INTERIM RECOVERY PLAN NO. 68

NORTHAMPTON MIDGET GREENHOOD

(*PTEROSTYLIS* SP. NORTHAMPTON)

INTERIM RECOVERY PLAN

2000-2003

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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This Interim Recovery Plan will operate from May 2000 to April 2003 but will remain in force until withdrawn or replaced. It is intended that, if the taxon is still 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 20 August 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 June 2000.

SUMMARY

Scientific Name: *Pterostylis* sp. Northampton
Common Name: Northampton midget greenhood
Family: Orchidaceae
CALM Region: Midwest
Shire: Northampton
Flowering Period: August, early September
CALM District: Geraldton
Recovery Team: Geraldton District Threatened Flora Recovery Team (GDTFRT)

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; Hoffman, N. and Brown, A. (1998). *Orchids of South-west Australia*. Revised 2nd edition with supplement. University of Western Australia Press, Nedlands.

Current status: *Pterostylis sp*. Northampton was declared as Rare Flora in September 1987 and was ranked in September 1995 as Critically Endangered (CR). It is currently ranked 'CR' under World Conservation Union (IUCN) Red List criteria A1c, B2ce + 3d and C1 (IUCN 1994). Threats include weeds, water erosion, accidental destruction during road and track maintenance, grazing, inappropriate fire and chemical drift.

Habitat requirements: *Pterostylis* sp. Northampton is known from four populations growing in open Melaleuca low scrub over low heath in winter-wet clay soils northwest of Northampton. Plants prefer open, well lit, moist areas and flower in much lower numbers when the density of the vegetation increases. The species co-occurs with two other species of Declared Rare Flora (DRF). These are *Caladenia elegans* at Populations 2, 3 and 4, and *C. elegans* and *Caladenia hoffmanii* subsp. *hoffmanii* at Population 1.

Critical habitat: The area of occupancy of the known populations, the local catchment for the surface and ground waters that provide the wetland habitat of the species; areas of similar habitat ie. open *Melaleuca* low scrub in low heath in winter-wet depressions within 200 metres of known populations; corridors of remnant vegetation that link populations; additional occurrences of similar habitat ie. open *Melaleuca* low scrub in low heath in winter-wet depressions.

Existing Recovery Actions: The following recovery actions have been or are currently being implemented:
1. Appropriate land managers have been informed of the species' location and the associated legal obligations.
2. Declared Rare Flora markers have been installed at Populations 1 and 2.
3. Dashboard stickers and posters that illustrate DRF markers and describe their purpose have been produced and distributed.
4. A poster that provides a description of the species and information about threats and recovery actions has been produced.
5. A pig exclusion fence has been erected at Population 1.
6. A baiting program was undertaken in 1989 by the Agriculture Protection Board to control feral pigs in the area.
7. A monitoring plot was established near Population 2 in 1990 by CALM staff. The plot continues to be monitored.
8. The shire has ripped the gravel pit above Population 2 and constructed a culvert rock wall in the adjacent erosion channel to improve drainage.
9. Weed control was conducted at Populations 2 and 4 by Geraldton District staff in April/May 2000.
10. Seed was collected by the Botanic Gardens and Parks Authority (BGPA) in 1998 and 1999 and stored in liquid nitrogen.
11. The Geraldton District Threatened Flora Recovery Team is overseeing the implementation of this IRP.
12. Staff from CALM's Geraldton District office regularly monitor the populations.

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

Recovery actions

1. Coordinate recovery actions.
2. Undertake weed control.
3. Seek to acquire buffers, and rehabilitate land, adjacent to Population 2.
4. Develop and implement a drainage and rehabilitation strategy for Population 2.
5. Liaise with relevant land managers.
6. Develop and implement a fire management strategy.
7. Monitor populations.
8. Control grazing.
9. Conduct further surveys.
10. Collect seed and tissue culture material.
11. Obtain biological and ecological information.
12. Propagate plants for translocation.
13. Undertake and monitor translocation.
14. Promote awareness.
15. Seek to acquire land, erect barriers, and rehabilitate buffer at Population 4.
16. Write full Recovery Plan.

1. BACKGROUND

History

Pterostylis sp. Northampton was discovered in 1978 by Stan Finck, a Victorian orchid enthusiast. The original locations are now recorded as Populations 1 and 2. No further populations were located until 1990, when A. Brown discovered another population on an unnamed road north of Population 1, but this area was mostly cleared in 1994. Population 4 was located in 1996 on a Shire reserve in Northampton, also by A. Brown.

Description

Pterostylis sp. Northampton is a small tuberous herb 5-10 centimetres tall. The flower spike emerges from a basal rosettes of leaves and bears between two and twenty pale green 'greenhood' flowers, each of which are approximately 5 by 5 mm in size (Hoffman and Brown 1998). Flowering occurs over a period of approximately three weeks from August to early September, with seed maturing between October and November. Plants are found in clumps or as solitary individuals. As is usual with the genus *Pterostylis*, plants become dormant after fruiting. Underground tuberoids continue the life cycle after an annual period of dormancy.

Pterostylis sp. Northampton has affinities with *P. cycnocephala* which occurs in eastern Australia and *P. mutica* (midget greenhood). *P. mutica* is found in semi-arid zones near Southern Cross and extends across the southern edge of the Nullarbor Plain into eastern Australia. *Pterostylis* sp. Northampton differs from *P. mutica* in that it is paler in colour, has forward-projecting labellum appendages and wavy-margined leaves (Hoffman and Brown 1998).

Distribution and habitat

Pterostylis sp. Northampton is known from four populations growing in open Melaleuca low scrub over low heath in winter-wet clay soils over laterite north west of Northampton. Plants prefer open, well lit, moist areas and flower in lower numbers when the density of the vegetation increases (Brown *et al*. 1998).

The species occurs with *Melaleuca uncinata*, *Hakea recurva* and two other species of DRF. These are *Caladenia elegans* ms and *Caladenia hoffmanii* subsp. *hoffmanii* at Population 1, and *C. elegans* at Populations 2, 3 and 4.

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 *Pterostylis* sp. Northampton 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 damplands and is dependent on maintenance of local surface hydrology),
- areas of similar habitat ie. open *Melaleuca* low scrub over low heath in winter-wet clay soils over laterite, 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. open *Melaleuca* low scrub over low heath in winter-wet clay soils over laterite (this represent possible translocation sites).

Biology and ecology

Very little is known about the biology or ecology of the species, and further research is required. Orchids have specific requirements for both pollination and germination. Pollination in most species of *Pterostylis* is thought to involve small diptera, commonly known as fungus gnats (Stoutamire 1982). The insects may be attracted to the plant by sex pheromones emitted by the orchid. The orchid does not produce nectar. Once at the flower, insects are trapped by a hinged labellum and can only escape through a small opening at the top of the column. Pollen is transferred at this point, and results in fertilisation.

Germination and successful establishment of most native orchids is reliant upon a soil-borne fungal symbiont. The specific nature of the mycorrhiza has not been identified for *Pterostylis* sp. Northampton.

The response of *Pterostylis* sp. Northampton to fire is unknown. However, some orchids require fire to stimulate flowering, but such fires must occur only in summer when plants are dormant.

Threats

Pterostylis sp. Northampton was declared as Rare Flora in September 1987 and was ranked in September 1995 as Critically Endangered (CR). It is currently ranked 'CR' under World Conservation Union (IUCN) Red List criteria A1c, B2ce+3d and C1 (IUCN 1994) due to the continuing decline in the extent and quality of habitat and number of individuals. Only 64 plants were recorded from a total of four known populations during the most recent surveys. The main threats include weeds, water erosion, accidental destruction from road and track maintenance, grazing, inappropriate fire and chemical drift.

- Habitat degradation due to **weed invasion** appears to be one of the greatest threats to all populations. Weeds suppress early plant growth by competing for soil moisture, nutrients and light. They also exacerbate grazing pressure and increase the fire hazard due to the easy ignition of high fuel loads that are produced annually by many grass weed species.

- **Road and track maintenance activities** threaten *Pterostylis* sp. Northampton and its habitat. Threats include actions such as grading road reserves, spraying of chemicals, constructing 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.

- **Water erosion** from a drainage channel at Population 2 is directly affecting *Pterostylis sp*. Northampton plants and habitat. The site may originally have been a natural drainage line but road building and land clearing have resulted in large volumes of runoff into the road reserve that contains Population 2. A drainage culvert and constructed levy bank in an adjacent paddock on the south side of the road have served to further direct water into the road reserve. This has resulted in the erosion of large sections of the road reserve, creating wide channels up to four metres in width. Other sections within the centre of the road reserve have also started to collapse. The water flowing from adjacent land is also channelling weed seeds, silt and fertilisers into the habitat of this orchid, causing weed infestation. A monitoring site established at the site in 1990 has become densely infested with weeds.

- **Feral pig** activity has been observed in most populations. As well as grazing the orchids themselves, pigs can destroy the underground tubers of the orchid and also affect the growth of symbiotic fungi that are essential for germination and for providing starches for the plant (Hoffman and Brown 1998).

- **Grazing** by brown caterpillars, kangaroos (*Macropus fuliginosus*) and rabbits (*Oryctolagus cuniculus*) has impacted upon most populations. In addition, disturbance of soil by rabbit warren construction, increased nutrient levels from rabbit droppings and the introduction of weeds are impacting on the habitat of the species. In recent years, the impact of rabbits has declined due to rabbit baiting by many landholders in the area, and the introduction of the calici virus.

- **Inappropriate fire** during autumn, winter and spring can adversely affect populations by killing flowering plants, preventing seed set or destroying the underground tubers. Some orchids require fire to stimulate flowering, but such fires must occur only in summer when plants are dormant. Most orchid species emerge from the soil by mid April and dehisce their seed by late November. The optimum time for fire is therefore from late November to mid April. In addition to the detrimental effects of fire on the vegetative stages of this species, proliferation of weeds is often a consequence of burning. Conversely, increased competition from dense understorey species can result from infrequent fire.

- **Chemical drift** from herbicide and fertiliser applications from adjacent farmland may affect the species' growth and survival.

Summary of population information and threats

Pop. No. and Location	Land Status	Year/No. plants	Condition	Threats
1a. W of Northampton	Shire Road Reserve	1992 10* 1994 60+* 1995 40+* 1997 40+ 1999 35+*	Moderate	Road maintenance, weed invasion, feral pigs, grazing, agricultural chemical drift.
1b. W of Northampton	Private property	1992 10* 1994 60+* 1995 40+* 1997 20+ 1999 35+*	Healthy	Weed invasion
2. W of Northampton	Shire Road Reserve	1992 5 1994 70+ 1996 100+ 1997 15 1999 0	Poor	Road maintenance, water erosion, weed invasion, grazing, agricultural chemical drift, feral pigs
3. W of Northampton	Private property	1990 12 1994 1 1999 0	Poor	Weed invasion, vegetation clearance, grazing, feral pigs
4. W of Northampton	Shire recreation reserve	1996 29	Healthy	Weed invasion, grazing, feral pigs

Note: * total for both subpopulations combined.

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 *Pterostylis* sp. Northampton 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 OBJECTIVES AND CRITERIA

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.

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

All relevant people have been made aware of the existence of this taxon and its locations. Local Shires and private property owners have been formally notified of the presence of the *Pterostylis* sp. Northampton populations on their lands. These notifications detailed the Declared Rare status of the taxon and the associated legal responsibilities.

Declared Rare Flora (DRF) markers have been installed at Populations 1 and 2. These alert people working in the area to the presence of significant flora and help prevent accidental damage during maintenance operations. Awareness of the significance of these markers is being promoted to relevant bodies such as shires. To this end, dashboard stickers and posters have been produced and distributed. These illustrate DRF markers, inform of their purpose and provide a contact telephone number to use if such a marker is encountered.

An A4 sized poster that provides a description of the species and information about threats and recovery actions has been developed for *Pterostylis* sp. Northampton. It is hoped that distribution of the poster will result in the discovery of new populations.

A pig exclusion fence was erected at Population 1 by the private land owner and staff from CALM Geraldton District. Both *Pterostylis* sp. Northampton and *Caladenia elegans* occur at this site.

In 1989, the Agriculture Protection Board undertook a 1080 baiting program throughout Northampton in an attempt to control feral pigs. By 1991, pigs had reinvaded the area, and in August 1994 recent pig diggings were observed near populations of *Pterostylis* sp. Northampton. Liaison between staff of CALM Geraldton District and Agriculture WA is continuing with regard pig control.

A monitoring plot was established near Population 2 in 1990 by CALM staff. Although the plot contains no *Pterostylis* sp. Northampton plants, monitoring data are indicative of levels of weed invasion and general condition at the site.

The local shire has ripped the gravel pit upslope of Population 2 and constructed a culvert rock wall in the adjacent erosion channel to improve drainage.

In April/May 2000, Geraldton District staff used fusilade to control grassy weeds at Populations 2 and 4.

Seed was collected by staff of the Botanic Gardens and Parks Authority (BGPA) in 1998 and 1999 and stored in liquid nitrogen. Fungal isolates were obtained in 1998 and 1999 from associated mycorrhiza. Germination studies using these isolates were not successful.

The Geraldton District Threatened Flora Recovery Team (GDTFRT) 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.

Staff from CALM's Geraldton District Office regularly monitor the populations.

Future recovery actions

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

1. Coordinate recovery actions

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

Action: Coordinate recovery actions
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $6600 per year

2. Undertake weed control

Weeds are a major threat to all populations. The following actions will be implemented:

1. Selection of appropriate herbicides after determining which weeds are present.
2. Controlling invasive weeds by hand removal or spot spraying around *Pterostylis* sp. Northampton plants when weeds first emerge.
3. Scheduling weed control to include spraying at other threatened flora populations within the district.

The tolerance of native plant species associated with *Pterostylis* sp. Northampton to herbicides is not known and weed control programs will be undertaken in conjunction with research.

Action: Undertake weed control
Responsibility: CALM (Geraldton District, CALMScience) through the GDTFRT
Cost: $1100 per year

3. Seek to acquire buffers, and rehabilitate land, adjacent to Population 2

The management of drainage at Population 2 is dependent upon managing water flowing from adjacent land. CALM will therefore seek to acquire, fence and rehabilitate buffer areas that are currently on private land adjacent to the population on either side of the road with local native species. Drainage in the buffer will also be managed to control water flow into the road reserve. This will also increase the potential habitat for the orchid, and provide a buffer to extant plants from weed invasion and chemical drift. The rehabilitation strategy will also include seeding of the gravel pit that occurs adjacent to Population 2, and which contributes additional water flow into the road reserve.

Action: Seek to acquire buffers, and rehabilitate land, adjacent to Population 2
Responsibility: CALM (Geraldton District) through the GDTFRT

Cost: $6000 in first year and $9300 in second year

4. Develop and implement a drainage and rehabilitation strategy for Population 2

Strategies to restore the habitat through drainage management, controlling weeds and reintroducing plant species native to the site are essential to conserve Population 2. A drainage control and rehabilitation strategy will be developed and implemented in liaison with relevant stakeholders including the local shire. Water flows around the population will be examined during a high rainfall event to help determine local topography and to help determine the most appropriate actions.

Possible actions include:

- Diverting the road.
- Lining the current erosion channels on the south side of the road with rocks.
- Levelling the spoon drain formed on the north side of the road, to ensure water flowing off the road flows alongside the road and not into the road reserve.
- On the south side of the road, channelling water so that it flows off farm land and into the road reserve in a different area.
- Fill in the current channel on the south side of the road and duct water through a large concrete pipe.
- Completely fill in the channel on the south side of the road with clean soil and create a much narrower rock-lined channel.
- Fill the current channel on the south side of the road at intervals with rocks to create riffles to slow the water flow and decrease erosion.
- Place smaller 'blunt ended' rock lined channels at angles to the current channel on the south side of the road to divert the water, and allow it to drain away more slowly (not a favoured option, as it will remove possible habitat and increase disturbance, weeds and flooding in the road reserve).
- Fill the channel on the south side of the road at intervals with brush cut from local species to slow water flow. Note that this is unlikely to have any real effect as the brush is likely to be washed away due to the high water flows at the site. This action may be more effective if combined with partial filling of the channel.

Action: Develop and implement a drainage and rehabilitation strategy for Population 2
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: To be determined

5. Liaise with relevant land managers

Staff from CALM's Geraldton District will continue to liaise with the Shire and relevant land managers to ensure that populations are not accidentally damaged or destroyed.

Action: Liaise with relevant land managers
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $700 per year

6. Develop and implement a fire management strategy

A fire management strategy that defines fire control measures, and fire frequency and timing will be developed in consultation with relevant authorities and land managers. In particular, at Population 2 occasional fire in conjunction with weed control may be necessary to reduce competition from dense understorey shrubs.

Action: Develop and implement a fire management strategy
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $2500 in first year and $1000 in subsequent years

7. Monitor populations

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

Action: Monitor populations
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $2000 per year

8. Control grazing

Grazing by animals such as rabbits, kangaroos and caterpillars will be monitored and managed at all populations. If necessary, grazing will be controlled through baiting (for rabbits) or other alternative methods. Carbaryl dust has been shown to be an effective method for controlling caterpillars.

Action: Control grazing
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $1000 per year

9. Conduct further surveys

Further surveys will be conducted during the species' flowering period (August to early September). Local volunteers such as members of naturalists clubs, the West Australian Native Orchid Study and Conservation Group and wildflower societies will be encouraged to be involved in surveys supervised by CALM staff.

Action: Conduct further surveys
Responsibility: CALM (Geraldton District) through the GDTFRT
Cost: $2900 per year

10. Collect seed and tissue culture material

Collection of germplasm will be given a high priority as there is a possibility of extinction of wild populations, and recovery of the species in the long-term may require *ex situ* conservation techniques. Hand pollination of the orchid may be required to promote a higher seed set. However, if it is not possible to collect adequate quantities of viable seed, other more costly methods of germplasm storage may need to be investigated. These may involve living collections or storage of tissue culture material.

Action: Collect seed and tissue culture material
Responsibility: CALM (Geraldton District, Threatened Flora Seed Centre) and BGPA, through the GDTFRT
Cost: $3600 per year

11. Obtain biological and ecological information

Increased knowledge of the biology and ecology of the species will provide a scientific basis for management of *Pterostylis* sp. Northampton in the wild. Investigations will include:

1. Study of 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.

Action: Obtain biological and ecological information
Responsibility: CALM (CALMScience, Geraldton District) through the GDTFRT
Cost: $18,100 per year

12. Propagate plants for translocation

The propagation of plants in readiness for translocation is essential as the only known populations are under threat in the wild.

Action: Propagate plants for translocation
Responsibility: CALM (Geraldton District) and BGPA, through the GDTFRT
Cost: $1400 in first and second years

13. Undertake and monitor translocation

Translocations will be planned once sufficient seed has been stored and prior to seedlings being developed. Although translocations are generally undertaken under full Recovery Plans, the many threats to wild populations of this species indicate the need for development of a translocation proposal within the time frame of this IRP. This will be coordinated by the GDTFRT. 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. Monitoring of the translocation is essential and will occur during the flowering period of the species.

Action: Undertake and monitor translocation
Responsibility: CALM (CALMScience, Geraldton District) through the GDTFRT
Cost: $12,800 in first year and $4500 in subsequent years

14. Promote awareness

The importance of biodiversity conservation, the preservation of Critically Endangered species generally and the existence of *Pterostylis* sp. Northampton in particular will be promoted to the public. Formal links with local naturalist groups and interested individuals will also be encouraged.

An information sheet for *Pterostylis* sp. Northampton has been produced and distributed (see existing recovery actions). CALM will also produce a mail-out information flier for distribution in the Northampton area. These fliers are aimed at local residents to provide information and a contact number if the species is located.

Action: Promote awareness
Responsibility: CALM (Geraldton District, Corporate Relations) through the GDTFRT
Cost: $700 per year

15. Seek to acquire land, erect weed barriers, and rehabilitate buffer at Population 4

Population 4 of *Pterostylis* sp. Northampton is located on a Shire reserve for 'Picnic Ground and Flora'. Permission will be sought from the shire for a shade cloth barrier to be erected and for a buffer strip to be replanted to prevent continual weed encroachment on the western side of the reserve. The possibility of acquiring this reserve and placing it under the management of the National Parks and Nature Conservation Authority will also be investigated.

Action: Seek to acquire land, erect weed barriers, and rehabilitate buffer at Population 4
Responsibility: CALM (Geraldton District, Land Administration Section) through the GDTFRT
Cost: $4300 in first year, $500 in second year

16. 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, Geraldton District) through the GDTFRT
Cost: $18,200 in third year

4. TERM OF PLAN

This Interim Recovery Plan will operate from June 2000 to May 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:

Andrew Batty	Botanic Gardens and Parks Authority
Alanna Chant	Conservation Officer, CALM Geraldton District
Mike Meinema	District Manager, CALM Geraldton District
Sue Patrick	Senior Research Scientist, CALM WA Herbarium
Phil Roberts	Wildlife Officer, CALM Geraldton District

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

6. REFERENCES

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7. TAXONOMIC DESCRIPTION

From Hoffman and Brown (1998).

Pterostylis sp. Northampton is a small tuberous terrestrial herb growing to 5 to 10 centimetres high. The flower spike emerges from a basal rosettes of leaves and bears between two and twenty pale green 'greenhood' flowers, each of which are approximately 5 by 5 millimetres in size. Flowering occurs from August to early September.