INTERIM RECOVERY PLAN NO. 145

SMALL-FLOWERED SNOTTYGOBBLE

(*PERSONIA MICRANTHERA*)

INTERIM RECOVERY PLAN

2003-2008

Gillian Stack & Andrew Brown

Photograph: S. Barrett

June 2003

Department of Conservation and Land Management
Western Australian Threatened Species and Communities Unit (WATSCU)
PO Box 51, Wanneroo, WA 6946

Natural Heritage Trust
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Government of Western Australia

DEPARTMENT OF Conservation AND LAND MANAGEMENT
Conserving the nature of WA

FOREWORD

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (DCLM) 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.

DCLM 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Plan, which replaces IRP 46 (1999-2002), will operate from June 2003 to May 2008 but will remain in force until withdrawn or replaced.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 reviewed after five years and the need for a full Recovery Plan will be assessed.

This IRP was approved by the Director of Nature Conservation 21 September 2003. The provision of funds identified in this Interim Recovery Plan is dependent on budgetary and other constraints affecting DCLM, as well as the need to address other priorities.

Information in this IRP was accurate at June 2003.

SUMMARY

Scientific Name:	*Persoonia micranthera*	**Common Name:**	Small-flowered Snottygobble
Family:	Proteaceae	**Flowering Period:**	February - March
Dept Region:	South Coast	**Dept District:**	Albany Work Centre
Shire:	Gnowangerup	**Recovery Team:**	Albany District Threatened Flora Recovery Team (ADTFRT)

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; Robinson, C. J. and Coates, D. J. (1995). *Declared Rare and Poorly Known Flora in the Albany District*. Western Australian Wildlife Management Program No. 20. Department of Conservation and Land Management, Western Australia; DCLM (1999). *Stirling Range and Porongurup National Parks: Management Plan.* Department of Conservation and Land Management, Western Australia; Weston, P. H. (1994) The Western Australian Species of subtribe *Persooniiae* (*Proteaceae*: *Persooniodeae*: *Persoonieae*), *Telopea*, 6(1): 116-117.

Current status: *Persoonia micranthera* was declared as Rare Flora in November 1997 and ranked as Critically Endangered in November 1998. It currently meets World Conservation Union (IUCN, 2000) Red List Category 'CR' under criteria B1ab(i,ii,iii,v)+B2ab(i,ii,iii,v), C2a(i) and D, due to the extremely small number of adult plants, the fragmented nature of the populations, a decline in habitat quality due to fire and *Phytophthora* and a decline in adult plant numbers. Only six mature plants are known from four populations, with many subpopulations represented only by juveniles. All are threatened by dieback, and most populations have been damaged by fire in 1991 and 2000. Additional minor threats are grazing by an unknown herbivore and recreational use of the area.

Distribution and habitat: *Persoonia micranthera* occurs at high altitudes in the eastern section of the Stirling Range. Habitat is low dense heath and scrub on a rocky shallow soil over schist. The community is described as 'dense heath or thicket with scrub vegetation on skeletal soils'. Associated species include *Kunzea montana*, *Beaufortia anisandra*, *Sphenotoma* sp. Stirling Range, *Andersonia echinocephala*, *Darwinia* spp., *Banksia solandri*, *Banksia brownii* and *Dryandra concinna* (Barrett 1999).

Critical habitat: The critical habitat for *Persoonia micranthera* comprises the area of occupancy of the known populations; similar habitat within 200 metres of known populations; native vegetation that links populations and additional nearby occurrences of similar habitat that do not currently contain the species but may have done so and may be suitable for translocations.

Habitat critical to the survival of the subspecies, and important populations: Given that this species is listed as Critically Endangered it is considered that all known habitat containing wild and translocated populations is habitat critical.

Benefits to other species/ecological communities: Recovery actions implemented to improve the quality or security of the habitat of *Persoonia micranthera* will also improve the health of the Critically Endangered Threatened Ecological Community (TEC) "Eastern Stirling Range Montane Heath and Thicket Community" in which it occurs and which includes several other threatened plant taxa including *Dryandra montana*, *Sphenotoma drummondii*, *Darwinia collina*, *D. squarrosa*, *Banksia brownii*, *Leucopogon gnaphalioides*, *Deyeuxia drummondii* and *Andersonia axilliflora*.

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 *Persoonia micranthera* 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: There are no known indigenous communities interested or involved in the management of areas affected by this plan.

Social and economic impacts: The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. All populations occur in the Stirling Range National Park.

Evaluation of the Plan's Performance: The Department of Conservation and Land Management (DCLM), in conjunction with the Recovery Team will evaluate the performance of this IRP. The plan is to be reviewed within five years of its implementation.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented –
1. Stirling Range National Park Rangers are aware of the location and threatened status of the species.

2. The populations are in areas that are being sprayed with phosphite at regular intervals to help protect plants form the pathogen *Phytophthora cinnamomi*.
3. The Botanic Garden and Parks Authority currently have 40 plants of *Persoonia micranthera* that were propagated from 11 clones.
4. Tissue culture of *Persoonia micranthera* has been undertaken by BGPA but was unsuccessful.
5. An IRP has been prepared for the Threatened Ecological Community in which *Persoonia. micranthera* occurs.
6. A demographic study has commenced in association with a study of the fire ecology of the Montane Heath Community.
7. Staff from DCLM's Albany Work Centre regularly monitor populations of *Persoonia micranthera*.
8. The Albany District Threatened Flora Recovery Team is overseeing the implementation of this IRP and will include information on progress in an annual report to DCLM's Corporate Executive and funding bodies.

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

Recovery criteria

Criteria for success: The number of individuals within populations and/or the number of populations have increased by 10% or more.

Criteria for failure: The number of individuals within populations and/or the number of populations have decreased by 10% or more.

Recovery actions

1. Coordinate recovery actions
2. *Phytophthora* control
3. Develop and implement a fire management strategy
4. Monitor populations
5. Conduct further surveys
6. Collect seed and cutting material
8. Propagate plants for translocation
9. Develop and implement a translocation proposal
10. Obtain biological and ecological information
11. Promote awareness
12. Review the need for a revised IRP or full Recovery Plan and prepare if necessary

1. BACKGROUND

History

Fred Lullfitz[1] made the type collection of *Persoonia micranthera* from the Stirling Range in 1964 and Peter Weston[2] described the species in 1985. Surveys between 1980 and 1997 failed to find plants outside the small area of known populations.

An intense fire in April 1991 burnt all the known populations of *Persoonia micranthera* on Bluff Knoll leaving just three adult plants intact in a small unburnt pocket (Population 3). Surveys were conducted in 1994, 1995 and 1996 to assess post-fire regeneration. Although no seedlings were found at that time (Barrett 1996), two seedlings were recorded at Population 1 and approximately 150 seedlings were recorded at Population 3 in 1997. An additional population of 39 juvenile plants was located in 2000 (Population 4), and at that time 2 juveniles were discovered at Population 2.

In October 2000 another intense fire burnt most populations. However, 6 mature plants survived the fire and approximately 350 juveniles were located.

A small number of plants that had germinated in response to the 1991 fire flowered for the first time in 2001.

A three year IRP was prepared for the species in November 1999 and expired in October 2002. This revised IRP, for 5 years, replaces that plan.

Description

Persoonia micranthera is a low growing shrub 10-40 cm tall. The young branchlets are moderately hairy, with flattened leaves, 4 to 8cm long and 8 to 30 mm wide, with slightly recurved margins. The leaves are held horizontally, often in clusters of 2 to 5 separated by long internodes. Inflorescences have 4-15 yellow flowers, with the main axis of the inflorescence being 1-6 cm long. Flower segments are 1-12 cm long, pointed, and moderately hairy outside (Brown *et al.* 1998).

Distribution and habitat

Persoonia micranthera occurs at high altitudes in the eastern section of the Stirling Range. Habitat is low dense heath and scrub on a rocky shallow soil over schist and is part of the Critically Endangered Threatened Ecological Community (TEC) "Eastern Stirling Range Montane Heath and Thicket Community". Associated species include: *Kunzea montana*, *Beaufortia anisandra*, *Sphenotoma* sp. Stirling Range, *Andersonia echinocephala*, *Darwinia* spp., *Banksia solandri*, *Banksia brownii* and *Dryandra concinna* (Barrett 1999).

Other species of threatened flora that occur in the community are *Dryandra montana*, *Sphenotoma drummondii*, *Darwinia collina*, *D. squarrosa*, *Banksia brownii*, *Leucopogon gnaphalioides*, *Deyeuxia drummondii* and *Andersonia axilliflora* (Barrett 1999).

Biology and ecology

Little is known about the biology or ecology of *Persoonia micranthera* but it appears that the species is highly susceptible to both dieback and fire.

It appears that *Persoonia micranthera*, like other montane species (eg *Andersonia axilliflora*), takes a long time to reach reproductive maturity. Several plants at Population 4 were carrying fruit for the first time in 2001, 10 years after the area was burnt in the 1991 fire. The level of viability of seed in those fruits is unknown.

Persoonia species are generally difficult to propagate (personal communication G. Keighery[3]), and *P. micranthera* has shown a variable success rate from cuttings, ranging from 0% to 100% (personal communication A. Shade[4]).

Threats

[1] Fred Lullfitz, former Nurseryman
[2] Peter Weston, Botanist NSW Herbarium
[3] Greg Keighery, Senior Research Scientist, the Department's Science Division
[4] Amanda Shade, Horticulturalist, Botanic Garden and Parks Authority

Persoonia micranthera was declared as Rare Flora in November 1997 and ranked as Critically Endangered (CR) in November 1998. It currently meets World Conservation Union (IUCN, 2000) Red List Category CR under criteria B1ab(i,ii,iii,v)+2ab(i,ii,iii,v), C2a(i) and D, due to the extremely small number of adult plants, the fragmented nature of populations, a decline in habitat quality due to fire and *Phytophthora* and a decline in adult plant numbers. Only six mature plants are currently known from four populations, with many subpopulations represented only by juveniles. All populations are threatened by dieback, and most populations have been affected by fire in 1991 and 2000. Lesser threats include grazing and damage through recreational use of the National Park.

- ***Phytophthora cinnamomi*** is a major threat to all populations of the species. *Persoonia micranthera* is moderately to highly susceptible to the pathogen, which kills susceptible plants by invading their root systems and severely reducing their ability to take in water and nutrients. Many other species in the Montane Heath and Thicket Community are also affected by the pathogen which spreads through root-to-root contact and through free water flow. It spreads most quickly downhill but is also capable of moving uphill. Notably, it also spreads through movement of infected soil, by foot (see Recreational Use) or by vehicle during firebreak and vehicle track use and maintenance. *P. cinnamomi* thrives best in mild moist conditions such as those produced by spring, autumn or summer rainfall. The interactions of fire and dieback are not completely understood but field observations suggest that fire in areas where the disease is already present increases site susceptibility to *P. cinnamomi* (personal communication- S. Barrett[5]).

- **Wildfire** may adversely affect the long-term viability of *Persoonia micranthera* populations. A fire in 1991 killed all but three adult plants but stimulated germination of soil stored seed. Seedlings take a minimum of 10 years to become mature (reproductive) and most plants assessed at Populations 1a and 4 had not flowered 11 years post-fire. A second fire swept through most populations in October 2000, killing most juveniles at Populations 1b, 1c, 1d and 3. However, germination of soil-stored seed occurred in Populations 1d and 3, showing that some seed had persisted despite the lack of mature plants. It is thought that, if a third major fire occurred before seed is produced in significant quantities, the soil seed bank would be seriously depleted, and if plant numbers continue to decline due to *P. cinnamomi* infection, the probability of species extinction is high.

- **Grazing** by herbivores has been noted on the habitat and some individual *Persoonia micranthera* plants at Populations 1a and 4, but the identity of the herbivore is unclear and the impact low

- **Recreational Use** of the Stirling Range is high. Uses include hiking, camping and rock climbing, which increase the threats of disease introduction/movement, trampling, secondary track formation and addition of nutrients to naturally nutrient-poor soils. A major recreational use of the eastern Stirling Range is a well known bushwalk which runs from Ellen Peak to Bluff Knoll. This is usually completed in two to three days, thus requiring camping in the area overnight. Most visitors do not deviate from the main ridge, but assessment, monitoring and regulation of visitor numbers may be necessary to ensure *Persoonia micranthera* populations and high priority areas of the Montane Heath and Thicket Community are not compromised.

Summary of population information and threats

Pop. No. & Location	Land Status	Year/No. plants	Condition	Threats
1a. Stirling Range NP, Bluff Knoll	National Park	1990 1 2002 0 (100+)	Moderate	Disease, fire, minor grazing, recreational use
1b. Stirling Range NP, Bluff Knoll	National Park	1999 1 (7) 2001 0	Poor – burnt in 2000 fire	Disease, fire, recreational use
1c. Stirling Range NP, Bluff Knoll	National Park	1999 0 (6) 2002 0 (2)	Poor – burnt in 2000 fire	Disease, fire, recreational use
1d. Stirling Range NP, Bluff Knoll	National Park	1999 0 (32) 2002 0 (100+)	Moderate	Disease, fire, recreational use
2. Stirling Range NP, Coyanerup Peak	National Park	1980 'common' 2002 0	Poor	Disease, fire, recreational use
3. Stirling Range NP, Isongerup Peak	National Park	1997 3 (150+) 2002 1 (100+)	Moderate	Disease, fire, recreational use
4a. Stirling Range NP, East Bluff	National Park	2000 0 (16) 2002 4 (18)	Moderate	Disease, fire, minor grazing, recreational use
4b. Stirling Range NP, East Bluff	National Park	2000 0 (23) 2002 0 (10+)	Moderate	Disease, fire, recreational use
4c. Stirling Range NP, East Bluff	National Park	2001 0 (1)	Moderate	Disease, fire, recreational use

Numbers in (.) = number of juveniles.

[5] Sarah Barrett, Rare Flora Officer, the Department's Albany Work Centre

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 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* (EPBC Act)).

The critical habitat for *Persoonia micranthera* comprises:

- the area of occupancy of known populations;
- areas of similar habitat within 200 metres of known populations, i.e. low dense heath and scrub on a rocky shallow soil over schist at high altitudes (these provide potential habitat for natural range extension);
- vegetation that links populations (the surrounding National Park 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). Currently, no *Phytophthora cinnamomi* free sites are known.

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

Given that this species is listed as Critically Endangered it is considered that all known habitat is habitat critical. In addition, all populations, including future translocated populations, are or will be considered important to the survival of the species.

Benefits to other species/ecological communities

Recovery actions implemented for *Persoonia micranthera* will improve the status of the Critically Endangered Eastern Stirling Range Montane Heath and Thicket Community in which it occurs. It will also improve the status of other threatened flora taxa including *Dryandra montana*, *Sphenotoma drummondii*, *Darwinia collina*, *D. squarrosa*, *Banksia brownii*, *Leucopogon gnaphalioides*, *Deyeuxia drummondii* and *Andersonia axilliflora*.

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 *Persoonia micranthera* 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

There are no known indigenous communities interested or involved in the management of specific areas affected by this plan.

Social and economic impacts

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. All populations occur in the Stirling Range National Park.

Evaluation of the Plans Performance

The Department of Conservation and Land Management (DCLM), in conjunction with the Albany District Threatened Flora Recovery Team will evaluate the performance of this IRP. The plan is to be reviewed within five years of its implementation. Any changes to management / recovery actions will be documented accordingly.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Any on-ground works (clearing, firebreaks, walk tracks etc) in the immediate vicinity of *Persoonia micranthera* will require assessment. On-ground works should not be approved unless the proponents can demonstrate that they will not have an impact on the species, its habitat or potential habitat.

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 individuals within populations and/or the number of populations have increased by 10% or more.
Criteria for failure: The number of individuals within populations and/or the number of populations have decreased by 10% or more.

3. RECOVERY ACTIONS

Existing recovery actions

Stirling Range National Park Rangers are aware of the threatened nature of the species and of its location.

To control the pathogen *Phytophthora cinnamomi* in the eastern Stirling Range aerial spraying of phosphite commenced in Autumn 1997 with Populations 1 and 3 sprayed that year. Monitoring of the impact of phosphite applications at Population 3 between 1997 and 2000 showed 100% survival of plants. Note: survival was also high in the three control quadrats (90%). Due to the continuing threat from *P. cinnamomi* these areas will continue to be sprayed at regular intervals through the DCLM's phosphite program.

There are currently no seed collections of *Persoonia micranthera* at either DCLM's Threatened Flora Seed Centre (TFSC) or the Botanic Garden and Parks Authority (BGPA). Although there have been several attempts to collect seed, none was found.

Cuttings were collected in 1999 and 2000 by Sarah Barrett and given to the BGPA who currently have 40 plants of *Persoonia micranthera* from 11 clones. Results of propagation have been extremely variable, ranging from 0 to 100% (personal communication- A. Shade). Tissue culture trials have also been conducted by BGPA staff, but unfortunately these attempts were unsuccessful.

Monitoring of all populations is conducted by staff from DCLM's Albany Work Centre and is ongoing. The effectiveness of phosphite application is being monitored at Population 1a, 1d and Population 3.

A draft Interim Recovery Plan (IRP) has been written by Sarah Barrett for the Critically Endangered TEC (Eastern Stirling Range Montane Heath and Thicket Community), in which *Persoonia micranthera* occurs. This Threatened Ecological Community IRP outlines recovery actions for many of the same threatening processes that are affecting *Persoonia micranthera* and both IRPs should be taken into account when recovery actions are implemented.

The Albany District Threatened Flora Recovery Team (ADTFRT) is overseeing the implementation of recovery actions prescribed in this IRP, and will include information on progress in its annual report to DCLM's Corporate Executive and funding bodies.

Future recovery actions

1. Coordination

The Albany District Threatened Flora Recovery Team (ADTFRT) is coordinating recovery actions for *Persoonia micranthera* and other Declared Rare flora in the District. The team includes information on progress in their annual report to DCLM's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: DCLM (Albany Work Centre) through the ADTFRT
Cost: $400 per year

2. Phytophthora

Persoonia micranthera and the plant community in which it grows are both severely impacted by dieback (*Phytophthora cinnamomi*). DCLM will continue applying phosphite to these areas, an action that will have the added benefit of protecting a number of other threatened plant species.

Action: *Phytophthora* control
Responsibility: DCLM (Albany Work Centre, Dieback Disease Coordinator) through the ADTFRT
Cost: $31,000 per year

3. Fire management strategy

Inappropriate fire is known to have a severe impact on *Persoonia micranthera*. Fire kills adult plants and frequent fire may result in insufficient seed being produced for successful regeneration. Fire should if possible be prevented from occurring in the area of populations, except where it is being used experimentally as a recovery tool. A fire management strategy will be developed to determine fire control measures and fire frequency.

Action: Develop and implement a fire management strategy
Responsibility: DCLM (Albany Work Centre) through the ADTFRT
Cost: $1,600 in the second year and $300 in subsequent years

4. Monitoring

Annual monitoring of factors such as the impact of pathogens, especially Phytophthora, and the success or otherwise of Phosphite application, habitat degradation, population stability (expansion or decline), pollination biology, seed production, recruitment, longevity and predation is essential. Herbivores, which graze on young plants, are also having a minor impact on some populations of *Persoonia micranthera* and continued monitoring is needed to assess if action is required in the future.

Action: Monitor populations
Responsibility: DCLM (Albany Work Centre), through the ADTFRT
Cost: $6,700 per year

5. Surveys

Although the species has been thoroughly surveyed, additional plants may have germinated following recent fires in the Stirling Range and further surveys by Departmental staff and community volunteers may be worthwhile during the flowering period of the species (February to March).

Action: Conduct further surveys
Responsibility: DCLM (Albany Work Centre) through the ADTFRT
Cost: $2,100 per year if required

6. Seed and cutting collection

Preservation of germplasm is essential to guard against extinction if wild populations are lost. Collections are also needed to propagate plants for translocations. However, as most extant plants have been too immature to produce flowers and fruit, there is currently no seed of *Persoonia micranthera* in DCLM's TFSC. Eleven plants are currently represented in the BGPA's nursery, and cuttings will continue to be collected from as many plants as possible to maximize the available genetic diversity. Some *in situ* plants are now starting to flower, and if fruits are set, seed will be collected according to the usual protocols (eg, collecting a small proportion of available seed) at that time.

Action: Collect seed and cutting material
Responsibility: DCLM (TFSC, Albany Work Centre), BGPA through the ADTFRT
Cost: $2,500 per year for the first three years

7. Propagation

The propagation of plants for future translocation is essential as the species is in serious decline in the wild. Although a translocation proposal has not yet been developed, propagation should commence immediately due to the slow growing nature of the species. Collection of seed and cutting material is covered in recovery action 6.

Action: Propagate plants for translocation

Responsibility: BGPA, DCLM (Albany Work Centre) through the ADTFRT
Cost: $3,900 per year in the second and third years

8. Translocation

As the number of mature extant plants is low and populations are highly vulnerable to current threats a translocation proposal will be developed and coordinated by the ADTFRT. Translocation is likely to be a restocking of existing populations or the establishment of a seed orchard outside the Stirling Range, rather than an introduction to a new site in the Range as no suitable sites are known to exist that are *Phytophthora cinnamomi* free.

Information on the translocation of threatened plants and animals in the wild is provided in DCLM's Policy Statement No. 29 *Translocation of Threatened Flora and Fauna*. All translocation proposals require endorsement by DCLM's Director of Nature Conservation. Monitoring of the translocation is essential and will be undertaken according to the timetable developed for the Translocation Proposal.

Action: Develop and implement a translocation proposal
Responsibility: DCLM (Science Division, Albany Work Centre) through the ADTFRT
Cost: $4,000 in the fourth year and $8,700 in the fifth year

9. Biology and ecology

Better knowledge of the biology and ecology of *Persoonia micranthera* will provide a scientific basis for management of wild populations. An understanding of the following is necessary for effective management:

1. The pollination biology of the species.
2. The requirements of pollinators.
3. The soil seed bank dynamics and the role of various disturbances (including fire), competition, rainfall and grazing in germination and recruitment.
4. The phenology and seasonal growth of the species.
5. The population genetic structure, levels of genetic diversity and minimum viable population size.
6. The impact of dieback disease and control techniques on *Persoonia micranthera* and its habitat.
7. The impact of frequent fire on *Persoonia micranthera* and its habitat.

Action: Obtain biological and ecological information
Responsibility: DCLM (Science Division, Albany Work Centre) through the ADTFRT
Cost: $18,300 per year in the second, third and fourth years

10. Community awareness

Bushwalkers, researchers and other visitors may inadvertently damage plants of *Persoonia micranthera* that are close to the track through trampling or the introduction of disease. This may minimised by providing all visitors with information on the need to protect the habitat. A review of the 'code of conduct' for backpacking in the Stirling Range National Park is provided in the IRP for the Stirling Range Montane Heath and Thicket Community.

It is important that biodiversity conservation and the need for the long-term protection of wild populations of *Persoonia micranthera* be promoted to the community through appropriate media. Formal links with local naturalist groups and interested individuals will also be encouraged. An information sheet, which includes a description of the plant, its habitat type, threats and management actions will be produced.

Action: Promote awareness
Responsibility: DCLM (Albany Work Centre) through the ADTFRT
Cost: $2000 in first year and $400 in subsequent years

11. Recovery Plan

If the taxon is still ranked as Critically Endangered at the end of the fourth year of the five-year term of this Interim Recovery Plan, the need for a full Recovery Plan or a review of this IRP will be assessed and a plan prepared if necessary.

Action: Review the need for a revised IRP or full Recovery Plan and prepare if necessary
Responsibility: DCLM (WATSCU, Albany Work Centre) through the ADTFRT
Cost: $20,300 in the fifth year (if full Recovery Plan is required)

4. TERM OF PLAN

This Interim Recovery Plan will operate from June 2003 to May 2008 but will remain in force until withdrawn or replaced. If the taxon is still ranked Critically Endangered after five years, the need to review this IRP or to replace it with a full Recovery Plan will be determined.

5. ACKNOWLEDGMENTS

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

Sarah Barrett	Rare Flora Officer, DCLM's Albany Work Centre
Anne Cochrane	Manager, DCLM's Threatened Flora Seed Centre
Amanda Shade	Horticulturalist, Botanic Garden and Parks Authority

We would like to thank the staff of the W.A. Herbarium for providing access to Herbarium databases and specimen information, and DCLM's Wildlife Branch for their assistance.

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8. TAXONOMIC DESCRIPTION

Weston (1994)

Persoonia micranthera is a decumbent to prostrate shrub, usually branching from near base, 0.1-0.4 m high, killed by fire (Keighery 1993); underground parts not known. Bark thin. Hairs of medium length, appressed to patent, grayish to pale brown. Branchlets sometimes angular when immature but becoming terete when mature, moderately hairy when young but glabrescent after 1 year. Leaves alternate or opposite, spathulate or obovate or oblanceolate, symmetrical to slightly asymmetric, often twisted at the base so that most of laminae are held in ± horizontal plane, flat but with slightly recurved margins when dried, obtuse mucronate acute or acuminate, not pungent, (2-)4-8 cm long,)3.5-(8-30 mm wide, often in clusters of 2-5 at end of each season's growth which are separated by long leafless sections of stem, often crowned with cluster, patent to erect, not usually curved in dorsiventral plane, soft and flexible, not glaucus, concolorous, sparsely to moderately hairy when immature, glabrescent when mature; venation brochidodromous; mid-vein evident to prominent on both surfaces; marginal veins prominent; other veins evident; epidermis smooth. Scale leaves triangular to narrowly triangular, acute to acuminate, 2-8 mm long, 0.4-1.5 mm wide. Inflorescences terminal or rarely subterminal, anauxotelic, pantotomic, (1-)4-15 flowered; rachis (0-) 1-6 cm long. Flowers subtended by scale leaves, regular, mostly held upright to subupright. Pedicles 2.5 -8 mm long longer at base of inflorescence than at tip, moderately hairy. Tepals ± narrowly-oblong to ± oblanceolate, truncate at base, slightly constricted near base, acute, 10.5 - 14 mm long, 1.7 - 2 mm wide, yellow, moderately hairy on outside, glabrous in inside except for marginal rows of papillae on proximal ½; lateral flaps absent. Filaments adnate to tepals, 6.5-9 mm long, 3/5-7/10 as long as tepals. Anthers sublatrorse, ± straight, free; connective narrower than loculi; loculi glabrous, 1.8-3 mm long; appendage ± globular to ± oblong, 0.2-0.3 mm long, about 1/10 as long as loculi; colour, position of anthers with respect to one another not known. Gynoecium slightly shorter than stamens, exserted, 7.5-11 mm long, glabrous; ovary basally constricted into distinct stipe, conspicuously thicker than base of style; style slightly curved at base but otherwise ± straight, not ridged, capitate bit otherwise ± constant in thickness from base to tip; abscission zone basal; ovules 2. Hypogynous glands 4, equal. Drupe ellipsoid to ovoid and compressed, smooth; long axis in line with or slightly oblique to stipe, in line with style; pyrene ellipsoid to ovoid and compressed, 6-6.5 mm long, 3-3.3 mm wide, smooth; seed 1; embryo straight; cotyledons 3.

Robinson and Coates (1995)

Persoonia micranthera is a decumbent shrub, branching from the base to 0.1-0.4 m tall, without well developed bark and is thought not to be lignotuberous. The branches become terete and glabrous with age. The spreading to erect leaves are alternate or opposite, often in seasonal growth clusters of 2-5 leaves separated by long leafless internodes. The leaf lamina is flat, held horizontally, spathulate to obovate, acuminate to obtuse mucronate, 4-8 cm long and 3 cm broad, soft and flexible, glabrous (when mature) with a prominent midvein. The inflorescence is terminal, 4-15 flowers on a 1-6 cm rachis. The flowers are regular, upright on 2.5-8 mm pedicels subtended by scale leaves. The acute narrow (1.7-2 mm wide) oblong 14 mm long tepals are yellow, moderately hairy outside and glabrous inside except for rows of papillae on the proximal half. The 7.5-11 mm glabrous gynoecium are slightly lower than the anthers and are exserted. The fruit is an ellipsoid smooth drupe 6-6.5 mm long and 3 mm wide. This is a distinctive species, easily distinguished by its long staminal filaments which are 7/10 as long as the tepals.