

INTERIM RECOVERY PLAN NO. 62

# DWELLINGUP SYNAPHEA

*(SYNAPHEA STENOLOBA)*

## INTERIM RECOVERY PLAN

**2000-2003**

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Photo: John Koch

March 2000

Department of Conservation and Land Management  
Western Australian Threatened Species and Communities Unit (WATSCU)  
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Natural Heritage Trust  
*Helping Communities Helping Australia*



Department of Conservation and Land  
Management



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

This Interim Recovery Plan will operate from March 2000 to February 2003 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked Critically Endangered, this IRP will be replaced by a full Recovery Plan after three years.

This IRP was approved by the Director of Nature Conservation on 11 May 2000. 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 March 2000.

**SUMMARY**

<b>Scientific Name:</b>	<i>Synaphea stenoloba</i>	<b>Common Name:</b>	Dwellingup synaphea
<b>Family:</b>	Proteaceae	<b>Flowering Period:</b>	August to October
<b>CALM Region:</b>	Swan	<b>CALM District:</b>	Dwellingup
<b>Shire:</b>	Murray		
<b>Recovery Team:</b>	Swan Region Threatened Flora and Communities Recovery Team (SRTFCRT)		

**Illustrations and/or further information** George, A.S. (1995). *Synaphea*. *Flora of Australia* 16: 271-316; Davis, R (1998), Survey of the Priority 1 Flora *Synaphea stenoloba* (Proteaceae), report for J. Koch, ALCOA of Australia Limited; 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:** *Synaphea stenoloba* was declared as Rare Flora and ranked as Critically Endangered (CR) in December 1999. It currently meets World Conservation Union (IUCN) Red List category 'CR' under criterion B1 + 2c (IUCN 1994), as the populations are severely fragmented with continued decline in the extent and quality of the habitat. The main threats are weeds; track, road and rail maintenance; mining operations and increased inundation.

**Habitat requirements:** *Synaphea stenoloba* is restricted to a six kilometre range near Pinjarra. The species grows most commonly in swampy loam in depressions that are occasionally inundated. *Synaphea stenoloba* is normally associated with wetland heath to 1m high, with emergent Nuytsias. The woodland habitat of Population 3 is quite different to the habitat associated with the other populations, however.

**Critical habitat:** The area of occupancy of the known populations; the local catchment for the surface waters that provide the wetland habitat of the species; areas of similar habitat ie. remnant vegetation on swampy loam in depressions that are occasionally inundated, or woodland habitat on drier soils, that occur within 200 metres of known populations; corridors of remnant vegetation that link populations; additional occurrences of similar habitat ie. wetland heath with emergent Nuytsias on swampy loam in depressions that are occasionally inundated, or woodland habitat on drier soils.

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

1. Propagation and seed set trials.
2. Chemical weed control at Population 4.
3. Survey for additional populations.
4. Taxonomic revision and genetic studies to establish the taxon's distinctiveness.
5. Initial stages of cryostorage at Botanic Gardens and Parks Authority (BPGA).
6. Regularly monitoring of all populations.
7. Overseeing of implementation of this IRP by the SRTFCRT.

**IRP Objective:** The objective of this Interim Recovery Plan (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.

**Recovery Criteria**

**Criterion for success:** The number of individuals within populations and/or the number of populations have increased.

**Criterion for failure:** The number of individuals within populations and/or the number of populations have decreased.

**Recovery actions****Future recovery actions**

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|---|---|
| 1. Coordinate recovery actions                    | 9. Develop and implement a fire management strategy |
| 2. Collect seed and cutting material              |   |
| 3. Install DRF markers                            | 10. Promote awareness                               |
| 4. Liaise with relevant land managers             | 11. Obtain biological and ecological information    |
| 5. Undertake weed control                         | 12. Develop Translocation Proposal                  |
| 6. Confirm species status through genetic studies | 13. Implement and monitor translocation             |
| 7. Monitor populations                            | 14. Develop full Recovery Plan                      |
| 8. Conduct further surveys                        |   |

## 1. BACKGROUND

### History

*Synaphea stenoloba* was first described last century. At that time the taxon encompassed another species, *Synaphea petiolaris*. A. S. George separated *Synaphea stenoloba* from *Synaphea petiolaris* as part of a review of the genus in 1995. This review also recognised the new species *Synaphea odocoileops*. The genus is current undergoing a further review by R. Butcher. This study has recognised new species including *Synaphea* sp. Fairbridge Farm, and *Synaphea* sp. Shanns Road.

D. Papenfus completed a survey for *Synaphea stenoloba* in 1997 and this confirmed several of the known populations. The survey also indicated that the taxon did not occur in several areas where it had historically been recorded. In 1998 R. Davis completed a survey for ALCOA that clarified several of the anomalies with respect to historical locations and similar species once recognised as *Synaphea stenoloba*. This survey also reconfirmed the currently known populations.

### Description

*Synaphea stenoloba* is a compact shrub to 50 cm high. The leaves are 5-40 cm long and tripinnate. The inflorescences are yellow and borne above the leaves to a height of 15 cm. Flowers can be seen in August but occur mainly from September to October (George 1995).

There are many *Synapheas* that look very similar to *Synaphea stenoloba* and that occur very close to known populations of this species. These species are *Synaphea gracillima*, *Synaphea petiolaris*, *Synaphea* sp. Fairbridge Farm and a hybrid between *Synaphea gracillima* and *Synaphea petiolaris*. There are features that distinguish these species from *Synaphea stenoloba*, as follows:

1. The stigma is half moon shaped on all the similar taxa.
2. There are no hairs at all on the flowers of *Synaphea stenoloba*, whereas the flowers of *Synaphea* sp. Fairbridge Farm have hairs on the outside of the tepal.
3. The leaf lobes on *Synaphea stenoloba* are variable but are generally straight, long and acute. The divisions are irregular, whereas those of *Synaphea* sp. Fairbridge Farm have symmetrical divisions.

The rail line population (Population 3) of *Synaphea stenoloba* has shorter, more folded leaves than plants in other populations. This is thought to be associated with differences in the habitat as this site is drier and has a slightly different soil type and associated vegetation (personal communication, R. Butcher<sup>1</sup>).

Another species which was previously thought to be *S. stenoloba* is *S. odocoileops*. In a recent taxonomic review by R. Butcher, these two species were confirmed as distinct (Davis 1998).

### Distribution and habitat

*Synaphea stenoloba* is known from four populations with a six kilometre range near Pinjarra. Recent survey has confirmed that the species is endemic to the Pinjarra area (Davis 1998). Several specimens in the Yarloop and Boyanup areas were thought to be this taxon, but are now considered to be the closely allied *Synaphea* aff. *stenoloba* (Davis 1998).

Currently, there are eighteen collections of *Synaphea stenoloba* held in the WA Herbarium. Eleven of these are from currently known populations, three from extinct populations or have vague location details, and two are now considered to be *Synaphea* aff. *stenoloba*. The last two specimens warrant further investigation and are from populations located near Wagerup (specimen number: Perth 04470745) and Serpentine (specimen number: Perth 05055911). Both require further clarification and urgent resurvey (Western Australian Herbarium 1998).

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<sup>1</sup> Ryonen Butcher, PhD student, Botany Department, University of Western Australia

Typically *Synaphea stenoloba* occurs on loamy soils in low lying areas that are occasionally inundated. Associated vegetation is generally swampy heath to 1m high with scattered emergent *Nuytsia*. Field evidence suggests that the condition of the plants deteriorates following inundation of the habitat (personal communication J. Koch<sup>2</sup>). The woodland habitat and drier soils associated with the population along the rail line (Population 3) differs from the habitat of other populations. There may also be hybrids with *Synaphea petiolaris* at this site (personal communication R. Butcher).

### Critical Habitat

Critical habitat is habitat identified as being critical to the survival of a listed threatened species or listed threatened ecological community. Habitat is defined as 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 that the potential to be reintroduced. (sections 207A and 528 of Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)).

The critical habitat for *Synaphea stenoloba* comprises:

- the area of occupancy of the known populations,
- the local catchment for the surface waters that provide the wetland habitat of the species (the species occurs in seasonal wetlands and is dependent on maintenance of local surface hydrology),
- areas of similar habitat, ie. remnant vegetation on swampy loam in depressions that are occasionally inundated, or woodland habitat on drier soils, that occur within 200 metres of known populations; (these provide potential habitat for natural range extension),
- corridors of remnant vegetation that link populations (these are necessary to allow pollinators to move between populations and are usually road and rail verges),
- additional occurrences of similar habitat, ie. wetland heath with emergent *Nuytsias* on swampy loam in depressions that are occasionally inundated, or woodland habitat on drier soils (this represents possible translocation sites).

### Biology and ecology

A cool fire in the habitat can result in established plants resprouting from rootstock, but not from seed. The species is thought to be a mild disturbance opportunist, as it restrouts from the long tap root rather than regenerating from seed. Excessive disturbance may kill adult plants.

*Synaphea stenoloba* is either not susceptible or can be mildly susceptible to dieback disease caused by the plant pathogen *Phytophthora cinnamomi*. Some fungus on leaves is common for the genus, but it is not known if this effects photosynthesis.

Insect galling of fruit and flowers is common and may affect the species' ability to reproduce. Species of the genus *Synaphea* are also known to be susceptible to insect scale.

Recent studies by ALCOA have shown that the populations that occur on their land have a very low seed set and seed viability. There is also some concern about the distinctiveness of this species as it appears to be highly variable. This raises some doubt about the true status of the taxon (personal communication J. Koch) and further investigation is therefore required.

### Threats

*Synaphea stenoloba* was declared as Rare Flora and ranked in December 1999 as Critically Endangered ('CR'). It currently meets World Conservation Union (IUCN) Red List category 'CR' under criterion B1 + 2c (IUCN 1994), as the populations are severely fragmented with continued decline in the area and quality of

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<sup>2</sup> John Koch, Environmental Officer, ALCOA of Australia Ltd

habitat. The main threats are weeds; track, road and rail maintenance; mining operations and increased inundation.

- **Weeds invasion** continues to threaten Populations 1, 2 and 4, and to a lesser extent Population 3. Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also increase the fire hazard due to the easy ignition of high fuel loads, which are produced annually by many grass weed species.
- **Road, track and firebreak maintenance activities** threaten populations and their habitat. Threats include actions such as grading road reserves, spraying of chemicals, construction of drainage channels and mowing the roadside vegetation to improve visibility. These disturbance events also often encourage weed invasion into adjacent habitat, as well as causing damage to actual plants. Relevant authorities need to be informed of the location of populations so that appropriate protective measures can be implemented. Adjacent landowners should also be informed of the location of populations to prevent possible damage due to grazing, crop maintenance, firebreak maintenance or other activities.
- **Increased inundation and waterlogging** as a consequence of changes to drainage with road building are likely to impact Subpopulations 1a-1d and possibly others as the species has been observed to deteriorate following flooding. Long-term changes in the flooding regime are therefore likely to impact on the viability of populations.
- **Future mining operations** threaten some populations, and have the potential to severely impact or destroy the habitat.

**Summary of population information and threats**

Pop. No & Location	Land Status	Year / number of plants	Condition	Threats
1a Highway, north east of Pinjarra	Main Roads WA road reserve	Oct 1993 - 135* Oct 1998 - 142**	Poor	Weed invasion Road maintenance Trampling Increased inundation
1b Private road verge, north east of Pinjarra	Private	Oct 1993 - 135* Oct 1998 - 142**	Good	Weed invasion Road maintenance Increased inundation
1c Remnant, north east of Pinjarra	Private	Aug 1993 - 6 Oct 1998 - 142**	Good	Road maintenance Weed invasion Increased inundation
1d Pipeline, north east of Pinjarra	Private	Oct 1997 - 25 Oct 1998 - 142**	Good	Weed invasion Road maintenance Increased inundation
2a Highway, north east of Pinjarra	Private	Aug 1993 - 6 Oct 1998 - 142**	Good	Weed invasion Road maintenance Mining operations
2b Highway, north east of Pinjarra	Private	Aug 1993 - 6 Oct 1998 - 142**	Good	Weed invasion Road maintenance Mining operations
3a Rail line, south east of Pinjarra	Westrail railway reserve	Dec 1997 - 15 plus Oct 1998 - 50	Excellent	Weed invasion Rail maintenance
3b Rail line, south east of Pinjarra	Westrail railway reserve	Oct 1998 - 40	Good	Rail maintenance Weed invasion Mining operations
4 Farm and road reserve, north east of Pinjarra	Shire road reserve / private	Sep 1998 - 50-100	Good	Weed invasion Mining operations Road maintenance

\*=combined total of Subpopulations 1a and 1b; \*\* =combined total of Populations 1 and 2.

**Guide for decision-makers**

Section 1 provides details of current and possible future threats. Developments in the immediate vicinity of any of the populations or within the defined critical habitat of *Synaphea stenoloba* require assessment. No developments should be approved unless the proponents can demonstrate that they will have no significant impact on the species, its habitat or potential habitat, or on the local surface hydrology.

**2. RECOVERY OBJECTIVE AND CRITERIA****Objective**

The objective of this Interim Recovery Plan (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.

**Criterion for success:** The number of individuals within populations and/or the number of populations have increased.

**Criterion for failure:** The number of individuals within populations and/or the number of populations have decreased.

**3. RECOVERY ACTIONS****Existing recovery actions**

ALCOA completed seed set and propagation trials on *Synaphea stenoloba* prior to the species being declared as Rare Flora. This research indicated that the species is not easy to propagate, that seed set is low and there is minimal or no viable seed produced by the populations on ALCOA land. A small quantity of seed has

been collected from Population 4 by the Threatened Flora Seed Centre (TFSC), but the viability of this seed is yet to be determined.

Weed control using herbicides was conducted on Population 4 prior to the species being declared as Rare Flora (personal communication J. Koch).

R. Davis conducted an extensive survey for this species for ALCOA, however, no additional populations were located.

R. Butcher is currently revising the genus *Synaphea*, and has completed the reclassification of this species. Work is continuing on other species in the genus.

A genetic study was conducted as an Honours project by J. Mahony at the University of Western Australia. Each population of *Synaphea stenoloba* was found to be genetically distinct. This study has also confirmed the separation of *Synaphea* sp. Fairbridge Farm as a distinct species. Further research is needed, however, to confirm the status of *Synaphea stenoloba* as a single species. During this project material was collected, and the first stages of micro-propagation and cryostorage completed. The initial results have been positive, however, it is yet to be determined if sufficient material can be propagated to conduct a translocation (personal communication. E. Bunn<sup>3</sup>).

CALM staff from the Dwellingup District office regularly monitor the populations.

The SRTFCRT is overseeing the implementation of this IRP and will include information on progress in its annual report to CALM's Corporate Executive and funding bodies.

### **Future recovery actions**

Where recovery actions are implemented on lands other than those managed by CALM, permission has been or will be sought from the appropriate land managers prior to actions being undertaken.

#### **1. Coordinate recovery actions**

The SRTFCRT will continue to oversee the implementation of the recovery actions for *Synaphea stenoloba* and will include information on progress in its annual report to CALM's Corporate Executive and funding bodies.

**Action:** Coordinate recovery actions  
**Responsibility:** CALM (Dwellingup District) through the SRTFCRT  
**Cost:** \$3,000 per year

#### **2. Collect seed and cutting material**

Some seed has been collected from this species, however, additional collections will be made from other populations to capture a larger proportion of the genetic diversity. Seed collection may be required over several years due the low seed set already observed in the field. Cuttings will also be collected to establish a living collection of genetic material at the BGPA.

**Action:** Collect seed and cutting material  
**Responsibility:** CALM (Dwellingup District, TFSC) and BGPA, through the SRTFCRT  
**Cost:** \$2,300 for seed collection and processing for Years 1 and 2; \$2,100 for collection and processing of cuttings in Year 1

#### **3. Install DRF markers**

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<sup>3</sup> Eric Bunn, Scientist, BGPA



DRF markers are required and will be placed at all populations of this species. DRF markers are normally only placed on road and track populations, however, due to the nature of possible future land uses and the difficulty in locating this species when not in flower, DRF markers will be placed at all populations to help to relocate and protect the populations in future.

**Action:** Install DRF markers  
**Responsibility:** CALM (Dwellingup District) through the SRTFCRT  
**Cost:** \$100 once

#### 4. Liaise with relevant land managers

Staff from CALM's Dwellingup District will continue to liaise with ALCOA, Main Roads WA, the Shire, other relevant land managers, and the owners of lands adjacent to populations to ensure the populations are not accidentally damaged or destroyed and that the impacts of mining are minimised.

**Action:** Liaise with relevant land managers  
**Responsibility:** CALM (Dwellingup District) through the SRTFCRT  
**Cost:** \$600 per year

#### 5. Undertake weed control

Weeds continue to threaten Populations 1, 2 and 4, and to a lesser extent Population 3. Herbicide control of weeds is required and the following actions will be implemented:

1. Determine which weeds are present.
2. Select appropriate herbicides .
3. Control invasive weeds by hand removal and/or spot spraying around the *Synaphea stenoloba* plants when weeds first emerge.
4. Monitor the success of the treatment, and the tolerance of *Synaphea stenoloba* and associated native plant species to the treatment.
5. Report on the method and success of the threatment, and effect on *Synaphea stenoloba* plants and associated species to CALM's Wildlife Branch and SRTFCRT.

**Action:** Undertake weed control  
**Responsibility:** CALM (Dwellingup District, CALMScience) through the SRTFCRT  
**Cost:** \$1,800 per year

#### 6. Confirm species status through genetic studies

There is some contention as to the speciation within the genus *Synaphea*. Further research is needed to confirm the status of *Synaphea stenoloba* as a single species, and the genetic distinctiveness of the populations of *Synaphea stenoloba* from species thought to be similar and that occur in the same area, in particular, *Synaphea* aff. *stenoloba*.

**Action:** Confirm species status through genetic studies  
**Responsibility:** CALM (CALMScience) through SRTFCRT  
**Cost:** \$4,100 in Year 1

#### 7. Monitor populations

Monitoring of factors such as weed invasion, habitat degradation, hydrology and population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity is essential. The populations will be inspected annually and an accurate location recorded.

The following specific monitoring is required at each population:

Population	Monitoring action
1a	Weed invasion and threats associated with the adjacent main road including any road works and trampling.
1b-d	Weed encroachment and impact of mining operations. Period of inundation and depth of surface water.
2a-b	Weed encroachment, impact of mining operations and road maintenance.
3a-b	Rail maintenance, weed encroachment and impact of mining operations.
4	Weeds may become a threat at the site. Monitor weeds, trampling and road maintenance and determine requirement for access control.

**Action:** Monitor populations  
**Responsibility:** CALM (Dwellingup District) through the SRTFCRT  
**Cost:** \$500 per year

## 8. Conduct further surveys

Further surveys will be conducted during the species' flowering period (August to October). Members of community groups such as local Naturalists Clubs and Wildflower Societies will be encouraged to be involved in surveys supervised by CALM staff.

**Action:** Conduct further surveys  
**Responsibility:** CALM (Dwellingup District, CALMScience) through the SRTFCRT  
**Cost:** \$900 per year

## 9. Develop and implement a fire management strategy

A mild fire is thought to result in regeneration of adult plants of the species, with little regeneration likely from seed. However, frequent fire may prevent the accumulation of sufficient soil stored seed, or reduce the vigour of the adult plants. The results of research (see recovery action 11) will help to determine appropriate fire management measures.

**Action:** Develop and implement a fire management strategy  
**Responsibility:** CALM (Dwellingup District) through the SRTFCRT  
**Cost:** \$1,100 in Year 1, then \$500 for monitoring and maintenance in Years 2 and 3

## 10. Promote awareness

The importance of biodiversity conservation and the protection of the Critically Endangered *Synaphea stenoloba* will be promoted to the public. An information sheet that includes a description of the plant, its habitat type, threats and management actions, and photos will be produced. Formal links with local naturalist groups and interested individuals will also be encouraged.

**Action:** Promote awareness  
**Responsibility:** CALM (Dwellingup District, WATSCU, and Corporate Relations) through the SRTFCRT  
**Cost:** \$1,000 once

## 11. Obtain biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Synaphea stenoloba* in the wild. This species is thought to be a mild disturbance opportunist, however, field evidence suggests that regeneration is from root-stock rather than soil held seed. Trials will be conducted to determine the species response to fire and disturbance, in conjunction with seed bank trials. This will provide a better understanding of the regeneration and germination requirements of the species.

Overall investigations will ideally include:

1. Study of the soil seed bank dynamics and the role of various factors including disturbance, competition, rainfall and grazing in recruitment and seedling survival.
2. Determination of reproductive strategies, phenology and seasonal growth.
3. Investigation of the mating system and pollination biology.
4. Investigation of population genetic structure, levels of genetic diversity and minimum viable population size.
5. Investigation of the impacts of dieback disease and control techniques on *Synaphea stenoloba* and its habitat.
6. The impact of changes in flooding regime in the habitat.

**Action:** Obtain biological and ecological information  
**Responsibility:** CALM (CALMScience, Dwellingup District) through the SRTFCRT  
**Cost:** \$14,900 per year for three years

## 12. Develop translocation proposal

Translocation is essential for the conservation of *Synaphea stenoloba*, as the total number of extant plants is low, and the only known populations are not secure from threats including weeds, road and rail maintenance and mining operations. Although translocations are generally undertaken under full Recovery Plans, it is possible to develop a translocation proposal and start propagating plants within the time frame of an IRP. This will be coordinated by the SRTFCRT. Information on the translocation of threatened animals and plants in the wild is provided in CALM Policy Statement No. 29 Translocation of Threatened Flora and Fauna. All translocation proposals require endorsement by the Director of Nature Conservation. A translocation proposal will be developed for this species.

**Action:** Develop translocation proposal  
**Responsibility:** CALM (CALMScience) through the SRTFCRT  
**Cost:** \$2,600 in Year 1

## 13. Implement and monitor translocation

Plants will be translocated into secure habitat and monitored. Monitoring the success of experimental translocations is essential and will occur over the flowering period of this species.

**Action:** Implement and monitor translocation  
**Responsibility:** CALM (CALMScience, Dwellingup District) through the SRTFCRT  
**Cost:** \$11,700 in Year 3 for translocation, plus \$4,800 in Year 3 for monitoring

## 14. Write full Recovery Plan

At the end of the three year term of this Interim Recovery Plan, the need for further recovery will be assessed. If the species is still ranked Critically Endangered, a full Recovery Plan will be developed to describe action required for long-term maintenance. A Recovery Plan will be prepared with the benefit of knowledge gained over the time frame of this Interim Recovery Plan.

**Action:** Write full Recovery Plan  
**Responsibility:** CALM (WATSCU, Dwellingup District) through the SRTFCRT  
**Cost:** \$18,100 in Year 3

## 4. TERM OF PLAN

This Interim Recovery Plan will operate from March 2000 to February 2003 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still ranked Critically Endangered, this IRP will be replaced by a full Recovery Plan after three years.

## 5. ACKNOWLEDGMENTS

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

John Koch	Environmental Officer, ALCOA
Ryonen Butcher	PhD Student, Botany Department, University of Western Australia
Rob Davis	Contract Consultant, CALM's WA Herbarium

Thanks also to the staff of the WA Herbarium for providing access to Herbarium databases and specimen information, and CALM's Wildlife Branch for their extensive assistance.

## 6. REFERENCES

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## 7. TAXONOMIC DESCRIPTION

### *Synaphea stenoloba*

George, A.S. (1995). *Synaphea*. *Flora of Australia* 16: 271-316.

Stems many, to 3 cm long, pubescent. Leaves tripinnatifid, multiplanar; each primary lobe twice tripartite; petiole 5-27 cm long, glabrous except pubescent sheath; lamina 5 –18 cm long, 2.5-9 cm wide; ultimate lobes erect, linear, 1-2 mm wide, acute, concave, shallowly reticulate, glabrous (not seen young). Inflorescence much exceeding foliage; spikes 10-15 cm long; flowers crowded; peduncle simple or sparsely branched, glabrous but puberulous towards base, 10-18 cm long; rachis very sparsely puberulous; bracts ovate, obtuse, spreading, 1-1.5 mm long, glabrous except ciliate margins. Perianth opening  $\pm$  widely, glabrous; adaxial tepal 4.5-5 mm long, 2 mm wide; abaxial tepal 3.5 mm long. Stigma ovate, lobed to less than a third, 1 mm long, 1-1.2 mm wide,  $\pm$ convex; ovary pubescent. Fruit obovoid, 6 mm long, shortly pilose.

Known from several small populations at a single locality near Pinjarra, WA. Grows on winter-damp sandy flats with low heath sedgeland. Flowers Sept. – Oct.

