MINNIVALE TRAPDOOR SPIDER (*Teyl* sp.) CONSERVATION PLAN

2008-2013

Illustration of a female (left) and a male (right) Minnivale Trapdoor Spider (*Brad Durrant*)

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FOREWORD

This species conservation plan has been developed by the Department of Environment and Conservation Western Australia (DEC) on behalf of the Avon Catchment Council.

This plan relates to the management of the species within the Avon River Basin. The implementation of recommendations and associated costs contained within this plan do not reflect current funding capacity. The availability of funding will determine the capacity to implement.

Information in this Species Conservation Plan was accurate at April 2008. This plan will operate from May 2008 to May 2013 but will remain in force until withdrawn or replaced.

ACKNOWLEDGEMENTS

Meg Green (former Ecologist, DEC Wheatbelt Region) contributed significantly towards the compilation of the first draft for this conservation plan.

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Avon Catchment Council (2007) Minnivale Trapdoor Spider (*Teyl* sp.) Conservation Plan No. ##. Avon Catchment Council, Western Australia.

CONTENTS

SUMMARY

Minnivale Trapdoor Spider *Teyl* sp. [BY Main, 1953/356, 1984/13]

Family: Nemesiidae.

NRM Region: Avon.

Current status of taxon: Critically Endangered.

Description: The Minnivale Trapdoor Spider is a small to medium sized spider with a total body length (excluding legs and pedipalps) of 11mm in males and 14mm in females. The legs of these spiders are long and thin, and the body is sparsely haired. These spiders are generally a dull, dusty tan colour (Burbidge, 2004).

These spiders have distinctive sexual dimorphism and it is often only possible to make identifications using adult male specimens, which are easily distinguished from other *Teyl* species by the morphology of the pedipalp (Burbidge *et al*., 1999).

Breeding habitat: Burrows in 'perched' swamp areas on high terrain.

Feeding habitat: Forages for invertebrates on bare ground.

Habitat critical for survival of *Teyl* sp. [BY Main, 1953/356, 1984/13]:

The habitat critical to survival and important populations of *Teyl* sp. comprises those areas in southwest Western Australia that consist of 'perched' swamp areas on high terrain, in particular the narrow band between Minnivale and Mellanbye that supports this type of habitat.

Conservation plan objective:

To maintain, and if possible enhance, the condition of *in situ* populations of *Teyl* sp.

Recovery Criteria:

Criteria for success:
The number of populations has increased and/or the number of mature individuals has increased by fifteen percent or more over the term of the plan.

Criteria for failure:
The number of populations has decreased and/or the number of mature individuals in the known populations has decreased by fifteen percent or more over the term of the plan.

Conservation Actions:

1. Establish a Mygalomorph Conservation Team
2. Determine the population characteristics of known populations & ongoing monitoring
3. Undertake a threat assessment for each population
4. Address threats to specific populations
5. Conduct surveys to identify new populations
6. Promote awareness

Conservation Team: The formation of a Mygalomorph Conservation Team is recommended as part of this and other Mygalomorph conservation plans.

Conservation plan time frame:

This plan will be [1]implemented, updated and continually evaluated over a 5 year period from 2008-2013.

[1] The degree of implementation will depend on the availability of future funding and resources

1. INTRODUCTION

The Minnivale Trapdoor Spider (*Teyl* sp.) belongs to the suborder Mygalomorphae, commonly known as "Trapdoor" and "Funnel-web" spiders. They are primarily terrestrial burrowing spiders which occasionally make tubular silk nests on tree trunks. Mygalomorphs are able to persist in small isolated areas due to their low dispersion powers, long life cycle and sedentary life style (Main, 1987a).

Mygalomorph spiders take several years to reach reproductive maturity, and females can live up to and exceeding twenty years. Mature males leave their burrows during moist conditions in search of females, and die shortly after mating (Main, 1985, Yen & Butcher, 1997). Females lay their eggs in a silk cocoon in the burrow, and after spending several months confined to the parent burrow, spiderlings emerge approximately one year after the parental mating (Main, 1982).

In areas that experience drought, mygalomorph spiderlings disperse from their mother's nest during or following rainy weather, and establish a new burrow in rain-softened soil. During this process, juveniles are vulnerable to predation by birds, mammals, lizards, frogs and other arthropods (Main, 1985).

Predators of *Teyl* sp. include other arthropods (eg. Centipedes and Scorpions) which enter burrows, Goannas and Bandicoots which dig out burrows and pompilid wasps, some of which specialize in preying upon burrowing spiders (Main, 1985). A major threat to *Teyl* sp. is loss or alteration of habitat due to their specialized habitat requirements, which may restrict them to microhabitats that have only subtle differences to adjacent ones. As a result, physical disturbance to these microhabitats can cause local extinction of populations (Main, 2002).

2. MINNIVALE TRAPDOOR SPIDER

2.1 History and taxonomic relationships

The Minnivale Trapdoor Spider (*Teyl* sp.) was first described by Barbara York Main in 1975 based on the species *Teyl luculentus*, which was found in the Western Australian Wheatbelt (Burbidge *et al*, 1999). The Minnivale Trapdoor Spider (Also referred to as *Teyl* species "C") is an undescribed species that can be easily confused with other mygalomorphs by the untrained eye. Identification is usually only possible with males (Burbidge *et al.*, 1999).

An assessment of the status of this species conducted by Harvey and Main (1997) found only a single extant population of this species, 1.6 km west of Minnivale, Western Australia. A survey conducted in 2001 has shown that no active burrows now remain at this location.

2.2 Description

The Minnivale Trapdoor Spider is a small to medium sized spider with a total body length (excluding legs and pedipalps) of 11mm in males and 14mm in females. The legs of these spiders are long and thin, and the body is sparsely haired. These spiders are generally a dull, dusty tan colour (Burbidge, 2004).

These spiders have distinctive sexual dimorphism and it is often only possible to make identifications using adult male specimens, which are easily distinguished from other *Teyl* species by the morphology of the pedipalp (Burbidge *et al*., 1999).

Figure 1: Female (left) and a male (right) Minnivale trapdoor spider. (Illustration: Brad Durrant)

2.3 Distribution, Habitat and Movements

The preferred habitat of *Teyl* sp. is 'perched' swamp areas on high terrain. It is thought that the former distribution of this species ran over a narrow band between Minnivale and Mellanbye in this type of habitat. Most of the presumed geographic range for this species has been cleared. The one known extant population of *Teyl* sp. is located on a DEC-managed Nature Reserve (C21475) in the Western Australian Wheatbelt near the town of Minnivale (Figure 1). The single known burrow was about six metres from the edge of a gravel pit (Burbidge *et al*., 1999).

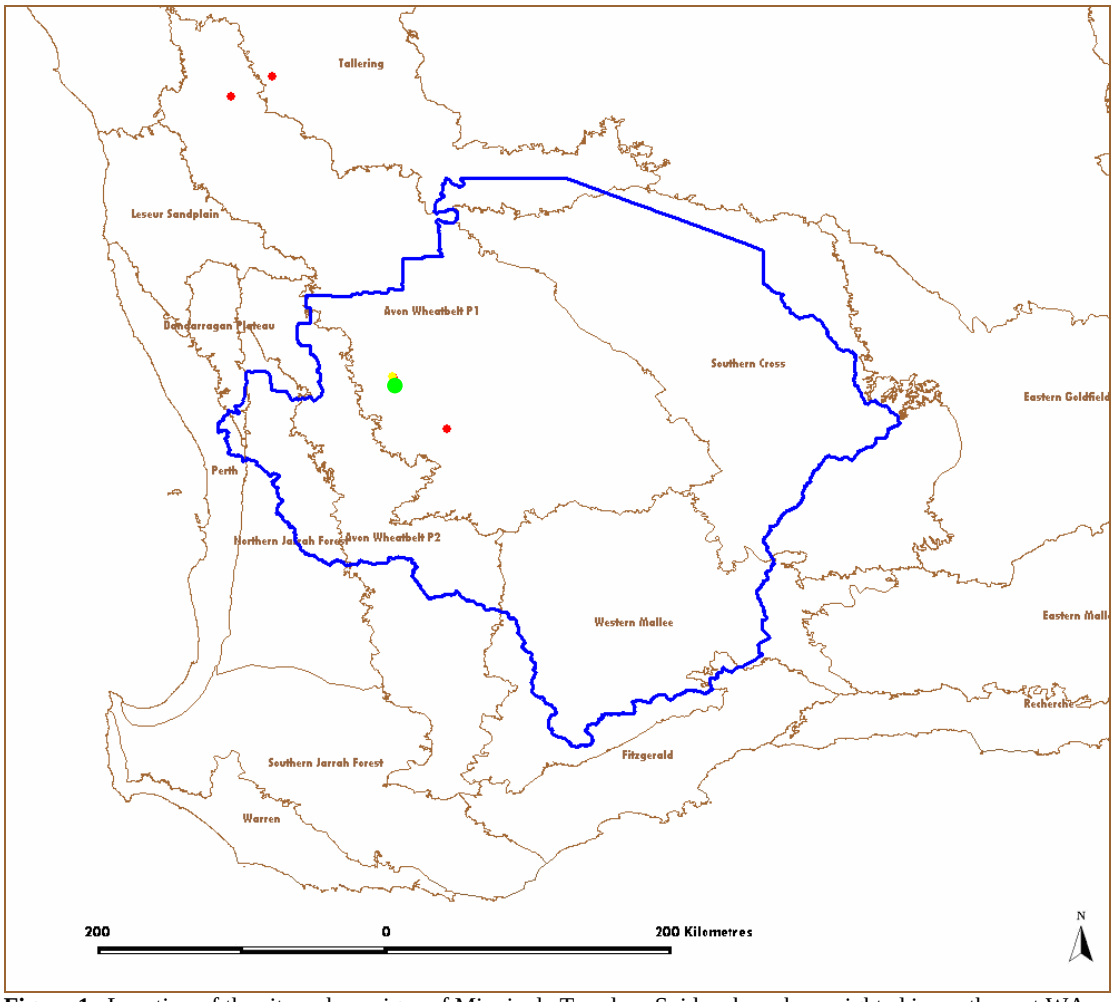

Figure 1. Location of the sites where signs of Minnivale Trapdoor Spiders have been sighted in south-west WA.
Red points - localities of the sites.
Green point - site of the last known extant population near the town of Minnivale.
Blue line - Avon NRM Boundary,
Brown divisions - IBRA subregions.

2.4 Biology and Ecology

The burrows of *Teyl* sp. are deep (the first excavated burrow was 33cm in depth) with a close fitting plug-shaped lid, and are difficult to observe when the lid is closed (Burbidge, 2004).

Minnivale Trapdoor Spiders digs simple, vertical burrows that are closed at the surface with a door, and have a side shaft that is also closed with a door. The doors are made with compacted soil and the insides lined with silk. When open, the hinged surface door lays flat and 'upside down' against the ground, and the side door hangs downward from its horizontal hinge into the main shaft of the burrow (Harvey & Main, 1997, Burbidge, 2004).

Members of the *Teyl* genus display seasonal behaviour, being winter active. During spring these spiders seal the opening to their burrows with soil, and these remain closed until the following wet season. This behaviour protects the spiders during the dry summer months.

2.5 Conservation Status

The Minnivale Trapdoor Spider (*Teyl* sp. [BY Main, 1953/356, 1984/13]) is listed under the Western Australian *Wildlife Conservation Act 1950* as Schedule 1 Fauna (fauna that is rare or likely to become extinct) and is ranked as Critically Endangered under the World Conservation Union (IUCN) Red list criteria A2c, B1ab+2ab, C1+2a and D.

3. HABITAT CRITICAL TO SURVIVAL AND IMPORTANT POPULATIONS

Habitat means the biophysical medium or media: (a) occupied (continuously, periodically or occasionally) by an organism or group of organisms; or (b) once occupied (continuously, periodically or occasionally) by an organism, or group of organisms, and into which organisms of that kind have the potential to be reintroduced (*Environment Protection and Biodiversity Conservation Act 1999*).

Habitat critical to survival and important populations of *Teyl* sp.:

- Areas currently occupied by *Teyl* sp.;
- Areas not currently occupied by the spiders but adjacent to areas that are currently occupied by *Teyl* sp.;
- Areas of suitable vegetation within the recorded range in which undiscovered *Teyl* sp. populations may exist;
- Areas of suitable habitat previously occupied but currently unoccupied.

The habitat critical to survival and important populations of *Teyl* sp. comprises those area in southwest Western Australia that consist of 'perched' swamp areas on high terrain, in particular the narrow band between Minnivale and Mellanbye that supports this type of habitat.

4. GUIDE FOR DECISION MAKERS

The availability of accurate data of known *Teyl* sp. populations and sites with a high prospect of supporting *Teyl* sp. populations is essential to decision-making.

Section five provides details of current and potential threats to *Teyl* sp. Any ground disturbance works (clearing, firebreaks, road works involving roadside vegetation or changes to drainage, burning, drainage etc) in the immediate vicinity of known *Teyl* sp. populations will require assessment. Proponents should demonstrate that the work will not have an impact on this species.

Ground disturbance or other operations which may have a direct or indirect impact on the habitat or hydrology of known *Teyl* sp. population will require an Environmental Impact Assessment (EIA) to ensure that the species is not adversely affected. A pre-disturbance survey to determine the presence/absence of *Teyl* sp. in habitat that may reasonably be expected to contain a *Teyl* sp. population is encouraged.

Encouraging landowners / managers to conserve populations occurring on their properties is critical to the protection of these populations. When a new population is identified on private property the land owner will be contacted in person by DEC staff to discuss the management needs of the *Teyl* sp. populations as well as any concerns the owner may have. A letter will be provided to the land owner as a formal notification of the presence of the population and a request to advise DEC of any change in ownership.

Working closely with landowners will improve the capacity to identify and address any land use related threats.

Where the land manager is a local or state government authority, the letter will require the agency to implement measures to ensure that the population will not be adversely affected by land use. These measures will include advising DEC of any land use that may impact on the survival of the population.

The DEC provides advice on the location and protection of threatened species and communities to telecommunication, water and power providers to ensure that these areas are managed as Environmentally Sensitive Areas (ESA). DEC will ensure this advice includes information on the relatively immobile nature of these fauna species.

The DEC is responsible for assessing notifications of intent to clear under the clearing of native vegetation provisions of the Environmental Protection Act 1986. This process considers the potential impact of the proposed work on threatened fauna species.

DEC also provides advice to the Commissioner for Soil and Land Conservation in respect to notifications of intent to drain and the potential impact that these proposals may have on threatened species and other conservation values.

The sedentary nature of these species increases their vulnerability to disturbance. Therefore a Regulation 15 license to take fauna for educational or public purposes is required if disturbance will occur in or immediately adjacent to these populations. Applications for this licence are made through the Department of Environment and Conservation. Failure to obtain a license may result in a breach of the Wildlife Conservation Act 1950.

5. THREATS

Minnivale Trapdoor Spiders possess certain characteristics that make them more susceptible to threats than other wheatbelt fauna. These include poor dispersal capabilities, confinement to disjunct habitats and low fecundity. These characteristics require a similar management approach to the conservation actions undertaken for Declared Rare Flora.

The limited knowledge of the ecology of this species and the nature of individual populations restricts the capacity to conserve these species. The implementation of the conservation actions described in section 12 of this plan will address this knowledge gap and the threats to the survival of this species.

The main threatening processes (not necessarily in order of priority) are:

1. Lack of ecological resources to support viable populations,
2. Impacts of introduced plants and animals,
3. Inappropriate fire regimes,
4. Salinity/altered hydrology,
5. Impacts of competing land use (mining).

These threats singularly and collectively contribute towards reduced ecological viability of populations and their habitats.

5.1 Lack of ecological resources to support viable populations

Lack of ecological resources to support viable populations relates to the:

- Availability of basic resources for survival & reproduction, where availability of food, shelter and access to mates limits population size. The survival of populations can be directly threatened when restricted gene flow and insufficient habitat are below the levels necessary to maintain a viable population.
- Restricted gene flow and insufficient habitat can increase a population's susceptibility to other threats. Example a small remnant may be totally consumed by fire providing no available habitat for the species to persist in before the affected habitat returns to suitable pre-fire condition.

Land clearing associated with agriculture, mining and infrastructure has resulted in habitat loss and fragmentation of habitat which in turn results in the lack of ecological resources available to support viable populations.

Habitat fragmentation reduces the capacity of the species to increase population size, restricts gene flow through preventing the movement of individuals and makes the population more susceptible to other disturbance events. It is likely that the highly fragmented landscape of the Western Australian wheatbelt, may account for the limited occurrence of this species.

5.2 Impacts of introduced plants and animals

Introduced animal species have the capacity to cause local extinctions of *Teyl* sp. populations. Grazing by livestock results in compaction of the soil and a reduction in leaf litter, which affects the ability of the spiders to burrow and forage. Livestock can also cause direct damage to burrows and their entrances (Main, 2001).

Grazing by rabbits causes a reduction in the ground cover that is necessary for the survival of this spider species. Rabbits may also disturb the soil profile in some spider habitats, and their diggings can directly destroy trapdoor spider burrows (Burbidge *et al*., 1999).

Invasion by introduced plant species cause a change in the structure of vegetation communities, which in turn may affect the survival of *Teyl* sp.

5.3 Inappropriate fire regimes

Fire represents a direct threat to *Teyl* sp. as intense wildfires have the capacity to result in direct mortality to individuals. Fire also represents an indirect threat through the reduction in the ground litter required for reconstructing burrows and to support the litter-dependant invertebrate food source for *Teyl* sp.

The ecological functions of fire include: removing competition, making light / nutrients available, reduces levels of parasites, triggering seed release / germination and maintains balance and diversity of the various components of flora communities.

While fire regimes provide a number of important ecological functions, inappropriate fire regimes may threaten the survival of *Teyl* sp. populations.

Inappropriate fire regimes relate to:

- Frequency Fires that are too frequent or too infrequent
- Season Fires occurring when a species is particularly vulnerable
- Intensity Fires are too intense resulting in high mortality
- Spatial Fires are too large resulting in no unburnt refuge areas

5.4. Impacts of competing resource use (Gravel extraction & mining)

Mining and gravel extraction represents a threat to known *Teyl* sp. populations either directly (destruction of habitat/burrows) or indirectly (nearby mining causing a change in hydrological cycles).

Areas subjected to mining and gravel extraction are sometimes used as waste disposal sites (official and unofficial). This practice constitutes a further threat through increased fire risk, creation of harbourage for invasive species and chemical contamination via disposal of pesticide and herbicide containers that may contain residues of contracted chemicals.

5.5 Salinity/Altered Hydrology

Salinity and changes in hydrology (surface and ground water) are threats to *Teyl* sp. due to the effect they have upon habitats. Both salinity and altered hydrology can cause changes in vegetation structure and soil composition, which can affect the ability of *Teyl* sp. to forage, burrow and breed.

Inundation of the upper soil profile through flooding or rising ground water may result in burrows becoming waterlogged and unusable.

Events such as climate change and changes in the local hydrology of an area (resulting in a drying or excessive wetting of the habitat) must be considered as threats. The impact of surface and ground water management proposals on *Teyl* sp. populations needs to be considered. Similarly it may be necessary to implement surface and or ground water management to conserve known populations threatened by altered hydrology.

6. INTERNATIONAL OBLIGATIONS

The Minnivale Trapdoor Spider (*Teyl* sp.) has not been listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

7. AFFECTED PARTIES

The main parties likely to be affected by this species Conservation Plan are:

- Avon Catchment Council (ACC);
- Department of Environment and Conservation (DEC);
- Landowners / managers where *Teyl* sp. populations are found on their property;
- Local Government Authorities;
- Mining companies (mining exploration and / or production activities which may potentially impact on *Teyl* sp. populations); and
- Public utility agencies (e.g. Western Power, Westnet rail and Water Corporation) whose activities may impact on *Teyl* sp. populations.

8. INDIGENOUS PEOPLE

According to the Department of Indigenous Affairs Aboriginal Heritage site register, no registered sites of Aboriginal significance are recorded at or near populations / occurrences of *Teyl* sp. Where actions recommended by the plan have the potential to impact on Noongar cultural values, further consultation will be undertaken to ensure such impact is avoided. Opportunities for Noongar individuals/groups to be involved with implementing actions including cultural interpretation and awareness of *Teyl* sp. will be considered.

The advice of (one or more of the following):

- The relevant NRM indigenous reference group (s)
- South West (Yamatji – Midwest) Aboriginal Land and Sea Council, and/or
- Department of Indigenous Affairs, and/or
- Native title claimants
- Specific groups/individuals identified as having an interest

….will be sought to assist in the identification of Noongar cultural values for land occupied by threatened species, or groups with a cultural connection to land that is important for *Teyl* sp. conservation. Continued liaison with the Noongar community will identify areas in which collaboration will assist implementation of conservation plans. Consultations with indigenous groups will be made through the ACC's Aboriginal NRM Coordinator.

9. BENEFITS

The conservation actions carried out to protect the habitat of *Teyl* sp. will contribute to the preservation of the biodiversity of these areas, and protection against further degradation. This will contribute to the protection of biodiversity in Western Australia.

As predators, occurrence of *Teyl* sp. indicates the presence of a sufficient number of other invertebrates. Because they are at the apex of food pyramids, these spiders are good indicators of the general balance of communities, and can be used to assess the status of other invertebrates in their community (Main, 1987a).

10. SOCIAL AND ECONOMIC IMPACTS

The implementation of this Conservation Plan is not expected to cause adverse economic impacts. Section 4 (Guide for decision makers) describes the process for identifying and assessing work that may impact on threatened fauna species.

No adverse social impacts are expected to result from the implementation of this Conservation Plan. The plan provides potential social benefits in terms of awareness raising and community capacity building programs.

11. CONSERVATION OBJECTIVES AND CRITERIA

11.1 Conservation plan objective:

To maintain, and if possible enhance, the condition of in situ populations of *Teyl* sp.

11.2 Recovery Criteria:

Criteria for success:

The number of populations has increased and / or the number of mature individuals has increased by fifteen percent or more over the term of the plan.

Criteria for failure:

The number of populations has decreased and / or the number of mature individuals in the known population has decreased by fifteen percent or more over the term of the plan.

11.3 Evaluation

The plan will be reviewed within five years of its implementation. The implementation of these conservation actions and any changes to these actions will be documented accordingly.

12. CONSERVATION ACTIONS

The purpose of conservation actions is to provide operational guidelines for the implementation of on-ground actions. A number of conservation actions were commenced in 2006 as part of the ACC's 'Back from the Edge' program. This program has resulted in a number of significant successes including the discovery of 24 new populations of threatened spider species and an increase in the public's awareness of these species.

Determining current population and site-specific information (population size, type and severity of threats) is the first step in conserving this species.

Conservation actions will provide the following on-ground management advantages:

- Allow for site-specific operational guidelines to be compiled for each population. This will provide a framework to ensure that internal DEC operations and the activities of external agencies such as Westrail, local government, and mining companies are undertaken in a manner that ensures the Yorkrakine Trapdoor spider populations and their habitats are not adversely affected;
- Provide a basis for prioritising the implementation of conservation actions i.e. those populations that are under imminent threat.

Note: Permission is to be obtained from land managers before conservation actions are undertaken.

The following conservation actions are presented in order of descending priority, but this should not prevent the implementation of 'lower' priority actions where opportunities arise and funding is available. The indicative budget and timeframes included in each conservation action depends on the availability of resources.

12.1 Establish a Mygalomorph Conservation Team

A Mygalomorph Conservation Team will be established with representatives from the Avon Catchment Council community, government agencies and experts with a knowledge or interest in spider taxonomy, ecology and conservation. This team will focus on conservation efforts for *Teyl* sp. as well as other threatened Mygalomorph spiders found in the Avon River basin. These species include:

- **Minnivale Trapdoor Spider** *Teyl* sp.
- Shield-backed Trapdoor Spider (*Idiosoma nigrum*)
- Tree-stem Trapdoor Spider (*Aganippe castellum*)
- Yorkrakine Trapdoor Spider (*Kwonkan eboracum*)

Action: Establish a Mygalomorph Conservation Team

Completion date: Ongoing

Cost: $2 500/year

This action has also been recommended in the other Trapdoor spider conservation plans). The budgeted amount listed in this action is a total amount for all four species.

12.2 Determine the population characteristics of known populations & ongoing monitoring

Ground work will be required in order to determine the population characteristics and confirm the continued existence of known *Teyl* sp. populations. A search will be conducted at all known sites in the ACC NRM Region. Areas adjacent to the habitat of extant populations will also be surveyed in order to investigate whether these populations have dispersed out of their known area of occupancy.

On-ground monitoring should preferably be undertaken in the months following the first winter rains, when burrows are open and easier to locate. When it is not possible to survey at this time, consideration should be given to minimising the disturbance of burrows associated with on-ground monitoring activities.

The information obtained from the monitoring will be used to create and update *Teyl* sp. distribution maps. Data is currently stored at the DEC Yilgarn District office in Merredin and the DEC Species and Communities Branch in Perth.

Action: Determine the size of known *Teyl* sp. populations
Completion date: 2008
Cost: $3,500/year

12.3 Undertake a threat assessment for each population

A threat / risk assessment for each population (including habitat health assessment) will be conducted during the population monitoring referred to in Section 12.2 of this plan.

The presence and significance of threats will be assessed, recorded and conservation actions recommended for each population. Threats considered will include the following (but not be limited to):

- introduced plants and animals;
- competing land use;
- pollution;
- inappropriate fire regimes; and
- salinity / waterlogging.

Action: Identify / confirm threats to each population
Completion date: 2008
Cost: Incorporated into sections 12.2 and 12.3

12.4 Address threats to specific populations

Specific conservation actions are expected to be developed from the planned assessment of existing populations (conservation actions 12.2 and 12.3).

Conservation actions may include fencing to exclude stock and/or rabbits, rabbit control, weed control, revegetation (to provide habitat and connectivity between habitats/populations), fire management and management of competing resource use.

Where it is necessary to protect a population from physical disturbance, areas can be demarcated using Environmental Sensitive Area (ESA) markers similar to those markers used to demarcate Declared Rare Flora (DRF) populations.

The costs described below are nominal and relate to minor work associated with the demarcating populations and controlling grazing / weeds. Addressing the threat of salinity & altered hydrological processes may require action of a larger scale with greater costs.

Action: Undertake population specific conservation actions
Completion date: On-going
Cost: $1,000/year

12.5. Conduct surveys to identify new populations

Areas of potential habitat will be identified through a process to map the critical habitat.

The critical habitat mapping can be undertaken by a GIS desktop assessment by using the following GIS datasets:

- Geology and soil types;
- Presence of remnant vegetation;
- Beards vegetation association;
- Rainfall;
- Associated flora and /or fauna species; and

Those sites identified as having a high probability of supporting *Teyl* sp. populations will be subject to a field survey to determine the presence of this species. Similarly other areas to be surveyed will include: sightings reported from the public or other groups and recommendations from experts.

A specific target will be set with regard to the number of new populations that are found. This target will be determined by the criteria (for e.g. number of new populations) that will be required to downgrade the current threatened conservation status of the Minnivale Trapdoor Spider to a lower conservation status category.

Action:	**Conduct surveys to identify new populations**
Completion date:	ongoing
Cost:	$2,000/year

12.6 Promote public awareness

Knowledge of most invertebrates is generally limited, both in the scientific and public arenas. It is therefore necessary to promote awareness on the ecological importance of invertebrates. A public awareness campaign has been initiated to inform the wider community about the importance of *Teyl* sp. and other Trapdoor spiders. This campaign is expected to assist in the discovery of new populations with landowners providing information about possible populations on their properties.

This campaign will aim to improve the public's appreciation of these animals while also encouraging the reporting of sightings of these animals.

A brochure containing information and images of *Teyl* sp. and its burrow has been sent to all landowners in the Avon River Basin, and a poster has been sent to all schools in the region to further improve the profile. Future work may involve investigating reports of sightings, delivering presentations to school and community groups and producing more copies of the brochure / poster.

A one day "spider-blitz" was conducted in 2007 at East Yorkrakine Nature Reserve involving community members, research specialists and staff from DEC and WWF. The spider-blitz was successful in raising public awareness of these species while also obtaining valuable information on the Shield-backed Trapdoor Spider (*Idiosoma nigrum*). Plans are underway to conduct another spider-blitz for *Teyl* sp. in 2008 and possibly other species / other locations in future years.

This action has also been recommended in three other trapdoor spider conservation plans. The budgeted amount listed in this action is a total amount for all four species and is not to be implemented four individual times.

Action: Promote public awareness
Completion date: ongoing
Cost: $500/year

13.0 SUMMARY OF CONSERVATION ACTIONS

Action	2008	2009	2010	2011	2012	Total
12.1 Establish a Mygalomorph Conservation Team	$2,500	$2,500	$2,500	$2,500	$2,500	**$12,500**
12.2 Determine the population characteristics of known populations & ongoing monitoring	$3,500	$3,500	$3,500	$3,500	$3,500	**$17,500**
12.3 Undertake a threat assessment for each population	Included in above costs	Included in above costs	Included in above costs	Included in above costs	Included in above costs	
12.4 Address threats to specific populations	$ 1,000	$ 1,000	$,1000	$,1000	$ 1,000	**$5,000**
12.5 Conduct surveys to identify new populations	$ 2 000	$ 2 000	$ 2000	$ 2000	$ 2 000	**$10,000**
12.6 Promote public awareness	$500	$500	$500	$500	$500	**$2,500**
Cost	**$9,500**	**$9,500**	**$9,500**	**$9,500**	**$9,500**	**$47,500**

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Appendix 1 Summary of location, purpose and tenure of extant populations

Pop. No.	Location	Shire	Vesting	Type	Tenure
1	Minnivale Reserve	Dowerin	DEC	Nature Reserve (C21475)	Crown

Appendix 2 Summary of location, purpose and tenure of other populations

Pop. No.	Location	Shire	Vesting	Type	Tenure
	North Bungulla NR	Tammin	DEC	Nature Reserve (A17732)	Crown