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 *Xeromys myoides* from CITES Appendix I to CITES Appendix II, in accordance with provisions of Resolution Conf. 9.24 (Rev CoP 17), Annex 4 precautionary measures A1 and A2a(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: *Xeromys myoides* Thomas, 1889

1.5 Scientific synonyms: No

1.6 Common names: English: Water Mouse, False Water-Rat, Yirrkoo
French: Faux rat d'eau
Spanish: Rata bastarda de agua, Falsa rata de agua

1.7 Code numbers:

2. Overview

At the 29th meeting of the Animals Committee (AC29 Com 7 Rev) the Committee selected *Xeromys myoides* (the Water Mouse) 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.

Xeromys myoides was listed on CITES Appendix I on 1 July 1975. Key threats to this species are the loss, degradation and fragmentation of freshwater and inter-tidal habitat used by the species (Department of the

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Environment and Resource Management 2010). The species occurs in a number of protected areas 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 *X. myoides* does not meet the criteria for inclusion on Appendix I. *Xeromys myoides* is eligible for transfer from Appendix I to Appendix II in accordance with Resolution Conf. 9.24 (Rev CoP17).

3. Species characteristics

3.1 Distribution

Xeromys myoides is known from northern Australia and Papua New Guinea (Department of the Environment and Resource Management 2010). On New Guinea, it is known from specimens collected on the Bensbach River floodplain (Hitchcock 1998 cited in Department of the Environment and Resource Management 2010).

In northern Australia, it has been recorded from several widely separated near-coastal sites in the Northern Territory including sites on the Glyde River and Tomkinson Rivers in Arnhem Land, and the South Alligator River, Daly River and Melville Island, (Department of the Environment and Resource Management 2010) and a discontinuous strip of the eastern Queensland coast from about Proserpine in the north to near the Queensland-New South Wales border in the south, and including Fraser, Bribie, North Stradbroke and South Stradbroke Islands (Van Dyck 1997, Ball 2004, Gynther and Janetzki 2008, Russell and Hale 2009, Department of the Environment and Resource Management 2010). The distribution of *X. myoides* is patchy but reasons for the species' apparent absence from areas that possess similar habit to occupied sites are unclear (Department of the Environment and Resource Management 2010).

3.2 Habitat

Xeromys myoides occurs mostly in near coastal regions, with most records from mangroves (within inland edges of mangroves and on tidal flats) and some records from saline grasslands or sedgelands and near-coastal freshwater swamps/wetlands (Van Dyck 1997, Woinarski *et al.* 2000, Ball 2004), or where there is a juxtaposition of these features (Russell and Hale 2009).

3.3 Biological characteristics

Xeromys myoides is probably entirely nocturnal, sheltering during the day and between tidal cycles in nesting mounds or hollows (Department of the Environment and Resource Management 2010). *Xeromys myoides* builds a distinctive mud dome nest (or set of burrows in earth banks sometimes with an additional mud dome), within which a dominant male and other animals may live communally (Van Dyck and Durbidge 1992, Van Dyck 1997, Van Dyck and Gynther 2003, Ball 2004). Other nests are constructed inside hollow tree trunks, usually mangroves, with mud sometimes visible at the base of the tree or sealing any openings in the trunk above ground level (Magnusson *et al.* 1976, Van Dyck and Gynther 2003, Gynther 2011). Artificial structures may also be used by the species. Human-generated spoil heaps and other artificial structures may also be used for nesting by the species (Van Dyck and Gynther 2003, Van Dyck et al. 2006). Nests may be used by successive generations over a number of years (Department of the Environment and Resource Management, 2010).

Little is known about *X. myoides* breeding characteristics. Reproduction may occur throughout the year

(Van Dyck 1997). Females produce up to four young (Gynther and Janetzki 2008). Age to maturity and longevity are unknown; generation length is assumed to be 2-3 years (Woinarski et al. 2014).

3.4 Morphological characteristics

Xeromys myoides is a small rat-sized native rodent with small eyes and small, rounded ears. The dorsal coat is dark grey and there is an abrupt change to white on its belly (Watts and Aslin 1981). Sparse, white speckling has been observed on some adult individuals. The tail is thinly haired and smooth. It has a maximum head and body length of 126 mm and maximum weight 64 g. It is distinguished from other species that may be encountered in similar habitat by its overall size and appearance (Department of the Environment and Resource Management 2010).

3.5 Role of the species in its ecosystem

Little is known about the role of *X. myoides* in its ecosystem.

4. Status and trends

4.1 Habitat trends

Within its Australian range, there is continuing decline in habitat quality and extent for *X. myoides* (Woinarski et al. 2014). For the Queensland component of its range, Dickman et al. (2000) considered that the 'area has declined by an unknown extent', largely due to coastal agriculture, industry and residential development, resulting in loss, fragmentation or degradation of mangrove and coastal wetland habitat.

There is no reported habitat trend for its range within Papua New Guinea.

4.2 Population size

There has been no robust assessment of the population size for *X. myoides*. Across its range there is estimated to be between 5,000 and 50,000 mature individuals, with between 10-30 subpopulations (Woinarski and Burbidge 2016). Woinarski et al. (2014) considered the Australian population to comprise 10,000 mature individuals (with low reliability) and to be declining. Gynther and Janetzki (2008) considered its Australian range, 'rare, scattered'. Dickman et al. (2000) estimated the population size in Queensland to be between 1,000 and 10,000 individuals.

There is no reported population size for *X. myoides* within Papua New Guinea.

4.3 Population structure

Mound nests may hold up to eight occupants, with generally only one sexually active male (Department of the Environment and Resource Management 2010). Genetic analyses of the Australian populations (Benfer et al. 2014) found regions with high genetic diversity indicating distinct subpopulations (e.g. central Queensland) while those in other areas had very low genetic diversity (e.g. Coomera region of south-east Queensland).

4.4 Population trends

There is no comprehensive monitoring program for this species. Within Australia, there is thought to be a continuing decline in the number of mature individuals, and the number of subpopulations (Woinarski and Burbidge 2016).

For the Queensland component of its range, Dickman et al. (2000) considered that the population size was 'suspected to be declining', and Van Dyck and Gynther (2012) documented the recent extirpation of one subpopulation and the decline of another. For the Northern Territory component of its range, Woinarski et al. (2007) considered that population trends were unknown.

4.5 Geographic trends

Benfer et al. (2014) found the species in Australia has a very low genetic diversity indicating a relatively recent historic expansion throughout its Australian range (Department of the Environment 2018).

Dickman *et al.* (2000) considered that *X. myoides* was endangered in Queensland, noting that 'its small and declining population and range size suggest that it is more at risk in Queensland than previously believed'. However, substantially more survey work has been conducted in Queensland since, revealing a far more extensive distribution than previously known, with sizeable (but less than 1,000 individuals) subpopulations at some sites (I. Gynther pers. comm., Woinarski and Burbidge 2016).

Local reductions and disappearances of *X. myoides* populations have been recorded both in Queensland and the Northern Territory in the past 30 years, and at least one local extinction event has been recorded at Coomera Waters adjacent to the Coomera River, Gold Coast (Van Dyck et al. 2006, Department of the Environment and Resource Management 2010).

There is no reported geographic trend for its range within Papua New Guinea.

The species is listed as Vulnerable B2ab(ii, iii, v) on the IUCN Red List.

5. Threats

The most important threats to *X. myoides* are the loss, degradation and fragmentation of freshwater and inter-tidal habitat used by the species (Department of the Environment and Resource Management 2010). This has resulted from urban development, sand mining, land reclamation, swamp drainage, feral animals, recreational vehicles, discharge of polluted waters and chemical pollution (runoff from agricultural and urban lands, exposure of acid sulphate soils and off-shore pollution events). These degrading processes reduce potential feeding resources and nesting opportunities, promote weed invasion and increase predation by feral animals such as foxes, pigs and cats (Department of Environment and Heritage Protection 2011). The species' habitats are often within areas of significant urban expansion (Department of the Environment and Resource Management 2010).

Threats in the New Guinea portion of the species' range are not well defined. Climate change is likely to result in marked diminution of habitat extent and quality (Traill et al. 2011, Woinarski and Burbidge 2016).

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 no international trade has been recorded by either Australia or Papua New Guinea.

6.3 Parts and derivatives in trade

No trade in parts or derivatives is recorded in the CITES Trade Database, or recorded by either Australia or Papua New Guinea, and the species is not known to be commercially traded domestically within either Australia or Papua New Guinea.

6.4 Illegal trade

There is no known incidence of illegal trade in *X. myoides*. 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 within its Australian range. There is no known incidence of commercial trade in this species within either Australia or Papua New Guinea. Trade has therefore not 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 measures in place in the Australian range to control for any potential for detrimental impact to the species.

7. Legal instruments

7.1 National

Xeromys myoides is listed as Vulnerable under Australia's national environmental legislation - the *Environment Protection and Biodiversity Conservation Act 1999.* It is also listed in Queensland as Vulnerable under the Queensland *Nature Conservation Act 1992*. It is listed as Data Deficient in the Northern Territory under the *Territory Parks and Wildlife Conservation Act 2000*.

7.2 International

Xeromys myoides has been listed on Appendix I of CITES since 1975. No commercial trade is permitted and any non-commercial trade would require CITES permits.

8. Species management

8.1 Management measures

In the Australian portion of its range, *X. myoides* is subject to a recovery plan under national environmental legislation.

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 act in accordance with a recovery plan that is in force under national environmental legislation and to implement the plan as it applies to Commonwealth managed areas. The national recovery plan (Department of the Environment and Resource Management 2010) came into force under national environmental legislation from 21 April 2011. Objectives identified in the recovery plan for the species' recovery include: identify habitats supporting populations of the species and map the current distribution; describe key biological and ecological features of the species and its habitat; identify and manage threats to the species' survival; rehabilitate habitat to expand extant populations; increase public awareness of, and involvement in, water mouse conservation.

A referral guideline (Commonwealth of Australia 2015) is available for this species to help proponents proposing actions within the species' distribution to undertake targeted surveys, and adopt mitigating practices such as vegetation buffers, prevent hydrological change and impacts from pests.

The Queensland Government Department of Environment and Heritage Protection (now the Department of Environment and Science) ranks *X. myoides* as a high priority species for conservation within its 'Back on Track' program (Department of Environment and Heritage Protection 2011).

8.2 Population monitoring

Xeromys myoides in Papua New Guinea has not been re-sampled since its original discovery. The species is not considered to be threatened or in decline in the region.

In Australia, *Xeromys myoides* populations have not been studied intensively enough to enable the primary factors responsible for local declines to be identified (Kaluza et al. 2016). There is no integrated monitoring program (Woinarski et al. 2014) across *X. myoides'* range in Australia. A subpopulation in south-eastern Queensland (Coomera) was monitored over a seven-year period, with that subpopulation declining from 'once-healthy' to locally extinct, with this decline considered to be associated with the establishment and expansion of a nearby canal and housing estate (Van Dyck et al. 2006, Department of the Environment and Resource Management 2010). Under the Queensland Government's 'Back on Track' program, some regions (Fitzroy, Mackay Whitsunday) identify monitoring *X. myoides* as a priority in regional natural resource management plans.

Exploratory surveys for the species have been conducted at locations in addition to those known to be occupied by the species (Department of the Environment and Resource Management 2010). The species' national recovery plan identifies the need for surveys to confirm the current distribution of the species, and undertake surveys in potential habitat, as well as to consolidate distribution data (Department of the Environment and Resource Management 2010).

Guidelines for survey methodology have been developed for the species (Commonwealth of Australia 2015).

8.3 Control measures

8.3.1 International

Xeromys myoides has been listed on CITES Appendix I of CITES since 1975.

8.3.2 Domestic

The species is managed in Papua New Guinea through national legislation – the *International Trade Fauna and Flora Act 1979*.

In Australia, *X. myoides* is protected through national and state legislation throughout its current and former range (see section 7.1). It is listed as Vulnerable 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 the approved conservation advice for the species.

In Queensland, *X. myoides* is included among 'protected wildlife' under the *Nature Conservation Act 1992* (the Act) and, accordingly, must be managed to conserve it and its values. In particular, this entails ensuring the survival and natural development of the wildlife in the wild; conserving the biological diversity of the wildlife to the greatest possible extent; identifying, and reducing or removing, the effects of threatening processes relating to the wildlife; and identifying the wildlife's critical habitat and conserving it to the greatest possible extent. It also entails ensuring that any use of the wildlife for scientific study and monitoring, for educational, recreational, commercial and authorised purposes, or by Aboriginal people under Aboriginal tradition or Torres Strait Islanders under Island custom is ecologically sustainable.

The species is also listed as vulnerable wildlife under the *Nature Conservation (Wildlife) Regulation 2006* (subordinate legislation to the Act). The proposed management intent for vulnerable wildlife under this legislation is to establish and maintain a database of information about the wildlife and its habitat; to the extent practicable, to prepare and put into effect recovery plans or conservation plans for the wildlife and its habitat; to seek funding to help achieve the objectives of the recovery plans or conservation plans; to take action to ensure viable populations of the wildlife in the wild are preserved or re-established; to cooperate with the Commonwealth and other State agencies for the ongoing protection and management of the wildlife and its habitat; to implement education programs for land-holders about the conservation of the wildlife and its habitat (including threatening processes); to regularly monitor and review the conservation status of the wildlife and its habitat; to encourage scientific research likely to contribute to an understanding of the wildlife or its habitat including, for example, the requirements for conserving the wildlife or habitat; to protect the critical habitat, or the areas of major interest, for the wildlife; to monitor and review environmental impact procedures to ensure they accurately assess the extent of the impact on the wildlife of the activities to which the procedures relate, provide for effective measures to mitigate any adverse impact of the activities on the wildlife, and, if there is an adverse impact of the activities on an area in which the wildlife normally lives, provide for the enhancement of other areas where the wildlife normally lives.

Principles for the proposed taking, keeping or use of vulnerable wildlife are also stipulated under the *Nature Conservation (Wildlife) Regulation 2006.* Firstly, the taking, keeping or use of vulnerable wildlife taken in the wild for display may be authorised under the Act only if it is for an approved captive breeding program for the wildlife to be conducted under an approved recovery plan for the wildlife or authorised under a conservation plan for the wildlife. Secondly, the taking, keeping or use of captive-bred vulnerable wildlife for display, or the taking, keeping

or use of vulnerable wildlife for a purpose other than display, may be authorised under the Act only if it is consistent with the management principles for the wildlife (refer above) and it will not reduce the ability of the wildlife's population to expand.

Although, some key Queensland populations of *X. myoides* occur within conservation reserves (see section 8.5), a significant proportion of the species' habitat in Queensland is not protected.

Xeromys myoides is listed as Data Deficient in the Northern Territory under the *Territory Parks and Wildlife Conservation Act 2000*.

8.4 Captive breeding and artificial propagation

There is no known current information on captive breeding although the species has been successfully held in captivity for short periods (Department of the Environment and Resource Management 2010).

8.5 Habitat conservation

Habitat loss, fragmentation and degradation is identified as the highest threat to the species, and habitat protection is one of the primary objectives for the species' protection and recovery in the Australian component of its range (Department of the Environment and Resource Management 2010). Habitat of *X. myoides* is protected through a number of protected management areas. In Queensland, these include:

- Cape Palmerston National Park, Cape Hillsborough National Park and Sandringham Bay Conservation Park in central Queensland;
- Eurimbula National Park, Great Sandy National Park, Poona National Park, Great Sandy Conservation Park, Maroochy River Conservation Park, Beerwah Forest Reserve and Bribie Island National Park in south-east Queensland; and
- Protection zones within the Southern Moreton Bay Marine Park in south-east Queensland.

Within the Great Sandy Strait, south-east Queensland, some populations of *X. myoides* are located within the Fraser Island World Heritage Area, and others occur within the Wide Bay Military Reserve. A large percentage of the *X. myoides* populations in the Great Sandy Strait and Moreton Bay areas of south-east Queensland occur in inter-tidal habitats within the Great Sandy Strait and Moreton Bay Ramsar sites.

In the Northern Territory, the species' known habitats on Melville Island and in parts of its mainland range are managed by Traditional Owners. Access to these sites is by permit, through the Tiwi Land Council and the Northern Land Council respectively. The species is also recorded from Kakadu National Park (Woinarski and Winderlich 2014; Department of Environment and Resource Management 2010).

Management actions for reducing habitat loss and degradation identified in the national recovery plan for *X. myoides* include developing a threat management plan outlining measures to mitigate and avoid threats (such as creating conservation reserves, enhancing habitat quality and use of buffer zones), regenerating habitat corridors at five sites, and increasing opportunities to support extant populations of *X. myoides* and habitat on freehold land through voluntary conservation agreements (Department of Environment and Resource Management 2010).

8.6 Safeguards

Regardless of any reclassification under CITES, the species will continue to be regulated in Australia by 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 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 *Xeromys* contains no other species apart from *X. myoides*. The species superficially resembles a number of native rodents but more-so resembles *Hydromys chrysogaster* (Water Rat) in head-shape (with an enlarged muzzle and flattened upper surface), and in possessing small ears and eyes (Watts and Aslin

1981). It also resembles a number of New Guinean rodents in body form, and apparently fills a similar ecological niche (Watts and Aslin 1981).

10. Consultations

The CITES Management Authority of Papua New Guinea, the Queensland Department of Environment and Science, the Northern Territory Department of Environment and Natural Resources, the Australian Government Department of the Environment and Energy and the Office of the Threatened Species Coordinator, and Professor John Woinarski were consulted in the development of this document.

11. Additional remarks

None.

12. References

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