INTERIM RECOVERY PLAN NO. 46

SMALL-FLOWERED SNOTTYGOBBLE

(*PERSOONIA MICRANTHERA*)

INTERIM RECOVERY PLAN

1999-2002

by

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November 1999

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FOREWORD

Interim Recovery Plans (IRPs) are developed within the framework laid down in Department of Conservation and Land Management (CALM) Policy Statements Nos. 44 and 50.

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

CALM is committed to ensuring that 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This Interim Recovery Plan will operate from November 1999 to October 2002 but will remain in force until withdrawn or replaced. It is intended that, unless the taxon is no longer ranked as 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 21 November 1999. 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 November 1999.

SUMMARY

Scientific Name: ***Persoonia micranthera***
Common Name: Small-flowered snottygobble
Family: Proteaceae
Flowering Period: February - March
CALM Region: South Coast
CALM District: Albany
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; Weston, P. H. (1994). The Western Australian species of subtribe Persooniiae (Proteaceae: Perooniodeae: 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 under World Conservation Union (IUCN) Red List Criteria B1+2c, C2b, D, due to the small number of adult plants, the fragmented nature of the populations and rapid decline in plant numbers. Just one population of three adult plants is known. All three plants are threatened by dieback (*Phytophthora cinnamomi*). Following a fire in 1991, 152 seedlings appeared in two populations (150 in one and two in another). These are also threatened by dieback and, as the species is an obligate seed regenerator that is killed by fire, are also threatened by fire should the area be burnt before plants have reached maturity.

All recovery actions recommended in this IRP will be conducted in conjunction with those contained in the IRP for the "Eastern Stirling Range Montane Heath Community" (Barrett in preparation), the IRP for *Andersonia axilliflora* (Evans *et. al.* 1999) and the Management Plan for the Stirling Range National Park (CALM 1999).

Habitat requirements: *Persoonia micranthera* is restricted to the eastern peaks area of the Stirling Range National Park (SRNP) where it occurs amongst dense low heath and scrub in shallow rocky soil over schist. The species forms part of the Critically Endangered "Eastern Stirling Range Montane Heath Community".

Existing Recovery Actions: The following recovery actions have been or are currently being implemented -
1. Cutting collections have been made and some plants propagated.
2. Phosphite has been applied to protect *Persoonia micranthera* and its habitat from dieback infection.
3. A draft Interim Recovery Plan (IRP) for the associated threatened ecological community has been written.
4. The populations are regularly monitored.

IRP Objective: The objective of this Interim Recovery Plan (IRP) is to abate identified threats and maintain viable *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

1. Control of *Phytophthora*.	6. Propagate plants for translocation.
2. Develop and implement a fire management strategy.	7. Develop a translocation proposal.
3. Monitor populations.	8. Obtain biological and ecological information.
4. Conduct further surveys.	9. Promote awareness.
5. Collect cutting material.	10. Write a full Recovery Plan.

1. BACKGROUND

History

Fred Lullfitz[1] first collected *Persoonia micranthera* in 1964 and Peter Weston[2] described the species in 1985. Surveys between 1980 and 1997 failed to find the species outside of the area of the known populations.

[1] Fred Lullfitz, former Nurseryman

An intense fire in April 1991 burnt all populations of *Persoonia micranthera*, leaving only three adult plants (population 3) intact in an unburnt pocket. A survey of Bluff Knoll was subsequently conducted in late 1991 to assess postfire regeneration. No seedlings were found during this survey (Barrett 1996), however, in 1997 two seedlings were recorded at population 1 and approximately 150 seedlings were found at population 3.

Sarah Barrett[3] assessed threats to the species during surveys of Bluff Knoll and Ellen Peak between 1994 and 1996. Threats include dieback and small population size.

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 *el al.* 1998).

Distribution and habitat

Persoonia micranthera occurs at high altitudes in the eastern section of the Stirling Ranges. 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).

Several other species of threatened flora also occur in the community. They are *Dryandra montana, Sphenotoma drummondii, Darwinia collina, D. squarrosa, Lambertia fairallii, 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.

Persoonia species are difficult to propagate (personal communication G. Keighery[4]) with only a 3% success rate predicted from cuttings (personal communication L. Sweedman[5]). There are no clones of the species in cultivation.

Threats

Persoonia micranthera is ranked as Critically Endangered under IUCN Red List Criteria B1+2c, C2b, D, due to the small number of adult plants, the fragmented nature of the populations and rapid decline in plant numbers. Just one population of three adult plants is known and all three plants are threatened by dieback.

- **Fire** in 1991 killed all but three adult plants and, although some 150 seedlings were produced, is a potential future threat if it re-occurs before plants are mature and more seed is produced. If this happens there is a significant risk of depleting the soil seed bank.

- ***Phytophthora*** killed many of the seedlings that appeared following fire and may kill more if phosphite spraying is discontinued.

- **Trampling** is a potential threat, however, visitors do not currently tend to deviate from the Eastern Peak Route.

[2] Peter Weston, Botanist NSW Herbarium
[3] Sara Barrett, Conservation Officer, CALM Albany
[4] Greg Keighery, Senior Research Scientist, CALMScience
[5] Like Sweedman, Seed Collector, Botanic Gardens and Parks Authority (BGPA)

Summary of population information and threats

Pop. No & Location.	Land Status	Year and No. of plants.	Condition	Threats
1. Stirling Range NP, Bluff Knoll.	National Park	1990 1 Adult 1999 2 seedlings	Moderate	Disease, fire and accidental trampling
2. Stirling Range NP, Coyanerup Peak	National Park	1980 1 Adult 1999 0	Possibly extinct	Disease, fire and trampling
3. Stirling Range NP, Isongerup Peak	National Park	1997 3 Adults + 150 seedlings	Moderate	Disease, fire and trampling

2. RECOVERY OBJECTIVE AND CRITERIA

Objective

The objective of this Interim Recovery Plan is to abate identified threats and maintain viable *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

There are currently no seed collections of *Persoonia micranthera* held at either CALM's Threatened Flora Seed Centre (TFSC) or at the BGPA There have been several attempts to collect seed but none was found.

To control dieback in the eastern Stirling Range, aerial spraying of phosphite commenced in Autumn 1997 with *Persoonia micranthera* populations 1 and 3 sprayed that year. Other threatened flora species in the area included in the program were *Dryandra montana, Sphenotoma drummondii, Darwinia collina, D. squarrosa, Lambertia fairallii* and *Banksia brownii* (personal communication E. Hickman[6]). The following table outlines the next date during which populations will be sprayed with phosphite. Due to the continuing threat from dieback these areas will be sprayed again at regular intervals through CALM's phosphite program.

Population	Peak	Date of next proposed spray
1	Bluff Knoll	Autumn 2000
3	Isongerup	Autumn 2000

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

Monitoring is being conducted by staff from CALM's Albany District and is ongoing. Three control plots and three spray plots are in place on Isongerup to monitor survival of *Persoonia micranthera* seedlings and the effectiveness of phosphite application (personal communication E. Hickman). The effectiveness of phosphite application is also being monitored on Bluff Knoll.

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

The Albany District Threatened Flora Recovery Team (ADTFRT) oversees the implementation of recovery actions prescribed in this IRP, and will report annually to CALM's Corporate Executive.

Future recovery actions

1. Control of *Phytophthora*

[6] Ellen Hickman, former Conservation Officer, CALM Albany

Persoonia micranthera and the plant community in which it grows are both severely impacted by dieback. CALM 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: Control of *Phytophthora*
Responsibility: CALM (Albany District, Dieback Disease Coordinator) through the ADTFRT
Cost: $31,000 per year.

2. Develop and implement a fire management strategy

Inappropriate fire is known to have a severe impact on *Persoonia micranthera*. Fire kills adult plants and regeneration from soil stored seed is impacted by dieback. Frequent fire may kill young plants before they are mature enough to produce seed.

Action: Develop and implement a fire management strategy
Responsibility: CALM (Albany District) through the ADTFRT
Cost: $1,600 in the second year and $300 in third year.

3 Monitor populations

Annual monitoring of factors such as impact of dieback and success or otherwise of phosphite application, habitat degradation, population stability (expansion or decline), pollinator activity, seed production, recruitment, and longevity is essential. Herbivores, which graze on young plants, are also having an impact on some populations of *Persoonia micranthera* and continued monitoring of this threat is needed in order to assess if action will be required in the future.

Action: Monitor populations
Responsibility: CALM (Albany District), through the ADTFRT
Cost: $6,700 per year.

4. Conduct further surveys

Further surveys supervised by CALM staff and with assistance from local naturalists and volunteers will be conducted during the species' flowering period (February to March).

Action: Conduct further surveys
Responsibility: CALM (Albany District) through the ADTFRT
Cost: $2,500 per year.

5. Collect seed and cutting material

Preservation of germplasm is essential to guard against extinction if the wild population is lost. However, there is currently no seed of P*ersoonia micranthera* in CALM's TFSC. Seed and cutting collections will be taken from as many plants as possible to fully represent the wild genetic diversity. Seed and cutting collections are needed to propagate plants for translocations (see 6 and 7).

Action: Collect seed and cutting material
Responsibility: CALM (TFSC, Albany District) through the ADTFRT
Cost: $2,500 per year.

6. Propagate plants for translocation

The propagation of plants for future translocation is essential as the species is in serious decline in the wild. Collection of seed and cutting material is covered in recovery action 5.

Action: Propagate plants for translocation
Responsibility: BGPA, CALM (Albany District) through the ADTFRT
Cost: $3,900 per year.

7. Develop a translocation proposal

Background 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*. Translocation is considered desirable if populations of threatened species are in rapid decline. It is recommended that restocking the existing populations and translocation to a more secure site be investigated with the former given priority.

Although translocations are generally undertaken under full Recovery Plans, in this case it is clearly vital to commence this course of action before a full Recovery Plan is written as all known plants are threatened. Translocation proposals require endorsement by the Director of Nature Conservation.

Action: Develop a translocation proposal
Responsibility: CALM (Albany District) through the ADTFRT and BGPA
Cost: $2,400 in the second year.

8. Obtain biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Persoonia micranthera* in the wild. Research on the species will include:

1. Investigation of the soil seed bank dynamics and the role of various factors (fire, disturbance, competition, rainfall, 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 the population genetic structure, levels of genetic diversity and minimum viable population size.

Action: Obtain biological and ecological information
Responsibility: CALM (CALMScience and Albany District) through the ADTFRT
Cost: $18,300 per year.

9. Promote awareness

The importance of biodiversity conservation and the protection of *Persoonia micranthera* ms will be promoted to the public. This will be achieved through an information campaign using the local print and electronic media and by setting up poster displays. This is especially important as populations of the species are small and highly threatened, and increased awareness may result in the discovery of others. Due the location of populations of *P. micranthera* close to a well-used walk trail, users of the trail may introduce disease or accidentally trample plants. Education of the users will be achieved by providing an information sheet. A review of the 'code of conduct' for backpacking in the Stirling Range National Park has been addressed in the IRP for the TEC and is equally applicable to *P. micranthera.*

An information sheet, which includes a description of the plant, its habitat type, threats and management actions will be produced. The preparation of a poster illustrating all Critically Endangered flora species in the District is recommended. Formal links with local naturalist groups and interested individuals will be encouraged.

Action: Promote awareness
Responsibility: CALM (Albany District and Corporate Relations Division (CRD)) through the ADTFRT
Cost: $900 in the first year and $400 in years two and three.

10. Write a full Recovery Plan

At the end of the second year of this IRP, the need for further recovery should be assessed. If the species is still ranked Critically Endangered, a full Recovery Plan will be written.

Action: Write a full Recovery Plan
Responsibility: CALM (Albany District and WATSCU) through the ADTFRT
Cost: $17,500 in the third year.

4 TERM OF PLAN

This Interim Recovery Plan will operate from November 1999 to October 2002 but will remain in force until withdrawn or replaced. It is intended that, unless the taxon is no longer ranked as 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:

Anne Cochrane Manager, Threatened Flora Seed Centre, CALM
Val English Ecologist, Western Australian Threatened Species and Communities Unit, CALM

Ian Herford	Regional Leader, Planning and Extension Resources, Albany Region, CALM
Ellen Hickman	Conservation Officer, Albany District, CALM
Sophie Juszkiewicz	Propagator, BGPA
Greg Keighery	Research Scientist, CALMScience
Russell Smith	Ecologist, Phosphite Program, CALM
Luke Sweedman	Seed Collector, BGPA

We would like to thank the staff of CALM's W.A. 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

Weston (1994)

[1]*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, spatulate 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 glaucous, concolorous, sparsely to moderately hairy when immature, glabrescent when mature; venation brochidodromous; midvien 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 glans 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)

[2]*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.