

Approved Conservation Advice for *Mesodontrachia fitzroyana* (Fitzroy land snail)

(s266B of the *Environment Protection and Biodiversity Conservation Act 1999*)

This Conservation Advice has been developed based on the best available information at the time this Conservation Advice was approved; this includes existing plans, records or management prescriptions for this species.

Description

Mesodontrachia fitzroyana (Fitzroy land snail), family Camaeinae, is a large camaeinaid land snail, with a shell diameter of 17-23 mm and a height of 10-14 mm. The shell has a medium-yellow horn, a white lip, and five to six whorls. The apex and spire are moderately elevated and somewhat rounded above (Solem, 1985).

Conservation Status

The Fitzroy land snail is listed as endangered under the name *Mesodontrachia fitzroyana* (a land snail). This species is eligible for listing as endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) (EPBC Act) as it has a restricted geographic distribution with an estimated extent of occurrence of approximately 50 km² and area of occupancy considered to be much less than 50 km² (TSSC, 2006). The species' geographic distribution is precarious given the nature of ongoing threats occurring within its range (TSSC, 2006).

The species is also listed as critically endangered in the Northern Territory, under the *Territory Parks and Wildlife Conservation Act 2000*.

Distribution and Habitat

This species is endemic to the Northern Territory, where it is known from a few low limestone hills on the Ngaliwurru/Nungali Aboriginal Land Trust, both north and south of the Victoria Highway, 24 km east of Timber Creek and approximately 350 km south of Darwin (Ward et al., 2012). The hills are about 8 km long and meet sandstone hills 1-2 km to the south, extending 4-5 km north of the highway (Ward et al., 2012). Part of the distribution of the species extends into Gregory National Park (Ward et al., 2012).

The Fitzroy land snail is restricted in range, and has specific habitat requirements. The species is restricted to open eucalyptus woodland and small vine-thicket patches on limestone hills with terraces and steep slopes (Pearson et al., 2009; Ward et al., 2012). Here they spend much of the year dormant under rocks, typically emerging only after heavy rain (Ward et al., 2012).

The Fitzroy land snail is dormant in the dry season. The species goes into a state of torpor or hibernation (aestivation) in response to very dry conditions, or hot temperatures among the rocks, and emerges to become active in the wet season (Ward et al., 2012).

There is evidence that the population density of snails has declined. The species was collected by a malacologist in 1985, who reported being able to find thousands of snails (Ward et al., 2012). He made three additional collecting visits to the area in the late 1990s, and the snails were very difficult to find during those times (Ward et al., 2012). Targeted surveys for snails in the Timber Creek region in 2008 found the species at the known location, noted that other snail species occupied nearby habitat patches, and concluded that *M. fitzroyana* is confined to the single location with an estimated area of occupancy of 4 km² (Ward et al., 2012).

Very restricted ranges are a feature of several camaenid snail species, although they can be locally very abundant. It is considered that sampling has been sufficient to establish that the Fitzroy land snail has a very restricted range (Ward et al., 2012). Comprehensive searches and collecting trips, made in exposed limestone areas close to roads and tracks, have thoroughly surveyed the areas likely to contain the species. Further surveys of limestone outcrops in north-west Australia are considered unlikely to reveal new locations for this species (TSSC, 2006).

This species occurs within the Victoria Bonaparte IBRA Bioregion and the Northern Territory Natural Resource Management Region.

The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community.

Threats

The main identified threat to the Fitzroy land snail is increased frequency and intensity of fires (Ward et al., 2012). These snails lie dormant during the dry season, aestivating among rocks. Frequent dry season fires in the area have reduced both the quality of habitat and the number of mature individuals (Ward et al., 2012).

The main potential threats to the Fitzroy land snail are the effects of cattle grazing and predation. Cattle grazing in the area may result in direct trampling of snails and increase their exposure when stock overgraze the vine-thicket vegetation which covers the land snail's microhabitat (Pearson et al., 2009, Ward et al., 2012). Feral predators such as rats and mice can also have a significant impact on populations of land snails, although there is no evidence that feral rats or mice currently occur at this location (Ward et al., 2012).

Cane toads (*Rhinella marina*) now occur across the region, but their impact is unknown (Ward et al., 2012). Cane toads are expected to invade the sites where the Fitzroy land snail occurs and may prey on the species, as molluscs are a known component of the diet of cane toads (TSSC, 2006, Pearson et al., 2009). However, there is some doubt whether camaenid snails in north-western Australia are at risk from this threat. Pearson et al. (2009) investigated the possibility of spatial and temporal overlap between cane toads and the Fitzroy land snail at the Timber Creek locality. Results indicated that despite being active at the same time, predation was less likely because of the largely arboreal activity of the snails, and the low density of cane toads at the time the study was conducted (Pearson et al., 2006).

Research Priorities

Research priorities that would inform future regional and local priority actions include:

- Quantifying specific threats to the known population
- More precisely assessing population size, distribution, ecological requirements and the relative impacts of threatening processes, including investigating the extent of predation by cane toads

Regional Priority Actions

The following regional priority recovery and threat abatement actions can be done to support the recovery of *Mesodontrachia fitzroyana*:

Habitat Loss, Disturbance and Modification

- Investigate formal conservation arrangements for that part of the distribution on the Ngaliwurru/Nungali Aboriginal Land Trust
- Design and implement a monitoring program. Monitor known populations to determine the species' status

- Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary
- Ensure there is no disturbance in areas where *Mesodontrachia fitzroyana* occurs, excluding necessary actions to manage the conservation of the species

Trampling, Browsing or Grazing

- Develop and implement a management plan to protect the species from trampling or exposure due to heavy grazing of vine-ticket vegetation cover by cattle (Pearson et al., 2009; Ward et al., 2012)

Animal Predation or Competition

- Develop and implement a management plan to control the adverse impacts of cane toads in the region, if cane toads are found to prey on the species

Fire

- Develop and implement a suitable fire management strategy to preserve the vine-ticket vegetation cover and better safeguard the known population (Ward et al., 2012)
- Where appropriate provide map(s) of known occurrences to local natural resource managers of national parks and the Land Trust and seek inclusion of mitigative measures in bush fire risk management plan/s, risk register and/or operation maps

Conservation Information

- Engage with the aboriginal community responsible for the land on which populations occur and encourage these key stakeholders to contribute to the implementation of conservation management actions
- Raise awareness of the Fitzroy land snail within the regional community, using fact sheets, information brochures in conjunction with graziers and community interest groups in, for example, Kununurra (Western Australia)

Local Priority Actions

The following local priority recovery and threat abatement actions can be done to further support the recovery of *Mesodontrachia fitzroyana*:

Habitat Loss, Disturbance and Modification

- Control access routes to suitably constrain public access to known sites on public land
- Appropriate control and management of access on all land tenures

Trampling, Browsing or Grazing

- If livestock grazing occurs in the area, ensure land owners/managers use an appropriate management regime and density that does not detrimentally affect this species due to trampling and exposure due to over-grazing of covering vegetation
- Where appropriate, manage total grazing pressure through exclusion fencing or other barriers on the Aboriginal Land Trust and on crown land (e.g. in Gregory National Park)

Animal Predation

- Control introduced pests that are potential threats at known sites, such as cane toads. Management of cattle and fire may provide an avenue for reducing cane toad density and impacts across larger landscapes, primarily because cane toads prefer degraded land (Zug and Zug, 1979), and because cow pats facilitate the spread and increased density of cane toads (González-Bernal et al., 2012). Although currently there are no methods for direct control of cane toads, management can occur if such information becomes available

This list does not necessarily encompass all actions that may be of benefit to *Mesodontrachia fitzroyana*, but highlights those that are considered to be of highest priority at the time of preparing the Approved Conservation Advice.

References

- González-Bernal E, Greenlees M, Brown GP and Shine R (2012). Cane toads on cowpats: commercial livestock production facilitates toad invasion in tropical australia. *PLoS ONE* 7(11), e49351. doi:10.1371/journal.pone.0049351
- Pearson D, Greenlees M, Ward-Fear G and Shine R (2009). Predicting the ecological impact of cane toads (*Bufo marinus*) on threatened camaenid land snails in north-western Australia. *Wildlife Research* 36: 533-540.
- Solem A (1985). Camaenid land snails from Western and central Australia (Mollusca: Pulmonata: Camaenidae). V. Remaining Kimberley genera and addenda to the Kimberley. *Records of the Western Australian Museum Supplement 20*: 707-981.
- Threatened Species Scientific Committee (TSSC) (2006). *Mesodontrachia fitzroyana* Listing Advice.
Available on the Internet at:
<http://www.environment.gov.au/node/16440>
- Ward S, Kessner V, Braby M and Woinarski J (2012). Threatened species of the Northern Territory: Fitzroy land snail, *Mesodontrachia fitzroyana*.
Available on the Internet at:
http://irm.nt.gov.au/_data/assets/pdf_file/0011/10901/Mesodontrachia_fitroyana_CR_FINAL.pdf
- Zug GR and Zug PB (1979). The marine toad, *Bufo marinus*: a natural history resumé of native populations. *Smithsonian contributions to zoology* 284: 1-54.