INTERIM RECOVERY PLAN NO. 204

HAIRY-FRUITED MARIANTHUS (*MARIANTHUS VILLOSUS*)

INTERIM RECOVERY PLAN

2005-2010

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Photo: Andrew Brown

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Natural Heritage Trust
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Government of Western Australia

DEPARTMENT OF Conservation AND LAND MANAGEMENT
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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.

IRPs outline the recovery actions that are required to urgently address those threatening processes most affecting the ongoing survival of threatened taxa or ecological communities, and begin the recovery process.

CALM is committed to ensuring that Threatened taxa are conserved through the preparation and implementation of Recovery Plans (RPs) or IRPs and by ensuring that conservation action commences as soon as possible.

This IRP will operate from July 2005 to June 2010 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked Vulnerable, this IRP will be reviewed after five years and the need further recovery actions assessed.

This IRP was given regional approval on 26 October, 2005 and was approved by the Director of Nature Conservation on 26 October, 2005. 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.

Information in this IRP was accurate at June 2005.

ACKNOWLEDGMENTS

The following people have provided assistance and advice in the preparation of this Interim Recovery Plan:

Anne Cochrane	Manager, CALM Threatened Flora Seed Centre
Andrew Brown	Threatened Flora Coordinator, CALM Species and Communities Branch
Malcom Grant	Conservation Officer, CALM Ravensthorpe

Thanks also to staff of the W.A. Herbarium for providing access to Herbarium databases and specimen information, and CALM Wildlife Branch for their assistance.

SUMMARY

Scientific Name:	*Marianthus villosus*	**Common Name:**	Hairy-fruited Marianthus
Family:	Pittosporaceae	**Flowering Period:**	August to September
CALM Regions:	South Coast	**CALM Districts:**	Albany and Esperance
Shires:	Ravensthorpe	**Recovery Team:**	Albany District Threatened Flora Recovery Team

Illustrations and/or further information: Brown, A., Thomson-Dans, C. and Marchant, N. (Eds). (1998) *Western Australia's Threatened Flora*. Department of Conservation and Land Management, Western Australia; Western Australian Herbarium (1998) FloraBase - Information on the Western Australian Flora. Department of Conservation and Land Management, Western Australia. http://www.calm.wa.gov.au/science/.

Current status: *Marianthus villosus* was declared as Rare Flora in 1988 under the Western Australian *Wildlife Conservation Act 1950*. It is currently ranked as Vulnerable under World Conservation Union Red List criteria D1 & 2 (IUCN 2004), primarily due to the small number of populations and small population size. It is listed as Endangered under the Commonwealth *Environment and Biodiversity Protection Act 1999*. The species is confined to an area of approximately twelve hectares over a range of thirty kilometres in which four populations and a total of approximately 42,700 plants are known.

Description: *Marianthus villosus* is a low, spreading shrub to 50 cm tall. Its reddish-brown stems are initially covered with fine white hairs, but become grey and hairless with age. The leaves, 2 cm long by 1.1 cm wide, also lose hairs, though they persist along the margins and mid-veins. Leaf margins are flat and the leaf stalk is very short. Deep blue flowers are held on slender stalks, 1.5 to 2.5 cm long, in the leaf axils and are usually solitary. The petals have 3 or 4 distinct purple lines on the outer surface, and a pale throat.

Habitat requirements: The species inhabits gravely sands over laterite or ironstone and sand over laterite. It grows in mallee heath and associated species include *Banksia lemanniana*, *Beaufortia schaueri*, *Eucalyptus astringens* subsp. *redacta* and *Taxandria spathulata*.

Habitat critical to the survival of the species, and important populations: The habitat critical to the survival of *Marianthus villosus* comprises the area of occupancy of the known population; similar habitat within 200 metres of the known population; remnant vegetation that may link future populations; and additional nearby occurrences of similar habitat that do not currently contain the species but may have done so in the past and may be suitable for translocations. Given that this taxon is listed as Vulnerable it is considered that all populations are important populations.

Benefits to other species/ecological communities: The Ravensthorpe Range occurs within one of the fifteen National Biodiversity Hotspots. The Ravensthorpe Range is habitat for a number of endemic species and threatened species, and some twenty Priority taxa. Recovery actions put in place for *Marianthus villosus* will benefit these species and reciprocally, recovery actions put in place for these species will benefit *M. villosus*.

International obligations: This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity. *Marianthus villosus* is not specifically listed under any international treaty and therefore this plan does not affect Australia's obligations under any other international agreements.

Role and interests of indigenous people: According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register, six registered sites occur in close proximity to the *Marianthus villosus* populations. The Department has welcomed any future consultation that will seek input and involvement from Indigenous groups that have an active interest in the areas that are habitat for *Marianthus villosus*.

Affected Interests: All populations occur on Crown land that currently holds mining tenements or may do in the future. Populations 2, 3A, 3B, 4D and 5 are located on live mining tenements and Populations 4A and 4C occur on pending mining tenements. Populations 1 and 4B are located within three kilometres of mining tenements.

Social and economic impacts: The implementation of this recovery plan has the potential to have some social and economic impact as the majority of populations are located on live or pending mining tenements. However, recovery actions refer to continued negotiations between stakeholders with regard to these areas.

Evaluation of the Plan's Performance: The Department of Conservation and Land Management (CALM), in conjunction with the Albany District Threatened Flora Recovery Team (ADTFRT) will evaluate the performance of this IRP.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented:

1. All land managers have been notified of the location and threatened status of the species.
2. Volunteers and staff from the CALM Albany Work Centre monitor populations.
3. Seed collections have been made by staff of CALM's Department's Threatened Flora Seed Centre (TFSC).

Objectives

The objective of this Interim Recovery Plan is to abate identified threats and maintain or enhance *in situ* populations to ensure the long-term preservation of the species in the wild.

Criteria for success: The number of populations and individuals within populations remains stable or increases over the five years of the plan.
Criteria for failure: The number of populations or the number of individuals within populations decreases over the five years of the plan.

Recovery actions

1. Coordinate recovery actions
2. Monitor populations
3. Continue fire management
4. Continue seed collection
5. Obtain biological and ecological information
6. Conduct further surveys
7. Liaise with stakeholders
8. Map habitat critical to the survival of the species
9. Promote awareness
10. Review the IRP and assess the need for further recovery actions

1. BACKGROUND

History

This species was for some time known as *Billardiera mollis* following its description by Eleanor Bennett in 1983. However, it was subsequently discovered that it had previously been named *Oncosporum villosum* by Turcz in 1854 and placed in *Marianthus* under the revised species epithet *villosus* by Bentham in 1863.

Populations 1 to 4 were located by E. M. Bennett in 1982 and at that time contained almost 1000 individuals. G. F. Craig found population 5 in 2004. Population 2 has not been relocated in recent years and the area appears to lack suitable habitat for the species.

Description

Marianthus villosus is a low, spreading shrub up to 50 cm tall. Its reddish-brown stems are initially covered with fine white hairs, but become grey and hairless with age. The leaves, 2 cm long by 1.1 cm wide, also lose their hairs, although they persist along the margins and mid-veins. Leaf margins are flat and the leaf stalk is very short. Deep blue flowers are held on slender stalks (1.5 to 2.5 cm long) in the leaf axils and are usually solitary. The petals have 3 or 4 distinct purple lines on the outer surface, and a pale throat.

Distribution and habitat

The species is found in the Ravensthorpe Range and eastward along the Rabbit Proof Fence, occupying approximately twelve hectares over a range of approximately thirty kilometres. It is suggested that the outlying population along the Rabbit Proof Fence is due to an extension of the underlying geology of the Ravensthorpe Range into this region (Lewis 1982). The species inhabits gravely sands over laterite or ironstone and sand over laterite. It grows in mallee heath, usually in open areas where the soil has been disturbed. The species does not appear to be highly specific to soil and vegetation types (Lewis 1982). However, the species was not found during detailed surveys of Bandalup Hill, 18 km southeast of Population 1 and would therefore appear to be restricted to the Ravensthorpe Range. Associated species include *Acacia pusilla, Banksia lemanniana, Beaufortia schaueri, Dampiera angulata, Dryandra cirsioides, Eucalyptus astringens* subsp. *redacta, E. incrassata, E. pleurocarpa, E. phaenophylla, Hakea marginata, Melaleuca hamata, M. rigidifolia, Siegfriedia darwinioides* and *Taxandria spathulata*.

Biology and ecology

Little is known about the biology and ecology of *Marianthus villosus*. The species flowers from August to September, though records show plants in Population 1 have flowered into January (Lewis 1982). In Population 1A, flowering was observed in November 2004, after being burnt in May 2001. The pollination biology is unknown, however it is likely that the species is insect or self pollinated due to its small flowers, rather than bird pollinated (Lewis 1982). Similarly, *Marianthus lineatus* (now *M. bicolor*) is thought to be insect pollinated. Sargent (1909) considered that the quantity of fruit produced by *M. lineatus* was related to the frequency of pollinator visits. He believed pollinators to be attracted in part by sight but also by the 'faint limonaceous odour' of the flower. *M. lineatus* fruit dehisces at flowering time and seeds can not be released by strong wind; ants or birds may be primarily responsible for seed dispersal. Lewis (1982) suggests that seed dispersal of *Marianthus villosus* is limited, due to the compact nature of the populations; however the rate of seed set and seedling establishment are likely to be competitive as there are relatively large numbers in some populations. It is probable that *Marianthus villosus* is a disturbance opportunist as it occurs in areas of soil disturbance, such as on tracks and firebreaks.

Threats

Marianthus villosus was declared as Rare Flora in 1988 under the Western Australian *Wildlife Conservation Act 1950*. It is currently ranked as Vulnerable under World Conservation Union Red List

Criteria D1 & 2 (IUCN 2004) due to the species small population size and small number of locations. However, it no longer meets criterion D1 as over 1000 mature individuals are now known. The species is listed as Endangered under the Commonwealth *Environment and Biodiversity Protection Act 1999*. Five populations comprising some 42,700 plants are currently known.

All areas occupied by *Marianthus villosus* are affected or potentially affected by one or more threats identified in this IRP. Threats include:

- **Mining:** All populations occur on Crown land that are currently subject to mining tenements or may be in the future. Populations 2, 3A, 3B, 4D and 5 are located on live mining tenements and Populations 4A and 4C occur on pending mining tenements. A haul road is proposed in the vicinity of Population 3A and the preferred route will dissect the population. Populations 1 and 4B are located within three kilometres of mining tenements. Possible impacts of mining include vegetation clearing, ground compaction, introduction of weeds and pathogens such as *Phytophthora cinnamomi*, increased risk of fires and discharge of waste products and hazardous materials. The species susceptibility to *P. cinnamomi* is unknown.

- **Inappropriate fire regime:** Poorly timed, intense and too frequent fire may be detrimental, as plants need to reach reproductive maturity to build up a seed bank. An estimation of the minimum desirable fire interval may be determined by doubling the primary juvenile period (time to first flower from germination, in 50% of the population) (Gill and Nichols 1989). The primary juvenile period for *Marianthus villosus* is three years, making the minimum desirable fire interval at least six years.

- **Small population size:** The small size of the *Marianthus villosus* populations renders them vulnerable to local extinction by either demographic stochasticity (eg. lack of recruitment in one year), or environmental stochasticity (random variation in for example rainfall or fire).

- **Climate change:** Long-term climate change is likely to stress the *Marianthus villosus* populations given the predicted decrease in rainfall and increases in temperature and evaporation. It has been considered that those groups likely to be most affected by climate change include geographically localised taxon such as *Marianthus villosus*, peripheral or disjunct populations, specialised species, poor dispersers, genetically impoverished species, and coastal communities (Peters & Darling 1985).

Summary of population land vesting, purpose and tenure

Population	Vesting	Purpose	Tenure
1A. Rabbit Proof Fence	Unvested	Other	Crown
1B. Rabbit Proof Fence	Unvested	Other	Crown
1C. Rabbit Proof Fence	Unvested	Other	Crown
1D. Rabbit Proof Fence	Unvested	Other	Crown
1E. Rabbit Proof Fence	Unvested	Other	Crown
1F. Rabbit Proof Fence	Unvested	Other	Crown
1G. Rabbit Proof Fence	Unvested	Other	Crown
1H. Rabbit Proof Fence	Unvested	Other	Crown
1I. Rabbit Proof Fence	Unvested	Other	Crown
1J. Rabbit Proof Fence	Unvested	Other	Crown
2. North of Mt Desmond	Unvested	Common	Crown
3A. Hecla Mine	Unvested	Vacant	Crown
3B. NE of Flag Mine	Unvested	Other	Crown
4A. North of Mt Iron	Unvested	Common	Crown
4B. North of Mt Iron	Unvested	Common	Crown
4C. North of Mt Iron	Unvested	Common	Crown
4D. North of Mt Iron	Unvested	Common	Crown
5. North of Western Gem Mine	Unvested	Vacant	Crown

Summary of population information and threats

Population No. and Location	**Year/Number of plants** mature (juvenile)		**Condition**	**Threats**
1A. Rabbit Proof Fence	1982	400 +		Firebreaks
	2004	35000 +/-	Healthy	Inappropriate
1B. Rabbit Proof Fence	1982	300 +		fire regime
	2004	50 +/-	Healthy	
1C. Rabbit Proof Fence	1982	1		
	2004	Not Found		
1D. Rabbit Proof Fence	1982	3		
	2004	0 (54)	Recently Burnt	
1E. Rabbit Proof Fence	1982	20 +		
	2004	2000 +/- (2000 +/-)		
1F. Rabbit Proof Fence	1982	20 +		
1G. Rabbit Proof Fence	2004	2500 +/-	Healthy	
1H. Rabbit Proof Fence	2004	10	Healthy	
1I. Rabbit Proof Fence	2004	100s	Healthy	
1J. Rabbit Proof Fence	2004	20 +/-	Healthy	
2. North of Mt Desmond	1982	50 +		
	2001	Not Found	Exact Location	
	2004	Not Found	Unclear	
3A. Hecla Mine	1982	150 +	Healthy	Mining
	1988	150 +		Inappropriate
	1995	150 +	Healthy	fire regime
3B. NE of Flag Mine	1982	10 +	Healthy	
	1995	2	Healthy	
	2004	700 +/-	Healthy	
4A. North of Mt Iron	1995	4 (13)	Healthy	Mining
	2004	14 +	Healthy	Firebreaks
4B. North of Mt Iron	1995	5 (15) +	Healthy	Inappropriate
	2004	15 +/-	Healthy	fire regime
4C. North of Mt Iron	1995	15 (35) +	Healthy	
	2004	500 +	Healthy	
4D. North of Mt Iron	1999	30 +/-	Healthy	
5. North of Western Gem Mine	2004	1500 +/-	Healthy	Mining Inappropriate fire regime

Habitat critical to the survival of the species, and important populations

Given that this species is listed as Endangered under the Commonwealth EPBC Act, it is considered that all known habitat is habitat critical to the survival of the species. In addition all populations, including any translocated populations, are considered important to the survival of the species. Habitat is defined as the biophysical medium or media occupied (continuously, periodically or occasionally) by an organism or group of organisms, or 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*). The area of occupancy of the currently known *Marianthus villosus* populations has been mapped. However, other parts of the habitat critical to the survival of *M. villosus* have not been mapped and an action outlined in this Interim Recovery Plan is to map all habitat as defined above.

The habitat critical to the survival of *Marianthus villosus* therefore comprises:

- the area of occupancy of known populations;
- areas of similar habitat within 200 metres of known populations that provide potential habitat for natural recruitment;
- remnant vegetation that surrounds and links populations (this is necessary to allow pollinators to move between populations) and
- additional occurrences of similar habitat that do not currently contain the species but may have done so in the past (these represent possible translocation sites).

Benefits to other species/ecological communities

The Ravensthorpe Range is an area of high conservation value and occurs within one of the fifteen National Biodiversity Hotspots, which are areas of species richness and endemism, and areas under major threat (CALM 2004). The Ravensthorpe Range is habitat for a number of endemic species and threatened species, including *Daviesia megacalyx* (En), *Acacia rhamphophylla* (En) and some twenty Priority taxa, such as *Melaleuca stramentosa* (P1), *Pultenea* sp. Kundip (P1), *Melaleuca* sp. Kundip (P1), *Acacia laricina* var. *crassifolia* (P2), *Spyridium glaucum* (P3) and *Siegfriedia darwinioides* (P4). Recovery actions put in place for *Marianthus villosus* will benefit these species and reciprocally, recovery actions put in place for these species will benefit *M. villosus*.

International obligations

This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in June 1993, and will assist in implementing Australia's responsibilities under that Convention. However, as *Marianthus villosus* is not listed under any international agreement, the implementation of other international environmental responsibilities is not affected by this plan.

Role and interests of indigenous people

According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register, the registered sites Claytup Surface Scatter, Kundip, Coujinup Surface Scatter, Gnamma Hole and North Jerdacuttup River 1 & 2 occur in close proximity to *Marianthus villosus* populations. The Department has welcomed any future consultation that will seek input and involvement from Indigenous groups that have an active interest in the areas that are habitat for *Marianthus villosus*, and this is discussed in the recovery actions.

Affected Interests

All populations occur on Crown land which are subject to mining tenements or may be subject to them in the future. Populations 2, 3A, 3B, 4D and 5 are located on live mining tenements and Populations 4A and 4C occur on pending mining tenements. Populations 1 and 4B are located within three kilometres of mining tenements.

Social and economic impacts

The implementation of this recovery plan has the potential to have some social and economic impact as the majority of populations are located on live or pending mining tenements. However, recovery actions refer to continued negotiations between stakeholders with regard to these areas.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Developments in the immediate vicinity of the population or within the defined critical habitat of *Marianthus villosus* require assessment for the potential for a significant level of impact. No developments should be approved unless the proponents can demonstrate that they will not have a detrimental impact on the species, or its habitat or potential habitat, or the local surface and ground water hydrology.

Evaluation of the Plan's Performance

The Department of CALM, in conjunction with the Albany District Threatened Flora Recovery Team will evaluate the performance of this recovery plan. In addition to annual reporting on progress against the criteria for success and failure, the plan is to be reviewed within five years of its implementation. Any changes to management and/or recovery actions made in response to monitoring results will be documented accordingly.

2. RECOVERY OBJECTIVE AND CRITERIA

Objectives

The objective of this Interim Recovery Plan is to abate identified threats and maintain or enhance *in situ* populations to ensure the long-term preservation of the species in the wild.

Criteria for success: The number of populations and individuals within populations remains stable or increases over the five years of the plan.
Criteria for failure: The number of populations or the number of individuals within populations decreases over the five years of the plan.

3. RECOVERY ACTIONS

Existing or completed recovery actions

All land managers have been notified of the location and threatened status of *Marianthus villosus*. The notification details the Declared Rare status of the species and the legal responsibility to protect it.

Populations are monitored as regularly as practicable.

Seed was collected from Population 4 in December 1995. Initial germination and retest germination of the seed yielded 46% and 36% germination, respectively. The seed was germinated on agar containing 25mg/l Gibberellic acid. *Marianthus villosus* (and another *Marianthus* species tested) have not been tested on plain agar and it therefore unclear whether the Gibberellic acid is aiding in the germination. Smoke treatment and seed coat nicking were also tested but do not appear to have had any beneficial effect on germination. However, results are inconclusive due to the small sample sizes ([3]A. Crawford, personal communication).

Future recovery actions

Where populations occur on lands other than those managed by CALM, permission has been or will be sought from appropriate land managers prior to recovery actions being undertaken. The following recovery actions are roughly in order of descending priority; however this should not constrain addressing any of the priorities if funding is available and other opportunities arise.

1. Coordinate recovery actions

The Albany District Threatened Flora Recovery Team (ADTFRT) is coordinating recovery actions for *Marianthus villosus* and will include information on progress in their annual report to CALM's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: CALM (Albany Work Centre) through the ADTFRT
Cost: $3,000 per year

[3] Andrew Crawford Senior Technical Officer, CALM Threatened Flora Seed Centre

2. Monitor populations

Continue regular monitoring of *Marianthus villosus*.

Action: Monitor populations
Responsibility: CALM (Albany Work Centre)
Cost: $1,750 per year

3. Continue fire management

Continue current fire management practices, including maintenance of firebreaks around populations, and develop a fire management strategy.

Action: Continue fire management
Responsibility: CALM (Albany Work Centre)
Cost: $2,800 in the first year

4. Continue seed collection

Preservation of germplasm is essential to guard against the possible extinction of wild populations. Seed can also be used to propagate plants for future translocations. Seed is required from all populations to maximise the genetic diversity of *ex situ* material. Seed collection will be ongoing to obtain seed from as wide a range of individuals as possible.

Action: Continue seed collection
Responsibility: CALM (Threatened Flora Seed Centre and Albany Work Centre)
Cost: $5,930 per year

5. Obtain biological and ecological information

Knowledge of the biology and ecology of *Marianthus villosus* will provide a better scientific basis for management of the wild populations. An understanding of the following is particularly necessary for effective management:

1. Soil seed bank dynamics and the role of various disturbances, competition and rainfall in germination and recruitment.
2. The phenology, seasonal growth and pollination biology.
3. Disease susceptibility.

Action: Obtain biological and ecological information
Responsibility: CALM (Science Division and Albany Work Centre)
Cost: $24,000 per year for three years

6. Conduct further surveys

Surveys supervised by CALM staff, with assistance from local naturalists and wildflower society members, are to be conducted during the species flowering period (August to September). Similar habitat has not been extensively surveyed. Information on soil and vegetation types will be used to identify similar habitat to target for further survey.

Action: Conduct futher surveys
Responsibility: CALM (Science Division and Albany Work Centre)
Cost: $5,320 per year

7. Liaise with land managers

Staff from CALM Albany District will continue to liaise with current and future mining leasees to ensure populations on mining tenements are not accidentally damaged or destroyed and that the impacts of identified threats are minimised. Input and involvement will also be sought from Indigenous groups that have an active interest in areas that are habitat for *Marianthus villosus*.

Action: Liaise with land managers
Responsibility: CALM (Albany Work Centre)
Cost: $1,200 per year

8. Map habitat critical to the survival of the species

It is a requirement of the EPBC Act (Section 207A) that spatial data relating to critical habitat be determined. Although habitat critical to the survival of the species is alluded to in Section 1, all the areas described have not yet been accurately mapped and will be addressed under this action. If additional populations are located, habitat critical to their survival will also be determined and mapped.

Action: Map habitat critical to the survival of the species
Responsibility: CALM (Albany Work Centre)
Cost: $400 in first year

9. Promote awareness

The importance of biodiversity conservation and the need for the long-term protection of wild populations of this species will be promoted to the community through poster displays and the local print and electronic media. Formal links with local naturalist groups and interested individuals will also be encouraged.

Action: Promote awareness
Responsibility: CALM (Albany Work Centre) through the ADTFRT
Cost: $900 per year

10. Review the IRP and asses the need for further recovery actions

If *Marianthus villosus* is still ranked as Vulnerable at the end of the fourth year of the five-year term of this IRP, the plan will be reviewed and the need for further recovery actions assessed.

Action: Review the IRP and assess the need for further recovery actions
Responsibility: CALM (Species and Communities Branch and Albany Work Centre) through the ADTFRT
Cost: $4,000 in the fifth year (if required).

4. TERM OF PLAN

This Interim Recovery Plan will operate from July 2005 to June 2010 but will remain in force until withdrawn or replaced. If the taxon is still ranked Endangered under the Commonwealth EPBC Act after five years, this IRP will be reviewed and if necessary, further recovery actions put in place.

5. REFERENCES

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6. TAXONOMIC DESCRIPTION

Low, spreading shrub to 50 cm tall; *young stems* reddish-brown, white hirsute, becoming grey-brown with age and hairs rubbing off. *Leaves* alternate, ovate to lanceolate-ovate, mucronate, 10-20 x 7-11 mm, both surfaces of young leaves long white hirsute, becoming glabrous with age, hairs semi-persistent along margin and midvein, margins flat, petiole 0.75-1 mm long. *Flowers* solitary (rarely 2), axillary; *flowering penduncles* slender, 15-25 mm long, deep blue with scattered long and short white hairs; *fruiting penduncles* 15-25 mm long, green or greenish-brown, hirsute. *Bracts* at base of penduncle lanceolate-linear, 0.75-1.25 mm, dark-blue covered in long and short white hairs. *Sepals* free, narrow-lanceolate, dark blue, hirsute. *Petals* dark blue or blue with 3 or 4 fine distinct purple lines on outer surface, pale blue or nearly white in throat, 12-15 x 3-6 mm, recurved 3-5 mm from tip. *Anthers* 0.75-1 mm long, white, *filaments* 6-8 (10) mm long, whitish green, dilated at base, tip curved forwards. *Ovary* hirsute, 2.5-3.5 mm long; *style* 1.5-2 mm long, glabrous. *Capsules* covered with long white hairs, 7-14 x 5-7 mm long; *seeds* 1.5-2 mm, dark brown, smooth, shiny.