

INTERIM RECOVERY PLAN NO. 235

# TOOLINNA ADENANTHOS (*ADENANTHOS EYREI*)

## INTERIM RECOVERY PLAN

2007 – 2012



March 2007

Department of Environment and Conservation  
Esperance District  
92 Dempster St. Esperance WA 6450

## Interim Recovery Plan for *Adenanthos eyrei*

### 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. Note: the Department of CALM formally became the Department of Environment and Conservation (DEC) in July 2006. DEC will continue to adhere to these Policy Statements until they are revised and reissued.

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.

DEC 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 and, in the case of Critically Endangered (CR) taxa, always within one year of endorsement of that rank by the Minister.

This IRP will operate from March 2007 to February 2012 but will remain in force until withdrawn or replaced. It is intended that, if the species is still ranked Endangered this IRP will be reviewed after five years and the need for further recovery actions assessed.

This IRP was given regional approval on 27<sup>th</sup> August 2007 and was approved by the Director of Nature Conservation on 10<sup>th</sup> September 2007. The provision of funds identified in this Interim Recovery Plan is dependent on budgetary and other constraints affecting DEC, as well as the need to address other priorities.

Information in this IRP was accurate at March 2007.

### IRP PREPARATION

This IRP was prepared by Emma Adams<sup>1</sup> and Andrew Brown<sup>2</sup>

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<sup>2</sup> Threatened Flora Coordinator, Species and Communities Branch, DEC, PO Box 51 Wanneroo, 6946.

### ACKNOWLEDGMENTS

The following people have provided assistance and advice in the preparation of this IRP:

Mike Fitzgerald	Nature Conservation Coordinator, Esperance District, DEC
Greg Keighery	Principal Research Scientist, Science Division, DEC
Craig Douglas	Project Officer, Species and Communities Branch, DEC

Thanks to the staff of the W.A. Herbarium for providing access to Herbarium databases and specimen information, and DEC's Species and Communities Branch for assistance.

**Cover photograph** by Andrew Brown

### CITATION

This IRP should be cited as:

Department of Environment and Conservation (2007). Toolinna *Adenanthos* (*Adenanthos eyrei*) Interim Recovery Plan 2007-2012. Interim Recovery Plan No. #. Department of Environment and Conservation, Perth, Western Australia.

## Interim Recovery Plan for *Adenanthos eyrei*

### SUMMARY

<b>Scientific Name:</b>	<i>Adenanthos eyrei</i>	<b>Common Name:</b>	Toolinna Adenanthos
<b>Family:</b>	PROTEACEAE	<b>Flowering Period:</b>	All year
<b>DEC Region:</b>	South Coast	<b>DEC District:</b>	Esperance
<b>Shire:</b>	Esperance	<b>Recovery Team:</b>	Esperance District Threatened Flora Recovery Team (EDTFRT)

**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; Nelson, E. C. (1978). *A taxonomic revision of the genus Adenanthos (Proteaceae)*. *Brunonia*, 1: 303-406;

**Current status:** *Adenanthos eyrei* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act* 1950 in November 1980 and currently meets World Conservation Union (IUCN 2001) Red List Criteria Endangered (EN) under criterion D as the population is estimated to number fewer than 250 mature individuals. The species is listed as EN under the Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act)

**Description:** *Adenanthos eyrei* is an erect, open shrub to 1 m tall. The branchlets are hairy, while older branches have very warty bark. The leaves are also hairy, and on stalks. They vary in shape, but are mostly divided into flat segments up to 15 mm long. The deep crimson, softly hairy flowers are held on stalks in leaf axils or at the end of branches. The narrow floral tubes, which are 25 mm in length, have long, protruding styles up to 35 mm long.

There is currently question over whether *A. eyrei* is a distinct species due to its similarity to *A. forrestii*. Key differences between the two species appears to be the absence of a lignotuber in *A. eyrei* as opposed to its presence in *A. forrestii*, and the colour of the flowers, with *A. eyrei* having dark crimson flowers and *A. forrestii* having pale red and cream flowers. However, recent observation has shown the flower colour of both taxa to be variable and the lack of a lignotuber and the lack of a woody underground rootstock are not normally used to distinguish taxa at a species level without additional morphological features (Brown *et. al.* 1998). A taxonomic review of *A. eyrei* is currently being carried out and a DNA analysis may follow.

**Habitat requirements:** *Adenanthos eyrei* occurs in an undisturbed area on the edge of the Great Sandy Bight, where there is just one known population. Plants resemble the common, widespread Forrest's woollybush (*A. forrestii*) and they are difficult to distinguish from one another due to variable leaf morphology. Habitat is deep siliceous sand dunes above limestone cliffs, in low open scrub with *Adenanthos forrestii* and *Banksia media*.

**Habitat critical to the survival of the species, and important populations:** The habitat critical to the survival of *Adenanthos eyrei* comprises the area of occupancy of the know population, similar habitat surrounding the known population 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 the species is listed as Endangered it is considered that all known habitat for wild and possible future translocated populations is habitat critical to its survival, and all populations, including translocated populations, are important populations.

**Benefits to other species/ecological communities:** *Adenanthos eyrei* occurs with *Banksia media* and several priority species including *Goodenia varia*, *Eucalyptus surgens*, *Opercularia loganioides* and *Galium migrans*. Recovery actions implemented to improve the quality or security of the habitat of *Adenanthos eyrei* will also improve the status of the vegetation type in which these priority species occur.

**International Obligations:** This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in 1993, and will assist in implementing Australia's responsibilities under that convention. This species is not specifically listed under any international treaty and therefore 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 no sites are known at or near the *Adenanthos eyrei* population. However, the involvement of the Indigenous community is currently being sought to determine whether there are any issues or interests identified in the Plan. If no role is identified for indigenous communities in the recovery of this species, opportunities may exist through cultural interpretation and awareness of the species.

The advice of the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs is being sought to assist in the identification of potential indigenous management responsibilities for land occupied by threatened species, or groups with a cultural connection to land that is important for the species' conservation.

Continued liaison between DEC and the indigenous community will identify areas in which collaboration will assist implementation of recovery actions.

**Affected interests:** All known populations are on Crown land managed by DEC.

## Interim Recovery Plan for *Adenanthos eyrei*

**Social and economic impact:** The implementation of this recovery plan has minimal social and economic impact as all populations are on Department of Environment and Conservation (DEC) managed land.

**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 habitat critical to the survival of *Adenanthos eyrei* 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.

**Evaluation of the Plans Performance:** DEC in conjunction with the EDTFRT will evaluate the performance of this IRP.

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

1. Land managers have been notified of the location and threatened status of the species.
2. Staff from CALM (now DEC) have been monitoring the population.
3. A taxonomic review is currently being carried out to assess the distinctiveness of *A. eyrei*.

**IRP Objective:** The objective of this IRP is to abate identified threats and maintain a viable *in situ* population of *Adenanthos eyrei* to ensure the long-term preservation of this species in the wild.

### Recovery criteria

**Criteria for success:** The number of populations have increased and/or individuals within the known population have increased by ten percent or more over the 5 year term of this plan.

**Criteria for failure:** The known population becomes extinct or individuals within the known population have decreased by ten percent or more over the 5 year term of this plan.

### Recovery actions:

1. Coordinate recovery actions
2. Complete a taxonomic review
3. Conduct DNA analysis
4. Re-assess access track
5. Monitor population
6. Conduct further surveys
7. Map habitat critical to the survival of *Adenanthos eyrei*
8. Seed collection
9. Collect cuttings for cultivation
10. Obtain biological and ecological information
11. Promote awareness
12. Review the IRP and assess the need for further recovery actions

## 1. BACKGROUND

### History

*Adenanthos eyrei* was first discovered by Ernest Nelson in October 1973 and was named in *Brunonia* by him in 1978 in honour of the explorer Edward John Eyre. This is the only collection of the species held at the W.A Herbarium. Nelson noted that *A. eyrei* had a limited distribution and was known from one population on the edge of the Great Sandy Bight.

Greg Keighery from CALM (now DEC) visited the site in 1985 and located the original population described by Nelson in *Brunonia*. Between 1987 and 1994 Bernie Haberley from CALM (now DEC) monitored the population, visiting the site several times. Haberley noted that there were other species of *Adenanthos* in the area which looked very similar and in 1987 took three separate voucher specimens all of which were later identified as *Adenanthos eyrei*. Early inspection records by Haberley stated that the number of individuals observed in the population was in excess of 200 plants.

Over the past ten years the site has been visited several times by Greg Keighery, Andrew Brown, Ryan Butler, Mike Fitzgerald and Klaus Tiedemann from CALM (now DEC). The most recent visit was in May 2004 by Brown and Butler. At that time they observed over 200 plants, which were healthy and in full flower.

Although there have been numerous field inspections, given its close similarity to *A. forrestii* there is still a taxonomic question as to the distinctiveness of *Adenanthos eyrei*. During a field survey in May 2004, twenty samples were collected for DNA analysis and it is hoped that laboratory work will provide further insight if a taxonomic review is inconclusive. As a result, the application of recovery actions associated with this species will be pending on the results of the taxonomic review and possible additional DNA analysis.

### Description

*Adenanthos eyrei* is an erect, open shrub to 1 m tall. The branchlets are hairy, while older branches have very warty bark. The leaves are also hairy, and on stalks. Leaves vary in shape, but most have three flat segments up to 15 mm long. The deep crimson (note that recent surveys have shown that these may be variable in colour), softly hairy flowers are held on stalks in leaf axils or at the end of branches. The narrow floral tubes, which are 25 mm in length, have long, protruding styles up to 35 mm long.

The taxonomic status of *Adenanthos eyrei* is questionable, and there is currently much discussion over whether it is a distinct, separate species due to its similarity to *A. forrestii*. The most distinct differences are said to be the absence of a lignotuber in *A. eyrei* as opposed to its presence in *A. forrestii*, and the colour of the flowers, with *A. eyrei* having dark crimson flowers and *A. forrestii* having pale red and cream flowers. However, recent surveys have shown that flowers may be variable in colour, and the lack of a lignotuber is not normally used without additional morphological information to distinguish species (Brown *et al.* 1998). A taxonomic review is therefore currently being carried out by Greg Keighery to confirm whether or not *A. eyrei* and *A. forrestii* are two distinct species. If this review fails to clarify the issue, then a DNA analysis will be conducted.

### Distribution and habitat

*Adenanthos eyrei* is located within the Nuytsland Nature Reserve on the edge of the Great Sandy Bight where it is restricted to a small undisturbed area 200 m East of Toolinna Cove. Its habitat is on deep siliceous sand dunes above limestone cliffs, in low open scrub with *Banksia media*.

**Table 1. Summary of population land vesting, purpose and tenure**

Pop. No. & Location	DEC District	Shire	Vesting	Purpose	Manager
<b>1. Nuytsland Nature Reserve</b>	Esperance	Esperance	Conservation Commission of Western Australia	Nature Reserve	DEC

Populations in **bold text** are considered to be Important Populations.

### Biology and ecology

It is thought that *Adenanthos eyrei* is killed by fire and regenerates from seed (Brown *et al.* 1998). Therefore frequent fires may result in the plants being killed before they are large enough to replenish the soil seed bank.

## Threatening processes

*Adenanthos eyrei* was declared as Rare Flora under the Western Australian *Wildlife Conservation Act 1950* in November 1980 and currently meets World Conservation Union (IUCN 2001) Red List Criteria Endangered (EN) under criterion D as the population is estimated to number fewer than 250 mature individuals. The species is listed as EN under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Threats include:

- **Inappropriate fire regimes** that occur during the reproductive phase of *Adenanthos eyrei* (i.e. flowering, pollination, seed development and seed dispersal) may result in poor or no seed production. Frequent fire that occurs before plants have reached reproductive maturity may result in poor recruitment as plants need to build up a seed bank.
- **Access tracks.** One of the tracks in the Nature Reserve runs directly into the population posing a threat from direct vehicle damage. It also provides a vector for transferring *Phytophthora cinnamomi*.
- **Disease** is a possible threat to the species. It has not been confirmed that *Adenanthos eyrei* is affected by *Phytophthora* but other species of *Adenanthos* are prone to the pathogen. Due to limited information on its affect on *A. eyrei* it should be considered as a possible threat until it is confirmed otherwise.
- **Wind Erosion;** the population is situated on a sand dune on the edge of the Great Sandy Bight and is highly susceptible to impacts from wind erosion, particularly following fire. The presence of vehicle tracks in the area exacerbates the problems of erosion.

**Table 2. Summary of population information and threats**

Pop no & location	Land status	Year/No of plants	Condit ion	Threats
1 Nuytsland Nature Reserve, 200 m East of Toolinna Cove	DEC Nature Reserve	2004 200	Healthy	Inappropriate fire, access tracks, disease, wind erosion

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

The habitat critical to the survival of *Adenanthos eyrei* comprises the area of occupancy of the known population, similar habitat surrounding the known population 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 the species is listed as Endangered, it is considered that all known habitat for the wild population and any future translocated populations it habitat critical to its survival, and that all wild and translocated populations are important populations.

## Benefits to other species/ecological communities

*Adenanthos eyrei* occurs with *Banksia media* and several Priority flora species including *Goodenia varia*, *Eucalyptus surgens*, *Opercularia loganioides* and *Galium migrans*. Recovery actions implemented to improve the quality or security of the habitat of *Adenanthos eyrei* will also improve the status of associated species and the vegetation type in which these species occur.

## International Obligations

This plan is fully consistent with the aims and recommendations of the Convention on Biological Diversity, ratified by Australia in 1993, and will assist in implementing Australia's responsibilities under that convention. This species is not specifically listed under any international treaty and therefore does not affect Australia's obligations under any other international agreements.

## Role and interests of indigenous people

## Interim Recovery Plan for *Adenanthos eyrei*

According to the Department of Indigenous Affairs Aboriginal Heritage Sites Register no sites are known at or near the *Adenanthos eyrei* population. However, the involvement of the Indigenous community is currently being sought to determine whether there are any issues or interests identified in the Plan. If no role is identified for indigenous communities in the recovery of this species, opportunities may exist through cultural interpretation and awareness of the species.

The advice of the South West Aboriginal Land and Sea Council (SWALSC) and Department of Indigenous Affairs is being sought to assist in the identification of potential indigenous management responsibilities for land occupied by threatened species, or groups with a cultural connection to land that is important for the species' conservation.

Continued liaison between DEC and the indigenous community will identify areas in which collaboration will assist implementation of recovery actions.

### **Affected interests**

The known population is on Crown land managed by the Department of Environment and Conservation (DEC).

### **Social and economic impacts**

The implementation of this recovery plan has minimal social and economic impact as all populations are on DEC managed land.

### **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 habitat critical to the survival of *Adenanthos eyrei* 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.

### **Evaluation of the Plans Performance**

DEC in conjunction with the Esperance District Threatened Flora Recovery Team (EDTFRT), will evaluate the performance of this IRP. In addition to annual reporting on progress with listed actions and comparison against 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**

### **Objective**

The objective of this IRP 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**

**Criteria for success:** The number of populations have increased and/or individuals within the known population have increased by ten percent or more over the 5 year term of this plan.

**Criteria for failure:** The known population becomes extinct or individuals within the known population have decreased by ten percent or more over the 5 year term of this plan.

## **3. RECOVERY ACTIONS**

### **Existing and completed recovery actions**

## Interim Recovery Plan for *Adenanthos eyrei*

Staff at DEC's Esperance District are aware of the Declared Rare status of *Adenanthos eyrei* and the legal responsibility to protect it. Populations are monitored as regularly as practicable, and population numbers, condition and threats are recorded.

A taxonomic review is currently being carried out by DEC's Science Division to determine if *Adenanthos eyrei* is a distinct species or a form of *A. forrestii*.

### Future recovery actions

The following recovery actions are roughly in order of descending priority; however this should not constrain addressing any action if funding is available and the opportunity arises.

#### 1. Coordinate recovery actions

The Esperance District Threatened Flora Recovery Team (EDTFRT) is coordinating recovery actions for *Adenanthos eyrei* and will include information on progress in their annual report to DEC's Corporate Executive and funding bodies.

**Action:** Coordinate recovery actions  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$1,500 per year.

#### 2. Complete a taxonomic review

Due to the similarity of *Adenanthos eyrei* to *Adenanthos forrestii*, a taxonomic review is currently being carried out. This needs to be completed and a report prepared.

**Action:** Complete a taxonomic review  
**Responsibility:** DEC (Esperance District, Science Division) through the EDTFRT  
**Cost:** \$4000 in the first year.

#### 3. Conduct DNA analysis

If the above review (recovery action 2) fails to determine the taxonomic status of *Adenanthos eyrei* a DNA analysis will be conducted.

**Action:** Conduct DNA analysis  
**Responsibility:** DEC (Esperance District, Science Division) through the EDTFRT  
**Cost:** \$4,500 in the second year.

#### 4. Re-assess access track

A track which passes into the population may need to be closed to prevent accidental vehicular damage to the population and associated habitat, to prevent the possible introduction of *Phytophthora* and to reduce the impact of wind erosion.

**Action:** Re-assess access track and re-align or close as appropriate  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$1000 in the first year.

#### 5. Monitor population

Monitoring of factors such as weed encroachment, habitat degradation, sub-population stability (expanding or declining), seed production, recruitment and longevity is required. The population will be inspected annually.

**Action:** Monitor population  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$2,500 per year



## 6. Conduct further surveys

Surveys supervised by DEC staff, with assistance of volunteers, should be conducted during the species' flowering period. Due to the remote location of the species, surveys have been limited in the past and are required to further investigate its range and habitat requirements. This can be done in conjunction with recovery action 5.

**Action:** Conduct further surveys  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$2,600 after the second year

## 7. Map habitat critical to the survival of *Adenanthos eyrei*

Spatial data relating to habitat that is critical to the survival of *Adenanthos eyrei* needs to be determined. Although this habitat is described in Section 1, it has not yet been fully mapped and this will be redressed under this action. If any additional populations are located habitat critical to their survival will also be determined and mapped.

**Action:** Map habitat critical to the survival of *Adenanthos eyrei*  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$800 in the second year.

## 8. Seed Collection

Seed collection will be ongoing to obtain seed from as wide a range of individuals as possible.

**Action:** Collect seed from *Adenanthos eyrei*  
**Responsibility:** DEC (Esperance District, Science Division) through the EDTFRT  
**Cost:** \$9,300 per year (for three years)

## 9. Collect cuttings for cultivation

Cuttings will be taken from as wide a range of individuals as possible, so they can be cultivated for use in future translocations.

**Action:** Collect cuttings of *Adenanthos eyrei*  
**Responsibility:** DEC (Esperance District, Science Division) through the EDTFRT  
**Cost:** \$5,800 in the third year.

## 10. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Adenanthos eyrei* will provide a better scientific basis for its management in the wild and will include:

- Defining the habitat requirements of the species
- Determining the reproductive methodology, phenology and seasonal growth of the species.
- Investigating the population genetic structure, levels of genetic diversity and minimum viable population size.
- Longevity of plants, and time taken to reach maturity.

**Action:** Obtain biological and ecological information  
**Responsibility:** DEC (Esperance District, Science Division) through the EDTFRT  
**Cost:** \$500 for each year.

## 11. Promote awareness

## Interim Recovery Plan for *Adenanthos eyrei*

As this species occurs in a remote area and is relatively poorly known, promoting an awareness of it may lead to the discovery of new populations.

**Action:** Promote awareness  
**Responsibility:** DEC (Esperance District) through the EDTFRT  
**Cost:** \$500 in the first year,

### 12. Review the IRP and assess the need for further recovery actions

If *Adenanthos eyrei* is still ranked as Endangered at the end 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:** DEC (Species and Communities Branch, Esperance District) through the EDTFRT  
**Cost:** \$4,000 in the fifth year (if required).

**Table 3. Summary of recovery actions**

Recovery Actions	Priority	Responsibility	Completion date
Coordinate recovery actions	High	DEC (Esperance District) through EDTFRT	Ongoing
Complete a taxonomic review		DEC (Science Division) through EDTFRT	2008
Conduct DNA analysis	High	DEC (Science Division) through EDTFRT	Subject to results of taxonomic review
Re-assess access track	Medium	DEC (Esperance District) through EDTFRT	2008
Monitor population	Medium	DEC (Esperance District) through the EDTFRT	Ongoing. Annually if possible
Conduct further surveys	Medium	DEC (Esperance District) through the EDTFRT	Annually
Map habitat critical to the survival of <i>Adenanthos eyrei</i>	Medium	DEC (Esperance District) through the EDTFRT	2008
Collect Seed	Medium	DEC (Esperance District, Science Division) through EDTFRT	2010
Collect cuttings for cultivation	Medium	DEC (Esperance District, Science Division) through EDTFRT	2008
Obtain biological and ecological information	Medium	DEC (Esperance District, Science Division) through the EDTFRT	Ongoing
Promote awareness	Low	DEC (Esperance District) through the EDTFRT	2008
Review the IRP and assess the need for further recovery actions	Low	DEC (Esperance District, Species and Communities Branch) through the EDTFRT	2012

## 4. TERM OF PLAN

This IRP will operate from March 2007 to February 2012 but will remain in force until withdrawn or replaced. If the species is still ranked EN after five years, this IRP will be reviewed and, if necessary, further recovery actions put in place.

## 5. REFERENCES

- Brown, A., Thomson-Dans, C. and Marchant, N. (Eds). (1998) *Western Australia's Threatened Flora*. Department of Conservation and Land Management, Perth, Western Australia.
- CALM (1992). Policy Statement No. 9 *Conservation of Threatened Flora in the Wild*. Department of Conservation and Land Management, Perth, Western Australia.
- CALM (1992). Policy Statement No. 44 *Wildlife Management Programs* Department of Conservation and Land Management, Perth, Western Australia.
- CALM (1994). Policy Statement No. 50 *Setting Priorities for the Conservation of Western Australia's Threatened Flora and Fauna*. Department of Conservation and Land Management, Perth, Western Australia.
- CALM (1995). Policy Statement No. 29 *Translocation of Threatened Flora and Fauna* Department of Conservation and Land Management, Perth, Western Australia.

DEC (2007) *Western Australian Herbarium FloraBase* – Information on the Western Australian Flora.

Department of Environment and Conservation, Perth, Western Australia.

Nelson, E.C. (1978). A taxonomic review of the genus *Adenanthos* (Proteaceae). *Brunonia*, 1:303-406

## 6. TAXONOMIC DESCRIPTION

**Nelson, E.C. (1978). A taxonomic review of the genus *Adenanthos* (Proteaceae). *Brunonia*, 1:303-406**

*Adenanthos eyrei* is an erect, diffuse shrub, to 1 m tall, without a lignotuber. Branches erect or ascending, the older branches glabrous with a very warty bark, young branches with short appressed hairs. Leaves divided into three segments, rarely entire, petiolate, to 15 mm long, with very short appressed hairs: segments obovate-lanceolate, laminar, to 10 mm long, c. 3mm broad, margins entire, apex obtuse with very prominent apical gland on dorsal surface, occasionally  $\pm$  uncinata. Inflorescence solitary, axillary and terminal; peduncle c. 4 mm long, with short appressed hairs, with two basal bracts, ovate, c. 1 mm long, villose on exterior, with short appressed hairs, glabrous interiorly; margins entire, ciliate; apex obtuse; with about two similar bracts at mid-point of peduncle; c. 1.5 mm long; involucral bracts ten or more, innermost largest, triangular-ovate, to 6 mm long, with short appressed hairs or glabrous exteriorly, glabrous interiorly, margins entire, ciliate, apex obtuse. Flowers dark crimson; in bud perianth tube very slightly swollen at base, distal portion rectangular in cross-section, limb acute. Tepals c. 25 mm long, with short hairs on exterior, glabrous interiorly, dorsal tepal broadest above mid-point; claw c. 22 mm long; lamina c. 3mm long, bearded inside behind anther. Anthers c. 3 mm long. Nectaries broadly triangular, c. 2 mm long, glabrous, apex obtuse. Ovary c. 1mm long, glabrous; style glabrous, c. 35 mm long; style-end c. 2 mm long. Fruit and seedlings not seen.

*Distribution:* Western Australia; known only from Toolinna sand patch, south of Caiguna on coast of Great Australian Bight (Nelson 1974b).