INTERIM RECOVERY PLAN NO. 132

GREEN HILL THOMASIA

(*THOMASIA* SP. GREEN HILL)
INTERIM RECOVERY PLAN
2003-2008

Val English

Photograph: Diana Papenfus

February 2003

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

Natural Heritage Trust
Helping Communities Helping Australia

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 (the Department) 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.

The Department 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 results from a review of IRP number 26 (Rebecca Evans and V. English, 1999-2002) and replaces it. The revised IRP will operate from February 2003 to January 2008 but will remain in force until withdrawn or replaced.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 assessed.

This IRP was approved by the Director of Nature Conservation on 20 June, 2003. The provision of funds identified in this Interim Recovery Plan is dependent on budgetary and other constraints affecting the Department, as well as the need to address other priorities.

Information in this IRP was accurate as at February 2003.

SUMMARY

Scientific Name:	*Thomasia* sp. Green Hill	**Common Name:**	Green Hill Thomasia
Family:	Sterculiaceae	**Flowering Period:**	October
Dept Region:	Midwest	**Dept District:**	Moora
Shire:	Victoria Plains	**Recovery Team:**	Moora District Threatened Flora Recovery Team (MDTFRT)

Illustrations and/or further information: A. Brown, C. Thomson-Dans and N. Marchant (Eds) (1998) *Western Australia's Threatened Flora*.

Current status: An Interim Recovery Plan was drafted for *Thomasia* sp. Green Hill in 1999 (Evans and English 1999). This plan is based on that document and includes additional information compiled since 1999.

Thomasia sp. Green Hill was declared as Rare Flora under the Western Australian *Wildlife Conservation Act* 1950 in October 1996 and ranked as Critically Endangered (CR) in November 1998. It is also listed as Endangered under the Commonwealth *Environmental Protection and Biodiversity Conservation Act* 1999. It currently meets World Conservation Union (IUCN 2000) Red List category 'CR' under criterion B1ab(iii)+2ab(iii) (IUCN 2000), as it is only known from one population, with declining quality of the habitat. The species exists in a bush block in New Norcia and the main threats are weed invasion, inappropriate fire regimes, grazing by kangaroos, destruction resulting from firebreak maintenance and farming activities, and a lack of genetic diversity.

Critical habitat: The critical habitat for *Thomasia* sp. Green Hill comprises the area of occupancy of the known population; similar habitat within 200 metres of the known population; remnant vegetation that links subpopulations; and additional nearby occurrences of similar habitat that do not currently contain the species but may have done so in the past and may be suitable for translocations.

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 for wild and translocated populations is habitat critical.

Benefits to other species/ecological communities

There are no other known threatened species or communities that occur in the habitat of Population 1. However, recovery actions implemented to improve the quality or security of *Thomasia* sp. Green Hill Population 1 are likely to improve the condition of its bushland habitat.

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 *Thomasia* sp. Green Hill 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. Therefore no role has been identified for indigenous communities in the recovery of this species.

Social and economic impacts

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. The only known population of *Thomasia* sp. Green Hill occurs on private land and the landholders are amenable to managing the habitat of the species for conservation. Recovery actions refer to continued liaison between stakeholders with regard this area.

Evaluation of the Plans Performance

The Department of Conservation and Land Management, in conjunction with the Recovery Team, will evaluate the performance of this IRP. In addition to annual reporting on progress with listed actions and comparison against the criteria for success and failure, the plan is to be reviewed within five years of its implementation.

Habitat requirements: *Thomasia* sp. Green Hill is endemic to Western Australia and is apparently confined to the New Norcia area. It is known from only one population, consisting of two subpopulations, with a total of 99 plants. The

subpopulations grow approximately 1.5 km apart but within the same bush block and on the same brown clayey sand over laterite, in open wandoo woodland. Associated taxa include *Grevillea*, *Melaleuca*, *Glischrocaryon*, *Allocausarina*, *Hibbertia* and *Stylidium* species.

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

1. Land managers and adjacent landowners have been made aware of the location and threatened status of the species.
2. Approximately 230 seeds were collected from Population 1 in November 1998 and are stored in the Department's Threatened Flora Seed Centre at –18°C.
3. The Botanic Garden and Parks Authority currently have two plants of *Thomasia* sp. Green Hill from two clones.
4. An information sheet that describes and illustrates the species has been produced and distributed.
5. Staff from the Department's Moora District regularly monitor populations of the species.
6. The Moora District Threatened Flora Recovery Team is overseeing the implementation of this IRP and will include information on progress in an annual report to the Department's Corporate Executive and funding bodies.

IRP Objective: 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.

Recovery criteria

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

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

Recovery actions

1. Coordinate recovery actions
2. Maintain boundary fence
3. Map critical habitat
4. Monitor population
5. Obtain biological and ecological information
6. Promote awareness
7. Collect seed and cutting material
8. Undertake and monitor translocation
9. Undertake weed control
10. Develop and implement a fire management strategy
11. Seek long-term protection of habitat
12. Conduct further surveys
13. Stimulate germination of soil-stored seed
14. Review the need for a full Recovery Plan

1. BACKGROUND

History

An interim Recovery Plan was drafted for *Thomasia* sp. Green Hill in 1999 (Evans and English 1999). This document is based on that plan and includes additional information compiled since 1999.

Thomasia sp. Green Hill was first officially collected in 1972, several kilometres south of New Norcia. This population could not be relocated during flora surveys in 1993 and 1994, and the species was not located during extensive floristic surveys conducted in the region by T. Griffin during 1990-1992. In September 1995 a survey was conducted specifically for *Thomasia* sp. Green Hill in the New Norcia area, and a collection was made in an area of remnant vegetation on private property. This consisted of two small subpopulations (13 and 8 plants respectively), separated by a distance of 1.5 km. This remains the only known population, but has increased in size to 18 and 81 plants respectively.

A *Thomasia* specimen collected by D. W. Giminez in 1923 appears very similar to the above taxon. Following a taxonomic review of *Thomasia*, this specimen may be identified as *Thomasia* sp. Green Hill.

Description

Thomasia sp. Green Hill is a low shrub approximately 40 cm in height with multiple stems that grow from a rootstock. The leaves are flat, narrowly elliptic, 10-13 mm long and 5 mm wide. The inflorescences are racemes of about three flowers. The ribbed calyx is mauve with a reddish purple base. The calyx is approximately 7 mm long, and is divided for less than half its length into five obtuse arching lobes. The rounded petals and anthers are dark purple-black.

Distribution and habitat

Thomasia sp. Green Hill is endemic to Western Australia and is apparently confined to the New Norcia area. It is known from only one population, consisting of two subpopulations, with a total of 99 plants. The subpopulations grow approximately 1.5 km apart but within the same remnant bush block and on the same brown clayey sand over laterite, in open *Eucalyptus wandoo* woodland. Associated taxa include *Grevillea sp., Melaleuca radula, Melaleuca scaberula, Glischrocaryon* sp., *Hibbertia hypericoides, Allocasuarina campestris, Calothamnus sp., Eucalyptus wandoo*, and *Stylidium* species.

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 *Thomasia* sp. Green Hill 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. Therefore no role has been identified for indigenous communities in the recovery of this species.

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 any translocated populations, are considered important to the survival of the species. Recovery actions include survey for further populations that would lead to the identification of additional habitat critical.

Benefits to other species/ecological communities

There are no other known threatened species or communities that occur in the habitat of Population 1. However, recovery actions implemented to improve the quality or security of *Thomasia* sp. Green Hill Population 1 are likely to improve the condition of its bushland habitat.

Social and economic impacts

The implementation of this recovery plan is unlikely to cause significant adverse social and economic impacts. The only known population of *Thomasia* sp. Green Hill occurs on private land and the landholders are amenable to managing the habitat of the species for conservation. Recovery actions refer to continued liaison between stakeholders with regard this area.

Evaluation of the Plan's Performance

The Department of Conservation and Land Management, in conjunction with the Moora District Threatened Flora Recovery Team will evaluate the performance of this recovery plan. In addition to annual reporting on progress against the criteria for success and failure, the plan is to be reviewed within five years of its implementation. Any changes to management / recovery actions made in response to monitoring results will be documented accordingly.

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*).

The critical habitat for *Thomasia* sp. Green Hill comprises:

- the area of occupancy of the known population;
- areas of similar habitat within 200 metres of the known population, i.e. brown clayey sand over laterite in open wandoo woodland (these provide potential habitat for natural range extension);
- remnant vegetation that links subpopulations (this is necessary to allow pollinators to move between subpopulations);
- 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).

Biology and ecology

Very little is known about the biology and ecology of the genus *Thomasia* or about *Thomasia* sp. Green Hill. *Thomasia* sp. Green Hill is known to have the ability to regenerate from rootstock after grazing, and probably also following fire.

There is no information about pollinators, but work on germination rates of seed collected from both subpopulations indicates the viability of the seed produced is high. The germination rate was initially tested using boiling water and resulted in only 20-40% germination, but subsequent testing with a treatment of nicking the seed coat resulted in 100% germination.

The species is difficult to propagate from cuttings, although some clones appear to have better strike rates than others.

Threats

Thomasia sp. Green Hill was declared as Rare Flora the Western Australian *Wildlife Conservation Act* 1950 in October 1996 and ranked as Critically Endangered (CR) in November 1998. It is also listed as Endangered

under the EPBC Act. It currently meets World Conservation Union (IUCN 2000) Red List category 'CR' under criterion B1ab(iii)+2ab(iii) (IUCN 2000), as it consists of one population with a small number of adult plants, with declining quality of the habitat. The species exists in a bush block in New Norcia and the main threats are weed invasion, fire, firebreak maintenance, chemical drift, grazing and a lack of genetic diversity.

- **Weed invasion** is a threat to adult plants and seedlings at both subpopulations. Weeds suppress early plant growth by competing for soil moisture, nutrients and light. *Thomasia* sp. Green Hill occurs on the edge of the bush block adjacent to farmland and the site is therefore prone to weed invasion from nearby pasture.

- **Inappropriate fire regimes** may affect the viability of populations, as seeds of *Thomasia* sp. Green Hill probably germinate following fire. If this is the case, the soil seed bank would rapidly be depleted if fires recurred before regenerating or juvenile plants reached maturity and replenished the soil seed bank. However, it is likely that occasional disturbances such as fire are needed for reproduction of this species.

- **Firebreak and fence maintenance activities** threaten plants that are growing close to the firebreak and fenceline. Vehicles turning, grading, chemical spraying and other maintenance activities could affect both subpopulations of *Thomasia* sp. Green Hill.

- **Chemical drift or leaching** of herbicide and fertiliser applications on adjacent farmland have the potential to impact both subpopulations of *Thomasia* sp. Green Hill.

- **Grazing** by kangaroos was impacting on this species in late winter 1999, but the impact of grazing declined following rapid growth of the plants in spring of that year.

- **Grazing** by sheep is a potential threat to both subpopulations if the fenceline between the pasture and the bush block is not maintained.

- **Genetic diversity** of the species is limited as there are only 99 plants of this species. Genetic diversity is required to provide a species with the ability to adapt to changing conditions, such as climate.

Summary of population information and threats

Pop. No. & Location	Land Status	Year/No. plants	Condition	Threats
1a. SW of New Norcia	Private (East)	1995 13 1998 16 1999 18 (2)	Good	Weed invasion, fire, firebreak maintenance, grazing
1b. SW of New Norcia	Private (West)	1995 8 1998 50+ 1999 81	Good	Weed invasion, fire, firebreak maintenance, chemical drift, grazing

Numbers in brackets = number of juveniles.

Guide for decision-makers

Section 1 provides details of current and possible future threats. Any on-ground works (clearing, firebreaks, roadworks etc) in the immediate vicinity of *Thomasia* sp. Green Hill 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 ten percent or more.
Criteria for failure: The number of individuals within populations and/or the number of populations have

decreased by ten percent or more.

3. RECOVERY ACTIONS

Existing recovery actions

The landowner was made aware of the existence and importance of *Thomasia* sp. Green Hill in 1995. Since then, the Farm Manager has participated in a survey for further populations and assisted subsequent Departmental staff in locating the known subpopulations. Care is also being taken in the management of the bush block to conserve the two subpopulations of *Thomasia* sp. Green Hill. A letter was sent to notify the landowner in October 1996 when the species was formally gazetted as Declared Rare Flora.

Due to the proximity of the subpopulations to crops on adjacent land, the managers of that land have been informed of the location of *Thomasia* sp. Green Hill. This is to ensure that due care is taken to avoid chemical drift and leaching, and to ensure maintenance of the fence is adequate to exclude stock.

Seed was collected from both subpopulations twice in November 1998 and stored in the Department's Threatened Flora Seed Centre (TFSC). The TFSC holds 106 seeds from 17 plants from Population 1a and 130 seeds from 45 plants at Population 1b. Staff of the TFSC test the viability of seed soon after collection and again after one year in storage. The initial germination rate of this seed ranged from 20% to 40%. After one year in storage the germination rate was 100% (unpublished data A. Cochrane[1]). Germinants from these trials are delivered to Botanic Garden and Parks Authority (BGPA) nursery for maturation into full plants

The BGPA currently have two plants of *Thomasia* sp. Green Hill from two clones. The species has been difficult to propagate in this way, with success ranging from 0% to 60% (personal communication A. Shade[2]).

A double-sided information sheet has been produced, and includes a description of *Thomasia* sp. Green Hill, its habitat, threats, recovery actions and photos. This is distributed to the community through avenues such as the local libraries and wildflower shows. It is hoped that this may result in the discovery of new populations.

Staff of the Department's Moora District regularly monitor both subpopulations for changes in population size, level of threat and habitat condition. Individual plants at both subpopulations will be mapped to aid future surveys and monitoring, as plants are inconspicuous when not in flower.

The Moora District Threatened Flora Recovery Team (MDTFRT) is overseeing the implementation of this IRP and will include information on progress in its annual report to the Department's Corporate Executive and funding bodies.

Future recovery actions

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

1. Coordinate recovery actions

The Moora District Threatened Flora Recovery Team (MDTFRT) will coordinate recovery actions for *Thomasia* sp. Green Hill and other Declared Rare Flora in the region. They will include information on progress in their annual report to the Department's Corporate Executive and funding bodies.

Action: Coordinate recovery actions
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $400 per year.

[1] Anne Cochrane, Manager, the Department's Threatened Flora Seed Centre
[2] Amanda Shade, Horticulturalist, Botanic Garden and Parks Authority

2. Maintain boundary fence

Adjacent farmland is periodically grazed by sheep and continued maintenance of the fence between the crop and the subpopulations is required to prevent any damage to *Thomasia* sp. Green Hill.

Action: Maintain boundary fence
Responsibility: The Department (Moora District) through the MDTFRT in consultation with the relevant Farm Managers
Cost: $600 in first year.

3. Map critical habitat

It is a requirement of the EPBC Act that spatial data relating to critical habitat be determined. Although critical habitat is described in Section 1, the areas as described have not yet been mapped and that will be done under this action. If any additional populations are located, then critical habitat will also be determined and mapped for these locations.

Action: Map critical habitat
Responsibility: The Department (Moora District, WATSCU) through the MDTFRT
Cost: $2000 in the first year

4. Monitor population

Annual monitoring of factors such as habitat degradation (including weed invasion, salinity and plant diseases such as *Phytophthora cinnamomi*), population stability (expansion or decline), pollination activity, seed production, recruitment, longevity and predation is essential. Special attention will be paid to the level of damage inflicted by kangaroo grazing, and action taken if deemed necessary. It is intended that individual plants will be mapped or marked to enable survey when the species is not in flower, and for collection of seed.

Action: Monitor population
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $1000 per year.

5. Obtain biological and ecological information

Improved knowledge of the biology and ecology of *Thomasia* sp. Green Hill will provide the necessary scientific basis for its management in the wild. An understanding of the following is particularly necessary for effective management:

1. Soil seed bank dynamics and the role of various disturbances (including fire), competition, rainfall and grazing in germination, recruitment and resprouting from rootstock.
2. The pollination biology of the species.
3. The requirements of pollinators.
4. The reproductive strategies, phenology and seasonal growth of the species.
5. The population genetic structure, levels of genetic diversity and minimum viable population size.

Action: Obtain biological and ecological information
Responsibility: The Department (Science Division, Moora District) through the MDTFRT with assistance from the BGPA
Cost: $20,000 per year in the second, third and fourth years

6. Promote awareness

The importance of biodiversity conservation and the need for the long-term protection of wild populations of this species will be promoted to the community through poster displays and the local print and electronic media. Formal links with local naturalist groups and interested individuals will also be encouraged.

Staff of the Moora District also will work with local Community Support Officers to help increase awareness of the species. Information sheets on *Thomasia* sp. Green Hill will be distributed opportunistically to the local community.

Action: Promote awareness
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $1,900 in second year.

7. Collect seed and cutting material

Preservation of germplasm is essential to guard against extinction if wild populations are lost, and to protect the remaining genetic diversity. Such collections are also needed to propagate plants for translocations. A small amount of seed and cutting material have been collected from both subpopulations but further collections are required.

Action: Collect seed and cutting material
Responsibility: The Department (TFSC, Moora District) through the MDTFRT
Cost: $2,300 per year

8. Undertake and monitor translocation

Translocation is highly desirable for the conservation of this species, as the number of extant plants is low and its range is extremely limited. It is therefore susceptible to both a single catastrophic event as well as the ongoing threats of weed competition, grazing, fire and chemical drift.

A Translocation Proposal will be developed and suitable translocation sites sought. Plants will be propagated in readiness for translocation, and when appropriate, these will be planted in accordance with the approved Translocation Proposal. Information on the translocation of threatened plants and animals in the wild is provided in the Department's Policy Statement No. 29 *Translocation of Threatened Flora and Fauna.* All translocation proposals require endorsement by the Department's Director of Nature Conservation.

Monitoring of translocations is essential and will be undertaken according to the timetable developed for the Translocation Proposal.

Action: Undertake and monitor translocation
Responsibility: The Department (Science Division, Moora District) and BGPA through the MDTFRT
Cost: $23,000 in first year and $7,500 per year in subsequent years

9. Undertake weed control

Subpopulations 1a and 1b are moderately weed infested. Adult *Thomasia* sp. Green Hill plants appear to cope well with weed competition, but the impact on recruitment is likely to be greater. Weed control will be undertaken through hand weeding or localised application of herbicide during the appropriate season to minimise the effect of herbicide on the species and the surrounding native vegetation. All weed control will be followed by a report on the method, timing and success of the treatment against weeds, and the effect on *Thomasia* sp. Green Hill and associated native plant species.

Action: Undertake weed control
Responsibility: The Department (Moora District, Science Division) through the MDTFRT in consultation with the relevant Farm Manager
Cost: $2,400 per year

10. Develop and implement a fire management strategy

The response of this species to fire is unknown, but it is likely that the species requires occasional fire for recruitment from soil-stored seed. Frequent fires, however, are likely to be detrimental to its long-term survival.

Fire also promotes the introduction and proliferation of weed species. Following research into the species' fire response, a fire management strategy will be developed.

Action: Develop and implement a fire management strategy
Responsibility: The Department (Moora District) through the MDTFRT and relevant Farm Managers
Cost: $1,700 in first year and $1,000 in subsequent years

11. Seek long-term protection of habitat

Staff from the Department's Moora District will continue to liaise with relevant land managers and landowners to ensure that populations are not accidentally damaged or destroyed. In addition, ways and means of improving the security of the population and its habitat will be sought. This may include conservation covenants with a range of agencies, and/or the Land for Wildlife scheme.

Action: Seek long-term protection of habitat
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $1,000 in first year, and $500 in subsequent years

12. Conduct further surveys

Further surveys by Departmental staff and community volunteers will be conducted on a systematic basis during the species' flowering period (October) in areas of suitable habitat. With the permission of the landowners, appropriate habitat on other private lands will be surveyed. Volunteers from the local community, Landcare groups, Wildflower Societies, and/or Naturalist Clubs will be invited to be involved in surveys supervised by Departmental staff.

Action: Conduct further surveys
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $1,700 per year

13. Stimulate germination of soil-stored seed

Burning, smokewater and soil disturbance may be effective in stimulating the germination of soil-stored seed. Where appropriate, these trials will be conducted near existing subpopulations in disturbed areas newly cleared of weeds.

Action: Stimulate germination of soil-stored seed
Responsibility: The Department (Moora District) through the MDTFRT
Cost: $4,400 in first year, and $1,000 in subsequent years

14. Review the need for a full Recovery Plan

At the end of the fourth year of its five-year term this Interim Recovery Plan will be reviewed and the need for further recovery actions will be assessed. If the species is still ranked as Critically Endangered at that time a full Recovery Plan may be required.

Action: Review the need for further recovery actions and/or a full Recovery Plan
Responsibility: The Department (WATSCU, Moora District) through the MDTFRT
Cost: $20,300 in the fifth year (if a full Recovery Plan is required)

4. TERM OF PLAN

This Interim Recovery Plan will operate from February 2003 to January 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:

Rebecca Carter	Program Leader Nature Conservation, the Department's Moora District
Anne Cochrane	Manager, the Department's Threatened Flora Seed Centre
Rebecca Evans	Previously Project Officer, WATSCU
Amanda Shade	Horticulturalist, Botanic Garden and Parks Authority
Gina Broun	Conservation Officer, the Department's Moora District

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

6. REFERENCES

Brown, A., Thomson-Dans, C. and Marchant, N. (Eds). (1998) *Western Australia's Threatened Flora*. Department of Conservation and Land Management, Western Australia.

Evans, R. and English, V. (1999). Interim Recovery plan number 26, 1999-2002. *Thomasia* sp. Green Hill. Department of Conservation and Land Management, Western Australia.

Department of Conservation and Land Management (1992) Policy Statement No. 44 *Wildlife Management Programs*. Department of Conservation and Land Management, Western Australia.

Department of Conservation and Land Management (1994) Policy Statement No. 50 *Setting Priorities for the Conservation of Western Australia's Threatened Flora and Fauna*. Department of Conservation and Land Management, Western Australia.

Department of Conservation and Land Management (1995) Policy Statement No. 29 *Translocation of Threatened Flora and Fauna.* Department of Conservation and Land Management, Western Australia.

Department of Conservation and Land Management (1998) Western Australian Herbarium FloraBase – Information on the Western Australian Flora. Department of Conservation and Land Management, Western Australia. http://www.calm.wa.gov.au/science/

World Conservation Union (2000) *IUCN red list categories prepared by the IUCN Species Survival Commission, as approved by the 51st meeting of the IUCN Council*. Gland, Switzerland.

7. TAXONOMIC DESCRIPTION

Papenfus, D. (1995). Proposed Addition or Deletion or Change to the Schedule of Declared Rare Flora, *Thomasia* sp. Green Hill (Unpublished report).

A low shrub to ca. 400 mm in height, multi-stemmed from root stock. Leaves are flat, narrowly elliptic, 10 - 13 mm long and 5 mm wide. The inflorescences are racemes of about three flowers. The calyx is mauve in colour with the ribs and base reddish purple. The calyx is c. 7 mm long, divided less than half way into five obtuse, arching lobes. The petals and anthers are dark purple - black; the petals are rounded.

Australian Government

Department of the Environment and Heritage

ADDENDUM

Green Hill Thomasia (*Thomasia* sp. Green Hill) Interim Recovery Plan 2003-2008

In adopting this plan under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the Minister for the Environment and Heritage has approved the following modifications.

Critical Habitat

The plan identifies a broad area as critical habitat, including buffer zones of a set distance around known populations. The Threatened Species Scientific Committee does not necessarily believe that such an area qualifies as habitat critical to the survival of the species, as defined in the EPBC Act.

Recovery Criteria

For the purposes of reviewing this recovery plan under the EPBC Act, the Recovery Criteria are amended to read as follows:

Criteria for success: The number of individuals within populations and/or the number of populations have increased by 10% or more over the period of the plan's adoption under the EPBC Act.
Criteria for failure: The number of individuals within populations and/or the number of populations have decreased by 10% or more over the period of the plan's adoption under the EPBC Act.