

MINNIVALE TRAPDOOR SPIDER INTERIM RECOVERY PLAN

1998-2000

by

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FOREWORD

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (CALM) Policy Statements Nos 44 and 50.

Where urgency and/or lack of information mean that a full Recovery Plan can not be prepared, IRPs outline the recovery actions required urgently to address those threatening processes most affecting the ongoing survival and begin the recovery process of threatened taxa or ecological communities.

CALM is committed to ensuring that Critically Endangered taxa are conserved, through the preparation and implementation of Recovery Plans or Interim Recovery Plans and ensuring that conservation action commences as soon as possible and always within one year of endorsement of that rank, by the Minister.

This IRP was approved by the Director of Nature Conservation on 15 February 1999. Approved IRPs are subject to modification as dictated by new findings, changes in status of the taxon or ecological community and the completion of recovery actions. The provision of funds identified in this Interim Recovery Plan is dependent on budgetary and other constraints affecting CALM, as well as the need to address other priorities.

Approved IRPs are subject to modification as dictated by new findings, changes in species' status and completion of Recovery Actions.

Information in this IRP was accurate at November 1998.

SUMMARY

***Teyl* species “C”, Minnivale Trapdoor Spider**

Family: Nemesiidae (in the infraorder Mygalomorphae, which includes numerous other trapdoor spider families)

CALM Region: Wheatbelt

CALM District: Merredin

Shire: Dowerin

Recovery Team: To be appointed

Current status of taxon: Critically Endangered

Habitat requirements: ‘Perched’ swamps on high terrain in the central and northern Wheatbelt

IRP Objective: To prevent the extinction of the species and to encourage the discovery of and conservation of additional populations.

Recovery criteria: Interim management guidelines, approved by the Director of Nature Conservation, are developed and implemented for reserve 21475 at Minnivale and searches for new populations of the Minnivale Trapdoor Spider are made by people expert in the identification and location of burrows.

Recovery Actions:

1. Seek change of purpose of Reserve 21475
2. Develop Interim Management Guidelines for Reserve 21475
3. Implement Interim Management Guidelines for Reserve 21475
4. Locate additional populations
5. Prepare full Recovery Plan.

1. BACKGROUND

1.1 History, taxonomy of taxon or defining characteristics of ecological community, and status

The trapdoor spider genus *Teyl* (family Nemesiidae) was first described by Main (1975), based on a single species *Teyl luculentus* Main from the Bruce Rock district of Western Australia. Although no further species have been formally described, there is evidence of an extensive radiation of the genus in the southern half of WA with numerous undescribed species. Other species occur on the Eyre Peninsula, South Australia, and in sandy areas of western Victoria (Main 1996, Harvey and Main 1997).

Teyl sp. B.Y. Main 1953/356, 1984/13 (hereafter referred to as *Teyl* species "C"), the Minnivale Trapdoor Spider, is an undescribed species. To the untrained eye, *Teyl* species are easily confused with other sympatric spiders, particularly those belonging to the infraorder Mygalomorphae, which includes numerous other trapdoor spider families. Identification is usually only possible with adult males. *Teyl* species "C" is easily distinguished from *Teyl luculentus* Main and undescribed species of the genus by the distinctive morphology of the male pedipalp; however at present identification would have to be by an expert, ie, Dr Mark Harvey (WA Museum) or Dr Barbara York Main (UWA Zoology). In the field the species is readily recognised by the characteristic burrow structure.

The spiders are small to medium-sized, with a total body length (excluding legs and pedipalps) of 11 mm in males and 14 mm in females. The legs are long and thin, and the body segments are sparsely hairy. The general colour of the body and legs is dull, dusty tan.

Most species of *Teyl* have simple, open-holed burrows; however, several species, including *Teyl* species "C", build trapdoors - an adaptation against sheet flooding (Main 1982, 1986, 1993). *Teyl* species "C" digs a vertical burrow, closed at the surface with a door and with a side shaft also closed by a door. Both doors are made of compacted soil, are circular, flat on the 'outside', with the underside rounded and silk-covered. The surface door fits snugly into the vertical burrow opening, and when open, the hinged door lies flat ('upside down') on the ground. The side shaft door, when open, hangs downward from the horizontal hinge, into the main shaft of the burrow. The burrow is deep (the first excavated burrow was 33 cm deep) with a close-fitting plug-shaped lid, which is extremely difficult to observe when it is closed.

1.2 Distribution and habitat

The Minnivale Trapdoor Spider is known from two localities in the northern and central wheatbelt of WA – on Mellanbye Station north east of Gutha and near Minnivale. Old, disused burrows and doors, tentatively identified as having been constructed by *Teyl* species "C", have been found at North Bungulla Nature Reserve and at Gutha (Harvey and Main 1997). The former distribution of the species is thought to have been over a narrow band, roughly between Minnivale and Mellanbye in 'perched' swamps on high terrain. It probably did not extend far westward as another rare *Teyl* species occurs in wandoo country, while several undescribed species occur further to the east in salt lake country of the eastern wheatbelt and braided creeks of the Eastern Goldfields (from Wydgee, near Mount Magnet, to Scadden, north of Esperance). Most of the presumed geographic range has been cleared for agricultural use.

In 1996, searches were made by the State's leading spider experts at a number of other localities within the species' presumed range, but these were unsuccessful (Harvey and Main 1997). Sites searched were at Ballidu, Buntine Rocks Nature Reserve, East Nugadong Nature Reserve, Gutha, Manmanning Town reserve, North Bungulla Nature Reserve, Nugadong Forest Reserve (which comprises Snake Gully Nature Reserve (No. 10351) and unvested reserve 9237 for 'Water and the conservation of flora and fauna'), Nugadong Nature Reserve, Pintharuka and a reserve near Bunketch.

1.3 Biology and ecology

The behaviour of *Teyl* species is seasonal, being winter active. Spiders that have open holes seal them with soil in the spring and these remain closed until the following autumn/winter rains. One nest of *Teyl* species "C" was found with young near Minnivale. The only known male was collected as a penultimate instar and was kept in a flower pot until it surfaced as an adult in September 1984.

1.4 Threatening processes

The only known viable burrow is located on Reserve 21475 for 'gravel', which is of about 13.75 ha. The reserve, which is in the Shire of Dowerin, is not vested. The single known burrow is about 6 m from the edge of a gravel pit. Additional mining for gravel could easily destroy this burrow and any others that may be present.

Rabbit diggings could easily open burrows, leading to the death of the inhabitants.

While there are no data on vulnerability to fire, it is assumed that, because of the tight fitting door and deep burrow, that adult spiders at least could survive a fire. However, lack of cover and reduced prey availability after a fire could jeopardise persistence of individuals.

1.5 Conservation status

Teyl species "C" (as *Teyl* sp. B.Y. Main 1953/356, 1984/13), the Minnivale Trapdoor Spider, is listed as threatened pursuant to the Western Australian *Wildlife Conservation Act 1950*. The species was ranked as 'Critically Endangered' by CALM's Threatened Species Scientific Committee in 1995 and that ranking has been endorsed by the Minister for the Environment. The species is not currently listed in Schedule 1 of the Commonwealth *Endangered Species Protection Act 1992*.

In February 1996, CALM let a contract to the Western Australian Museum to conduct searches for the species and report on its current distribution and abundance, and what management actions are necessary to conserve it. The report from this work was provided to CALM in November 1997. Preparation of this IRP commenced in early 1998, with work to implement recovery actions 1 and 2 being carried out later that year.

1.6 Strategy for recovery

The sole known intact population of the Minnivale Trapdoor Spider (*Teyl* species "C") occurs in an unvested gravel reserve near Minnivale, where only a single burrow was found during a search by three spider experts in 1996. It is possible that some recovery of this population will occur following protection. However, unless additional populations are found, the prognosis for the species is extremely poor. The following strategies will be implemented.

- a) Protection of existing population. CALM will negotiate protective measures for the single known population of *Teyl* species "C" with the Shire of Dowerin. These measures will include protection from mining, fire and rabbits.
- b) Searching for additional populations. CALM will encourage spider experts to search for additional populations of *Teyl* species "C", and if funds are available, contract experts to carry out additional searches, especially in the northern part of the species' range.

2. RECOVERY AIM AND CRITERIA

2.1 Objective(s)

The Objective of this Interim Recovery Plan for the Minnivale Trapdoor Spider (*Teyl* species "C") is to prevent the extinction of known populations of the species and to encourage the discovery and

conservation of additional populations.

2.2 Criteria for success

This IRP will be deemed successful if interim management guidelines, approved by the Director of Nature Conservation, are developed and implemented for reserve 21475 at Minnivale and if searches for new populations of the Minnivale Trapdoor Spider are made by people expert in the identification and location of burrows.

2.3 Criteria for failure

This IRP will be deemed a failure if the identified threats to the single known population of the Minnivale Trapdoor Spider are not abated by the development and implementation of a satisfactory management program for the Minnivale gravel reserve and if no attempt is made to locate additional populations.

3. RECOVERY ACTIONS

A recovery team, the Minnivale Trapdoor Spider Recovery Team, will be appointed to coordinate and oversee actions described below. The Recovery Team will initially consist of, CALM (Wheatbelt Region/Merredin District and WATSCU) and Dr B.Y Main from The University of Western Australia. The Western Australian Museum and the Shire of Dowerin will be invited to nominate representatives. The Team will report annually to CALM's Corporate Executive.

3.1 Seek change of purpose of Reserve 21475

Negotiations have been held between CALM and the Shire of Dowerin with the aim of having the purpose of some or all of reserve 21475 changed to 'Conservation of Flora and Fauna' and having the reserve vested in the National Parks and Nature Conservation Authority. The Shire of Dowerin has agreed to reserve 21475 becoming a nature reserve. It has also agreed to reserve 21476 becoming a nature reserve. This reserve, plus a railway reserve, provides a corridor between Reserve 21475 and the larger Minnivale Nature Reserve.

Responsibility: CALM Wheatbelt Region
Cost: \$1,000 (CALM salaries)
Source of funds: CALM Wheatbelt Region
Priority: Very high
Completion date: June 1999.

3.2 Develop interim management guidelines for reserve 21475

CALM will, in conjunction with the Shire of Dowerin develop Interim Management Guidelines (IMG) for Reserve 21475 that will be aimed at preventing the extinction of *Teyl* species "C". The IMG will include provisions for the protection of the only known burrow and of similar habitat, a fire management plan and the control of rabbits.

Responsibility: CALM Wheatbelt Region
Cost: \$1,000 (CALM salaries)
Source of funds: CALM Wheatbelt Region
Priority: Very high
Completion date: June 1999.

3.3 Implement interim management guidelines for Reserve 21475

Once complete, the IMG for Reserve 21475 will be implemented. Work will include closing the gravel pit and undertaking limited non-disturbing rehabilitation, erecting nature reserve signs, and controlling rabbits. Rabbit control will be by fencing – 500 m are required. Detailed costs are as follows:

	Materials	Labour	CALM salaries	CALM vehicle	Total
Fencing (0.5 km)	1400	1000	250	300	2950
Signage	800	0	250	100	1150
Gravel pit rehabilitation	400	500	250	200	1350
Rabbit control	500	750	250	200	1700
Weed control	150	250	250	200	850
Total	3250	2500	1250	1000	8000

Responsibility: CALM Wheatbelt Region
Cost: \$8000
Source of funds: CALM: salaries and vehicle use, plus weed control - materials and labour, gravel pit rehabilitation and rabbit control - labour only: \$3900, Natural Heritage Trust (NHT): fencing materials plus labour, signage, gravel pit rehabilitation, and rabbit control - materials only: \$4100
Priority: Very high
Completion date: December 2000.

3.4 Locate additional populations

Spider experts and enthusiasts will be encouraged to search for and locate additional populations of *Teyl* species "C". In order to promote searches, CALM will, in conjunction with the Western Australian Museum, prepare and produce a pamphlet on the species. CALM will seek funds from the NHT (Endangered Species Program) to carry out further searches for the distinctive burrows (the only effective searching method). The searches will be conducted by Dr BY Main (Zoology Department, The University of Western Australia) and Dr M. Harvey (WA Museum of Natural History), mainly targeting the Gutha and Mellanbye areas.

Responsibility: CALM WATSCU, WA Museum

Cost: \$500 for pamphlet, \$10,155 for searches, total \$10,655

Source of funds: Pamphlet: CALM WATSCU. Searches: WA Museum salaries \$5,000; NHT: Consultant's fees \$2,500, Museum field allowances (@\$27.25, 10 days, 3 people = \$818), vehicle (1424 km @ \$0.50/km = \$712) \$1,530, Museum technical support \$1,125

Priority: High

Completion date: Pamphlet: December 1999, Searches: December 2000.

2.5 Prepare full recovery plan

Unless extensive new populations are located, justifying the downlisting of the species from Critically Endangered, a full recovery plan will be prepared.

Responsibility: CALM WATSCU

Cost: \$2,000 (salaries), \$1,500 (publication), total \$3,500

Source of funds: CALM

Priority: High

Completion date: December 2001.

IMPLEMENTATION TABLE – MINNIVALE TRAPDOOR SPIDER INTERIM RECOVERY PLAN

Action No	Action	Cost	Funding source	Responsibility	Completion date
3.1	Seek change of purpose of Reserve 21475	\$1,000	CALM Wheatbelt Region	CALM Wheatbelt Region	December 1998
3.2	Develop Interim Management Guidelines for reserve 21475	\$1,000	CALM Wheatbelt Region	CALM Wheatbelt Region	June 1999
3.3	Implement Interim Management Guidelines for Reserve 21475	\$8,000	CALM Wheatbelt Region (\$3,900), NHT (\$4,100)	CALM Wheatbelt Region	December 2000
3.4a	Prepare and publish pamphlet	\$500	WATSCU	WATSCU	December 1999
3.4b	Locate additional populations	\$10,155	WA Museum (\$5,000), NHT (\$5,155)	WATSCU, WA Museum, UWA Zoology Department	December 2000
3.5	Prepare full Recovery Plan	\$3,500	CALM	WATSCU	December 2001
	Total Cost	\$24,155			

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