incidence of trade in this species; as such, the species is demonstrably not in trade. There is no suspected or demonstrable potential demand for the species. Future commercial trade is unlikely. There is no evidence that trade is or may be a threat to the survival of this species. Therefore *Z. pedunculatus* does not meet the criteria for inclusion on Appendix I. *Zyomys pedunculatus* is therefore eligible for transfer from Appendix I to Appendix II in accordance with Resolution Conf. 9.24 (Rev CoP17).

3. Species characteristics

3.1 Distribution

Zyomys pedunculatus is endemic to Australia, where it is currently only known to occur in the MacDonnell ranges, west of Alice Springs in the Northern Territory on higher elevation ridgetops of the western Chewings Range (which includes Mt Giles) and Heavitree Range (which includes Counts Point) in Tjoritja (West MacDonnell) National Park, and west of Mt Edward on Haast's Bluff Aboriginal Land Trust (McDonald et al. 2017). Given the substantial survey effort at lower elevations and on other geologies (McDonald et al. 2013), higher elevation (>950 m) quartzite ridgetops appear to provide core refuge habitat for the species during contracted phases of the population cycle (McDonald et al. 2017).

Historically, the species had a wider distribution with records from living animals or cave deposits in Northern Territory at Uluru-Kata Tjuta National Park, Illamurta (James Range), Haast's Bluff (West MacDonnell Ranges), Mount Liebig, Napperby Station, Devils Marbles, The Granites (Tanami Desert), and the Davenport Range (Woinarski and Burbidge 2016), and from recent cave deposits in the Cape Range, Western Australia (Woinarski et al. 2014).

3.2 Habitat

The species' habitat appears to be that of stony ground, including rugged rocky landforms, scree slopes, hills and valley floors supporting a range of open vegetation such as tussock and hummock grasslands, low shrublands and low open woodlands (Woinarski et al. 2014). Recent survey results support the suggestion that higher-altitude quartzite mountains and ridges (>1100m) may provide core refuge habitat for *Z. pedunculatus* (McDonald 2012, McDonald et al. 2015).

3.3 Biological characteristics

Zyomys pedunculatus is a nocturnal rodent that is primarily granivorous but includes other plant materials (leaf and stem) and insects in its diet (Nano et al. 2003, Edwards 2013a). The species undergoes population fluctuations in response to climatic conditions (McDonald 2012). Juveniles have been recorded in the field in April, July and November, indicating that breeding may occur throughout the year in suitable conditions (Nano 2008, Edwards 2013a). Generation length is assumed to be 1-2 years given that age at sexual maturity is 5-6 months in captivity (Gaikhorst and Lambert 2009) and longevity is probably 2-3 years based on congeneric species (Woinarski and Burbidge 2016).

3.4 Morphological characteristics

Zyomys pedunculatus is a stocky rodent weighing approximately 70-120 grams. Its tail length is equal to the head-body length (McDonald 2012) or slightly longer, up to 14cm long, and like other rock-rats,

is fattened at its base. The body has long, yellow-brown fur dorsally and cream to white fur ventrally (Watts and Aslin 1981).

3.5 Role of the species in its ecosystem

Zyomys pedunculatus is primarily but not exclusively a granivore (Nano et al. 2003, Edwards 2013a), and has been regarded as a rock-dwelling specialist (Freeland et al. 1988).

4. Status and trends

4.1 Habitat trends

The species' range is expected to continue to decline (Woinarski et al. 2014, Woinarski and Burbidge 2016, TSSC 2018) as a result of changing habitat quality brought about through multiple factors including changed fire regimes, including landscape-scale wildfires, impacts of climate change (TSSC 2018) together with predation by feral cats (see also Section 5).

4.2 Population size

Robust estimates of population size are not available from the data, as capture rates are low (TSSC 2018). The species' population size is estimated to be less than 1000 mature individuals (Woinarski et al. 2014, Woinarski and Burbidge 2016) or fewer than 800 mature individuals (TSSC 2018).

4.3 Population structure

There is no known reported information on population structure for this species.

4.4 Population trends

Zyomys pedunculatus is considered to be similar to other Australian arid zone rodents in undergoing dramatic population fluctuations in response to climatic conditions, particularly rainfall (McDonald 2012). Nano (2008) considered the species to be a 'boom-bust' species but also rare and extremely limited. The long term trend is decreasing population size (Woinarski et al. 2014, Woinarski and Burbidge 2016). The population is estimated to have declined by at least 81 per cent over a 10 year period (2000/2001 to 2010/2011), and this rate of decline may be ongoing (TSSC 2018).

The species is listed as Critically Endangered on the IUCN Red List based on population size reduction (A2abce) (Woinarski and Burbidge 2016).

4.5 Geographic trends

Fossil and recent subfossil records indicate that *Z. pedunculatus* historically ranged across inland Western Australia to the coast at Cape Range (Woinarski et al. 2014). The species has exhibited a very marked decline in range since European settlement in Australia (Woinarski and Burbidge 2016) and the species' range has further declined since 1992 (Woinarski et al. 2014).

It is currently only known from a small number of disjunct localities in central mainland Australia in the Northern Territory, with an area of occupancy estimated at 20 km² (Woinarski and Burbidge 2016), area of occupied habitat at less than 5 km² (McDonald et al. 2017, TSSC 2018), and extent of occurrence 906 km² (TSSC 2018). The absence of records of the species from outside of the west MacDonal Ranges since the 1970 implies an apparent contraction in extent of occurrence of greater than 95 per cent over the past 50 years (McDonald et al. 2017).

5. Threats

The main threats to the central rock-rat are considered to be extensive fires and predation by feral cats (TSSC 2018), and the interaction of these factors (i.e. with cats hunting more often and successfully in recently-burnt areas). Other threats include habitat modification and resource depletion as a result of changed fire regimes, and possibly predation by dogs or foxes, habitat degradation by introduced herbivores and exotic invasive grasses (Woinarski et al. 2014, Woinarski and Burbidge 2016). Decadal scale climate

variation (Letnic et al. 2005) is also likely to disadvantage this species (Woinarski and Burbidge 2016, McDonald et al. 2017, TSSC 2018). Predation by cats is considered to pose a very high to extreme risk to the species' extinction (McDonald et al. 2017) with evidence that cats target rock-rats over alternative small mammal prey.

There is no evidence of trade threatening the survival of this species.

6. Utilization and trade

6.1 National utilization

None

6.2 Legal trade

No trade is recorded in the CITES Trade Database and the species is not traded domestically.

6.3 Parts and derivatives in trade

No trade is recorded in the CITES Trade Database.

6.4 Illegal trade

There is no known incidence of illegal trade in this species. Illegal trade is not considered to have been a factor in this species' decline.

6.5 Actual or potential trade impacts

The species is protected nationally. There is no known incidence of trade in this species. Trade is not considered to have had a detrimental impact on the status of the species. There is no demonstrable potential demand for the species. Future commercial trade is unlikely; some trade for scientific or conservation purposes may arise in remaining specimens and there are national control measures in place to control for any potential for detrimental impact to the species.

7. Legal instruments

7.1 National

Zyzomys pedunculatus is listed as Critically Endangered under Australia's national environmental legislation - the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The species is also listed as Endangered in the Northern Territory under the *Territory Parks and Wildlife Conservation Act 2000* and as Critically Endangered in Western Australia under the *Wildlife Conservation Act 1950*.

7.2 International

Zyzomys pedunculatus is listed on CITES Appendix I since 1975. No commercial trade is permitted and any non-commercial trade would require CITES permits.

8. Species management

8.1 Management measures

Zyzomys pedunculatus is subject to an approved conservation advice and a recovery plan under national environmental legislation.

The approved conservation advice sets out the grounds on which the species is listed as threatened under national environmental legislation, the main factors that are the cause of it being listed as threatened, and information about what could appropriately be done to stop the decline of, or support the recovery of, the species (or if nothing can appropriately be done).

The recovery plan identifies the management actions and research necessary to stop the decline of, and support the recovery of, the species so that its chances of long-term recovery in the wild are maximised. The Australian Government is committed to acting in accordance with a recovery plan that is in force under national environmental legislation and to implementing the plan as it applies to Commonwealth managed areas. The national recovery plan is that of Cole (1999) which came into force under national environmental legislation from 2000. This recovery plan has been evaluated and a draft replacement (McDonald et al. 2017) is awaiting being put into force under national environmental legislation.

The Australian Government has identified *Z. pedunculatus* as one of 20 priority mammals for an improved trajectory by 2020 under the 'Threatened Species Strategy' (Australian Government 2017). The Northern Territory Government Department of Environment and Natural Resources has identified *Z. pedunculatus* as a top-10 priority species and is implementing the actions identified in the draft 2017 recovery plan (McDonald et al. 2017).

Recovery of the species is primarily dependent on reducing the impacts of feral cats, determining and applying favourable fire management practices, and if feasible, establishing and enhancing secure populations through translocation. A key action in the draft recovery plan is to develop a strategy for translocation to assess the benefits and risks and recommend the best approach for establishing an insurance population of this species. Experimental cat control and fine-scale fire management, together with a monitoring program for feral cats and *Z. pedunculatus*, have been implemented since 2015. A fire management strategy that specifically targets the species' requirements is being completed for the West MacDonnell National Park. Considerations required for any captive management program have been identified, including risks, and are being considered relative to wild-to-wild translocations (see also section 8.4) (McDonald et al. 2017).

8.2 Population monitoring

In the early 1990s the species was thought to be extinct. However, in 1996 it was rediscovered in the West MacDonnell Ranges in the Northern Territory.

Population monitoring was undertaken at least annually between 1996 and 2006 (Edwards 2013b; McDonald et al. 2015). In 2002 the population crashed and no individuals were reported at the monitoring sites between 2002 and 2006 (Edwards 2013b). Further surveys in the West MacDonnell Ranges between 2009 and 2012 indicated that some sites continued to tenuously support small populations (McDonald et al. 2017). Additional surveys, including in areas without records of the species since the 1960s, were undertaken in 2013 and 2014 (McDonald et al. 2015).

An annual monitoring program for *Z. pedunculatus* and feral cats has been implemented since 2015 (McDonald et al. 2017). The following survey and monitoring priorities have been identified: undertake targeted surveys to more precisely assess the species' entire geographic extent, changes in extent of occurrence and area of occupancy, relative abundance, and viability of populations across the species' range (TSSC 2018); determine the extent of currently-used core refuge habitat for the species and to monitor shifts in the proportion of habitat occupied; and determine home range size and spatial ecology of the species and that of feral cats in and around core refuge habitat (McDonald et al. 2017).

8.3 Control measures

8.3.1 International

Zyzomys pedunculatus is listed on CITES Appendix I.

8.3.2 Domestic

Zyzomys pedunculatus is protected through state, territory and national legislation throughout its current and former range (see section 7.1).

It is listed as Critically Endangered under Australian national environmental legislation (*Environment Protection and Biodiversity Conservation Act 1999*). Under this legislation, an action requires approval from the Australian Government Environment Minister if the action has, will have, or is likely to have, a significant impact on the species. International movement of the species is also regulated under this national legislation.

When making a decision about an action that may have an impact on the species and what conditions to attach to any approval of an action, the Minister must not act inconsistently with a recovery plan that is in force under national environmental legislation and must have regard to any approved conservation advice for the species.

It is listed as Critically Endangered in the state of Western Australia (*Biodiversity Conservation Act 2016*) and as Endangered in the Northern Territory (*Territory Parks and Wildlife Conservation Act 2000*).

8.4 Captive breeding and artificial propagation

Captive populations have previously existed and their maintenance was a proposed action for recovery planning (Cole 1999). These populations helped to increase understanding of *Z. pedunculatus* and its husbandry requirements, however, the last specimen of the captive populations died in 2011 (McDonald et al. 2017).

The re-establishment of a captive breeding population has recently become the focus for insurance against further wild population decline and potential extinction. The aim of any future captive breeding populations will be for reintroduction to the wild (Australian Government 2017; McDonald et al. 2017). Any proposal to establish a captive breeding population is contingent on it being aligned with a specific translocation plan. Such a plan must specify the aims, timelines and end-points of the breeding program, and have assessed options for translocations, interim captive breeding, and the associated risks (McDonald et al. 2017).

8.5 Habitat conservation

The species' conservation advice and recovery plan identify actions to address habitat degradation and depletion of resources. Priorities for management of the species' habitat include: developing and implementing fire management strategies that benefit the species' needs; ensuring a high proportion of the habitat is maintained with a post-fire age sufficient to provide adequate cover for the species together with immediate and ongoing post-fire predator control; monitor and control feral horse density; and implementing management of invasive grasses to reduce fuel loads (TSSC 2018).

8.6 Safeguards

Regardless of any reclassification under CITES, the species will continue to be regulated by Australian national environmental legislation as well as state environmental legislation. The species is not subject to commercial harvest across any of its range. Take from the wild is controlled by both national and state/territory regulation. Permission to collect, or other actions that may impact on the species, can only be undertaken if consistent with the species' recovery plan.

9. Information on similar species

The genus *Zyomys* contains five species (ALA 2018). All are characterised by fragile swollen tails that store fat, compact harsh-furred bodies, pronounced rounded-noses, rounded ears and protruding eyes. All inhabit rocky ranges (Watts and Aslin 1981). *Zyomys pedunculatus* is the only species of this genus listed on the CITES Appendices.

10. Consultations

The Northern Territory Department of Environment and Natural Resources, the Western Australian Department of Biodiversity, Conservation and Attractions, the Australian Government Department of the Environment and Energy and the Office of the Threatened Species Commissioner, and Professor John Woinarski were consulted in the preparation of this document.

11. Additional remarks

None.

12. References

Australian Government (2017). Threatened Species Prospectus. Australian Government Department of the Environment and Energy. Available on the internet at:

- <http://www.environment.gov.au/system/files/resources/86e2d7df-6523-44b4-bb7a-692576bd0d67/files/threatened-species-prospectus.pdf> downloaded 7 March 2018.
- ALA (2018). Atlas of Living Australia. *Zyzyomys* Thomas, 1909. Available on the internet at: <https://bie.ala.org.au/species/urn:lsid:biodiversity.org.au:afd.taxon:1b8cbc51-9707-4509-9b1e-cdc8a3291fc1#> downloaded 7 March 2018.
- Cole, J. (1999). Recovery plan for the Central Rock-rat (*Zyzyomys pedunculatus*). Project Number 583. The Australian Government Department of the Environment and Heritage, Canberra, Australia.
- Edwards, G.P. (2013a). Temporal analysis of the diet of the central rock-rat. *Australian Mammalogy* 35:43-48.
- Edwards, G.P. (2013b). Relative abundance of the central rock-rat, the desert mouse and the fat-tailed pseudantechinus at Ormiston Gorge in the West MacDonnell Ranges National Park, Northern Territory. *Australian Mammalogy* 35:144–148
- Freeland, W.J., Winter, J.W. and Raskin, S. (1988). Australian rock-mammals: A phenomenon of the seasonally dry tropics. *Biotropica* 20:70-79.
- Gaikhorst, G. and Lambert, C. (2009). Breeding and maintenance of the Central rock-rat *Zyzyomys pedunculatus* at Perth Zoo. *International Zoo Yearbook* 43: 212-221.
- Letnic, M., Tamayo, B. and Dickman, C.R. (2005). The responses of mammals to La Niña (El Niño Southern Oscillation) – associated rainfall, predation, and wildfire in Central Australia. *Journal of Mammalogy* 86:689-703
- McDonald, P.J. (2012). Threatened Species of the Northern Territory – Central Rock-rat *Zyzyomys pedunculatus*. Available at https://nt.gov.au/data/assets/pdf_file/0013/205510/central-rock-rat.pdf.
- McDonald, P.J., Pavey, C.R., Nano, C., Knights, K., Grantham, D., Ward, S.J., and Nano, C.E.M. (2013). Extant population of the Critically Endangered central rock-rat *Zyzyomys pedunculatus* located in the Northern territory, Australia. *Oryx* 47:303–306.
- McDonald, P.J., Brittingham, R., Nano C. and Paltridge, R. (2015). A new population of the critically endangered central rock-rat (*Zyzyomys pedunculatus*) discovered in the Northern Territory. *Australian Mammalogy* 37:97-100.
- McDonald, P., Ward, S., Nano, C., Pavey, C., Nano, T. and Nunn P. (2017). National Recovery Plan for the Central Rock-rat, *Zyzyomys pedunculatus*. Northern Territory Department of Environment and Natural Resources. Alice Springs, Northern Territory. Available at: <https://www.environment.gov.au/system/files/resources/1aef5fa4-4749-45fc-b7f9-ae87cb9340a/files/draft-recovery-plan-central-rock-rat.pdf> downloaded 7 March 2018.
- Nano, T.J. (2008). Central rock-rat *Zyzyomys pedunculatus*. In: Van Dyck, S and R. Strahan, eds. *The Mammals of Australia*. Third Edition. Pages 658-660 New Holland Publishers (Australia) Pty Ltd.
- Nano, T.J., Smith, C.M. and Jefferys, E. (2003). Investigation into the diet of the central rock-rat (*Zyzyomys pedunculatus*). *Wildlife Research* 30:513-518.
- TSSC (2018). Conservation advice *Zyzyomys pedunculatus*. Threatened Species Scientific Committee Available at: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/68-conservation-advice-15022018.pdf> downloaded 7 March 2018.
- Watts C.H.S. and Aslin, H.J. (1981). *The Rodents of Australia*. Angus and Robertson, Australia.
- Woinarski, J. and Burbidge, A.A. (2016). *Zyzyomys pedunculatus*. The IUCN Red List of Threatened Species 2016. Available at: <http://www.iucnredlist.org/details/23324/0> downloaded 21 December 2017.
- Woinarski, J.C.Z., Burbidge, A.A. and Harrison, P.L. (2014). *The Action Plan for Australian Mammals 2012*. CSIRO Publishing, Collingwood.