

**Caladenia bryceana  subsp bryceana
Annual Report**

2004

BY
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On behalf of the

March 2005

Wellington District Office
Wittenoom Street
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Executive Summary

The initial success, in the first three years of the Interim Recovery Plan, has continued. The population size of the *Caladenia bryceana* subs. *bryceana* (Population 2) within the Wellington District appears to be on the increase.

The reasons for the ongoing improvement are not clear, there were no apparent changes in the physical characteristics of the site. This trend has continued from a very poor flowering season in 2002 and 2003 to an improved population this year, in spite of an extended dry and hot weather period.

As the 2003 and 2004 year received a below average rainfall and extended dry periods, 28 plants were observed within the vicinity of Wild Horse Swamp Nature Reserve.

An achievement for this year was the continued monitoring of the trial prescribed burn and weed control program undertaken within the population. The increase in germination and plant number differences between the trial burn area and the untreated sections of the population suggest that fire may be a significant factor contributing to population increases from 2002-2004. Further investigation into the effects that fire has on weed competition and recruitment, soil nutrient cycling and germination warrant future work.

Goals for 2004 were:

- 1 *Weed control by hand weeding*
- 2 *Herbicide trials using various rates in conjunction with BGPA*
- 3 *Translocation proposal*
- 4 *Regular monitoring of ground water in vicinity of the site*
- 5 *Continue with the pilot workshop*
- 6 *Look at DNA comparison between other subspecies populations*
- 7 *Continue the search for other populations*

GOALS FOR 2005

- 1 Weed control by hand weeding
- 2 Herbicide trials using various rates in conjunction with BGPA
- 3 translocation proposal
- 4 Regular monitoring of ground water in vicinity of the site
- 5 Continue with the pilot workshop
- 6 Look at DNA comparison between other subspecies populations
- 7 Continue the search for other populations

1.0 Weed control by hand weeding

An achievement for this year was the continuation of hand removal of invasive weed species within the immediate vicinity of the population.

2.0 Herbicide trials using various rates in conjunction with BGPA

Weeds appear to pose a significant threat to recruitment and establishment of this species, and during 2004 weed monitoring was undertaken of the areas on which herbicide trials had been conducted. Continued monitoring of weed species will be used to detect influences and enact possible changes to current management actions.

Further liaison with Dr. A Batty regarding appropriate weed management strategies will be included as a priority management action for 2005.

3.0 Develop a Translocation Proposal

This recovery action may be considered at a later stage when a more a comprehensive understanding of the species is attained. Further investigation into translocation methods will be actioned in 2005 in consultation with Dr A Batty BGPA.

4.0 Regular monitoring of ground water in vicinity of the site

Ongoing water sampling to monitor for acid sulphate soils and salinity was undertaken in February 2004. pH and salinity testing will continue at Wild Horse Swamp in 2005 in conjunction with monitoring programs at nearby reserves.

5.0 Promote Awareness – conduct a pilot workshop

The proposed stakeholder workshop was not held in 2003/4-5. This will be made a priority in 2005/6.

A previous proposal to produce a regional poster, for community groups and stakeholders, identifying the current three critically endangered species of flora within the Wellington District will also be considered in the current years operational plan.

6.0 Look at DNA comparison between other subspecies populations

This will be discussed with Dr Andrew Batty as will other items under “Action 7. Obtain biological and ecological information”, which is covered below.

7.0 Conduct Further Surveys

A field visit to Albany was completed in 2004. The visit looked at the different population dynamics and plant biology. Variances in habitat and physical characteristics between the populations will assist in attaining a better understanding of plant ecology and further assists in locating additional areas for future surveys within the South West Region.

Currently annual surveying is restricted to areas of Wild Horse Swamp Nature Reserve that contain the *E. rudis*/*A. acuminate*/*X. pressie*/*M. reidlii* associations on sandy soils.

Further investigation is required into the impact of weeds on this species, as fire or significant weed removal has not occurred within the area prior to 1995. A thick cover of grasses and palatable weeds species have established over invaded the *Caladenia bryceana* sites.

Significant staff changes resulting in a loss of program continuity, 4 of 5 staff are now not involved in the program, in conjunction with other operational (fire and training) commitments has prevented further surveys from occurring in 2004/5.

7.1 Continue to Monitor Populations

Monitoring this year took place between mid-August and mid-November. Leaves emerging as possible *C. bryceana* were pegged and marked with coloured tape for future positive identification during the flowering period. Plant characteristics were recorded in field notes and marked with numeric plastic tags attached to galvanised wire pegs.

Progress was also made with “Action 7. Obtain biological and ecological information” from the Interim Recovery Plan and this is discussed below.

1. *Effects of weeds on recruitment and establishment*
See **1.0** above

2. *Pollination biology*
No additional work has been undertaken in 2004. Future research into pollination and seed germination will be undertaken in conjunction with Dr. Andrew Batty KPBG.

3. *Seed germination requirements*
The previous collection of seed and associated fungi was undertaken in 2001 and 2003 by Dr A Batty. Research into trial seed germination techniques has continued, when possible, in 2004.

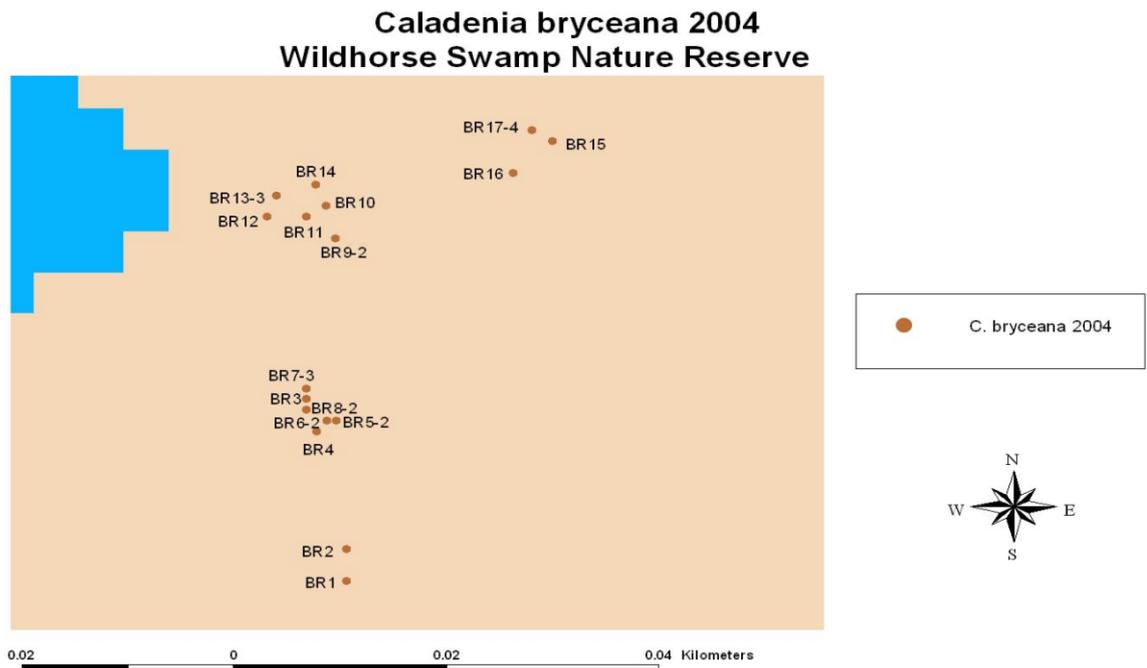
To date, a small sample of seed collected from population two sown onto oat-agar media and inoculated under sterile conditions with the mycorrhiza fungus indicated that approximately 50% of the seed collected may germinate.

4. *Lifecycle of plants*
No additional work has been undertaken this year, ongoing field data surveys will continue.

5. *Habitat response to herbicide treatments*
Herbicide treatment was not undertaken in 2004. The possibility and appropriateness of further trials will be discussed with Dr A Batty in 2005.

6. *Species and habitat response to fire*
This is now no longer a priority following discussions in 2003 with Dr. A Batty, however further investigation into the effects of prescribed burning on weed management and soil characteristics may be considered.

Locations of Caladenia bryceana September 2004



Population Count -Caladenia bryceana subsp. Wild Horse Swamp

Year	No. Plants	Identification
2000	7	Light Blue tags
2001	21	Light Blue tags?
2002	12	Blue tags
2003	17	Blue tags
2004	28	White tags

CONCLUSIONS

The goals set for this year are achievable but are dependent on time and resources available from DCALM and BGPA.

It is anticipated that additional study into soil borne fungi populations (mycorrhiza sp.) and seed propagation may help improve the current rate of seed germination. These issues will be investigated in cooperation with Dr. Andrew Batty BGPA.

Consideration will be given to seeking involvement of the Southwest College of TAFE for assistance in population’s searches. In addition if staff from the herbarium have time available we may be able to do some population prediction modelling.

References

Batty, Dr. A. (Research Officer) Terrestrial Orchid Conservation, Kings Park & Botanic Garden
Plant Science and Research Unit. West Perth WA 6005
Personal communication

2004 Annual Report
DRF- *Caladenia* sp.

- **CARBUNUP KING SPIDER ORCHID**
(*CALADENIA PROCERA*)
- **DUNSBOROUGH SPIDER ORCHID**
(*CALADENIA VIRIDESCENS*)
- **BUSSELL'S SPIDER ORCHID**
(*CALADENIA BUSSELLIANA*)

CARBUNUP KING SPIDER ORCHID
(*CALADENIA PROCERA*)

Goals for 2005

- 1) Undertake a weed assessment of all occurrences and implement a weed control program.
- 2) Establish formal weed monitoring plots (in association with the flora monitoring).
- 3) Produce at least 2 articles for local media outlets to increase community/stakeholder awareness of the importance of the areas, what they can do to participate and what management guidelines are in place.
- 4) Undertake a trial translocation of plants displaced from the "Peppermint Park" development.

Recovery Actions implemented during 2004

Numerous actions were carried out and achieved throughout the year, with the highlights discussed below.

Undertake weed control as necessary

Observations of occurrences for weeds

Develop and implement a fire management strategy

- No action required, previously completed.
- Review process is underway.

Monitor populations

- Monitoring of translocates formally occurred twice in the reporting period with assistance from CALM Science staff.
- Observations/inspections also occurred periodically in conjunction with overall district inspections

Conduct further surveys

- Resurveying of known populations occurred
- No new populations were discovered

DUNSBOROUGH SPIDER ORCHID (CALADENIA VIRIDESCENS)

Goals for 2005

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- 3) Produce at least 2 articles for local media outlets to increase community/stakeholder awareness of the importance of the areas, what they can do to participate and what management guidelines are in place.
- 4) Assist where appropriate Kings Parks staff to complete the development of the translocation proposal.
- 5) Undertake a trial translocation.

Recovery Actions implemented during 2004

Map critical habitat

- During field surveys. Locations of individual plants were GPSed and placed on a mapping program to record the extent of populations

Continue weed control

- Each occurrences had some form of weed control implemented in 2004. This Ranged from spray application of glyosphosphate (Buffer spraying) to hand weeding.
- Observations of occurrences for weeds

Finalise the fire management strategy

- No action required, previously completed.
- Review process is underway.

Continue control of grazing

- Maintenance of fencing was undertaken

Monitor populations

- Monitoring of translocates formally occurred twice in the reporting period with assistance from CALM Science staff
- Observations/inspections also occurred periodically in conjunction with overall district inspections

Conduct further surveys

- Resurveying of known populations occurred
- A new population along the Meelup walktrail was discovered.

Collect seed and fungal material

- Kings Park staff have been undertaking this work.

Undertake translocation

- Kings Park staff have been developing a translocation proposal.

BUSSELL'S SPIDER ORCHID (CALADENIA BUSSELLIANA)

Goals for 2005

- 1) Undertake a weed assessment of all occurrences and implement a weed control program.
- 2) Establish formal weed monitoring plots (in association with the flora monitoring).
- 3) Produce at least 2 articles for local media outlets to increase community/stakeholder awareness of the importance of the areas, what they can do to participate and what management guidelines are in place.
- 4) Assist where appropriate Kings Parks staff to complete the development of the translocation proposal.
- 5) Undertake a trial translocation.

Recovery Actions implemented during 2004

Map critical habitat

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Continue weed control

- Occurrences had some form of weed control implemented in the 2004 reporting period. Ranging from spray application of glyphosphate (Buffer spraying) to hand weeding.

Finalise the fire management strategy

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RULINGIA sp. TRIGWELL BRIDGE

ANNUAL REPORT 2004

By

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MARCH 2005

EXECUTIVE SUMMARY

During 2004 monitoring of all populations continued, with artificial watering restricted to the translocated population on the Nalder's property (population 1.) and Trigwell's Nature Reserve (population 2a & 2b.)

The artificial watering regime during 2004/5 has been limited to occur only when the translocated population mortality rate has reached 30%. In 2002/3 population 2a. was supported by artificial controlled watering in response to seasonally dry conditions. Populations 3 and 4 were also watered.

Quarterly monitoring of all populations has continued, and overall plant vigour has declined, resulting in increased plant mortality in all populations.

In late 2002 an experimental burn in Muja Conservation Park resulted in the germination of 223 seedlings. Of these 23 have survived to date.

Goals for 2004

1. To monitor all population and translocation plots;
2. To continue monitoring of the experimental burn population in Muja block;
3. To review the IRP;
4. To more effectively deliver artificial watering, based on results from 2002/3, by implementing the use of an accurate soil moisture monitoring system;
5. To monitor and assess seed yield, plant growth, vitality and mortality;
6. To define sustainability.

Goals for 2005

1. To monitor all population and translocation plots;
2. To continue monitoring of the experimental burn population in Muja block;
3. To review the IRP;
4. To more effectively deliver artificial watering, based on results from 2002/3, by implementing the use of an accurate soil moisture monitoring system;
5. To monitor and assess seed yield, plant growth, vitality and mortality;
6. To define sustainability.

Discussion

Goals 1, 2, 3, and 5 were achieved this year. Goal 4 was not fully reassessed and achieved due to numerous project officer and management staff changes in addition to major staff resource restriction caused by the onset of an early and protracted fire season.

It is anticipated that an artificial watering monitoring review will continue with the end goal of eliminating the need for watering where possible. A further assessment of soil moisture monitoring will be enacted within all populations to ascertain more accurate watering regimes.

In addition, a review of plant habitat and biological processes will be undertaken to ascertain where future translocation sites may be more successful.

Ongoing germination trials using hot water soaking trials, coordinated with Dr Carole Wilkins with seed collected from Bennelaking NR in 1998, has resulted in a high number of successful germinating seeds >70%.

1.0 Monitor all populations in translocation plots

All sites were monitored regularly. The only unusual occurrence was the evidence of white ant attack on several dead plants. Limited insect attack was observed on approximately 15 percent of the population.

2.0 To continue monitoring of the experimental burn population in Muja block

Of the initial 223 seedlings that germinated in 2003, 31 survived in 2003. Numbers have declined to 23 in 2004. The decrease in this population may be attributable to extended dry weather conditions.

3.0 Review of the IRP

Not carried out as time and resources were limited.

4.0 More effective artificial watering

Based on results and field applications from 2002-4, a more precise water monitoring and delivery regime may be implemented using a more accurate soil moisture monitoring system and implementing minor improvements to the reticulation systems.

5.0 To monitor and assess seed yield, plant growth, vitality and mortality

No additional seed was collected in 2004, as an adequate seed bank is already stored at the Wellington district office. Additional seed may be considered for collection from the Muja translocation site in 2005.

Ongoing measurements for plant statistics have been achieved during 2004, these will continue in 2005.

Population count 2003/4.

Site	No. plants 2003/2004	Average ht. 2003/2004
Muja transloc.	23/34	0.0/ 9.3
Nalders.	31/23	0.0/68.7
Trigwell Brg.	0.0/22	0.0/0.0
Bennelaking op Cons Pk	0.0/ 37	0.00/24
T NR	11/0.0	na

6.0 To define sustainability

Additional analysis into the post fire response will be undertaken in 2005 in order to synthesise the post burn data into the IRP. Further monitoring and survey work will be continued in 2005 to more accurately define the most suitable biological and environmental conditions for future translocation proposals.

Areas outside the current habitat profiles may be investigated.

Ongoing field measurements and management will be continued in 2005. Improved management actions should result from an increased continuity of project staff.

Recovery Actions 1999-2002

1. Undertake rabbit control

Rabbit control was undertaken as required. Baiting has been undertaken in the translocated population in Wild Horse Swamp Nature Reserve.

2. Maintain Weed Control

Weed control was undertaken as required.

3. Maintain Dieback Hygiene

Dieback hygiene was maintained as required.

4. Monitor Wild Population

This population (No.1) was regularly monitored during the first half of 2004, intermittent monitoring occurred during spring and summer months of 2004. All translocated populations received the same monitoring frequency.

5. Review of the Fire Management Strategy

A fire management strategy is currently in place.

6. Preserve Genetic Diversity of the Species

At this time substantial seed bank in storage (> 5000). No additional seed has been collected in 2004. This will be reviewed on an annual basis.

7. Monitor and Assess Translocation in Muja Conservation Park.

During September 2004 monitoring of the experimental burn translocation site was carried out. Of the original 223 seedlings recorded post burn 23 now survive.

No watering has been undertaken as this is the control population.

8. Obtain Biological and Ecological Information

Information obtained in 2004/5 was limited to continued seed response to fire reported in recovery action 7 for Muja experimental burn population. Including plant condition, growth rate, leaf count, and an estimate of grazing and disease presence for population (1,2,3 & 4.)

9. Disseminate Information

No additional work was undertaken in 2004. A stakeholder progress meeting has been proposed for the upcoming year. *Additional IRP operational information will be circulated in 2005.*

Conclusion

Monitoring of all populations will continue with a greater impetus to be placed on watering regimes for the translocated populations and greater frequency for field data recording for 2005. Once more effective soil moisture monitoring system is in place a more efficient watering regime should increase the viability and hardiness of translocated populations. Further additional investigation into post burn, soil and habitat variables will be undertaken. A greater continuity of staff resources this upcoming year should enable the local and IRP goals to be delivered in 2005.

2004 Annual Report
Other Busselton DRF

- **Large Flowered Short-Styled Grevillea**
Grevillea brachystylis ssp. *grandis* ms
Interim Recovery Plan 120
- **Tufted Plumed Featherflower**
Verticordia plumosa var. *ananeotes*
- **Matted Centrolepis**
Centrolepis caespitosa
- **Meelup Mallee**
Eucalyptus phylacis
Interim Recovery Plan 155

Large Flowered Short-Styled Grevillea

Grevillea brachystylis ssp. *grandis* ms

Interim Recovery Plan 120

Recovery Actions IRP 120

Numerous actions were carried out and achieved throughout the year. Below is a summary of the recovery actions undertaken in 2004.

Undertake weed control

- Observations of populations for weeds
- See IRP44

Conduct further surveys

- A number surveys and rare flora report forms were completed this year. With new populations being discovered and recorded.

Develop and implement fire management strategy

- Fire response strategies have previously been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

Seek improved security for populations

- The security of the narrow roadside populations is of concern through the impacts of road works and farmer activities and high level weed invasion. It is proposed for 2005 to investigate with the shire some way of offering further protection other than that provided by the yellow markers for these populations

Monitor populations

- Observations/inspections also occurred periodically in conjunction with overall district inspections

Promote awareness

See IRP44/3.4

Tufted Plumed Featherflower
Verticordia plumosa var. *ananeotes*

Recovery Actions

Maintain DRF markers

- Undertaken and Completed

Fencing and weed control

- Observations of occurrences for weeds
- See IRP44

Conduct further surveys

- Surveys and rare flora report forms were completed this year
- No new populations found

Monitor populations

- Rare flora report forms will be completed two yearly on all occurrences and this objective will be met in 2005.
- Observations/inspections also occurred periodically in conjunction with overall district inspections

Develop and implement a fire management strategy

- Fire response strategies have previously been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

Seed collection

- A proposal was submitted to wildlife branch to collect seed from plants within Ambergate and further undertake germination trials as started in 2001. Approval was given and seed was collected over the summer of 2004/05.

Promote community awareness

- See IRP44/3.4

Seek a change in land vesting

- The District has supported a proposal by the Shire to change vesting of the reserve from 'C' class to 'A' class.

Matted Centrolepis
Centrolepis caespitosa

Recovery Actions

Conduct further surveys

- No new populations found

Monitor populations

- Rare flora report forms will be completed two yearly on all occurrences and this objective will be met in 2005.
- Observations/inspections also occurred periodically in conjunction with overall district inspections

Develop and implement a fire management strategy

- Fire response strategies have previously been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season

Undertake weed control

- Observations of occurrences for weeds
- See IRP44

Promote awareness

- See IRP44/3.4

Meelup Mallee
Eucalyptus phylacis

Recovery Actions

Map critical habitat

- Desktop investigation into possible potential habitat in vicinity of the existing site using RFA types and aerial photographs has begun.

Develop and Implement an Emergency Response Plan.

- Fire response strategies have previously been completed but failed to prevent an escape from Busselton Shire burning through the occurrence defoliating all ramets and destroying the understorey rehabilitation. Further discussions with the shire re:their fire mgt strategies and communications protocols are to take place during 2005.

Collect seed

- Anne Cochrane contacted to collect seed in 2005

Monitor populations

- Individual ramets re-identified according to previous numbering
- Regular monitoring in the process of being re-instigated

Liaise with land managers

- Contact made with the Meelup Regional Park Recovery Committee
- Janine Liddelow appointed CALM representative for this committee

Obtain biological and ecological information

- Rehabilitated gravel pit (1997) assessed. Conclusion from species variety and coverage observed is that this has been successful. Will need recommence this work following the February fire.

Promote awareness

- Previously occurred. All relevant parties aware of presence.

2004 Annual Report
Busselton Ironstones TEC and Associated DRF

- SHRUBLAND ASSOCIATION ON SOUTHERN SWAN COASTAL PLAIN IRONSTONE (BUSSELTON AREA)
 - Interim Recovery Plan 44

- McCutcheon's Grevillea
 - *Grevillea maccutcheonii*
 - Interim Recovery Plan 144

- Western Prickly Honeysuckle
 - *Lambertia echinata* ssp. *occidentalis*
 - Interim Recovery Plan 133

- Ironstone Petrophile
 - *Petrophile latericola* ms
 - Interim Recovery Plan 93

- Whicher Range Dryandra
 - *Dryandra squarrosa* ssp. *argillaceae*

- ABBA Bell
 - *Darwinia* sp. *williamson*
 - Interim Recovery Plan 139

- Butterfly-Leafed Brachysema
 - *Gastrolobium papilio*
 - (Formally know as *Brachysema papilio*)
 - Interim Recovery Plan 85

- Ironstone Grevillea
 - *Grevillea elongata*
 - Interim Recovery Plan 131

SHRUBLAND ASSOCIATION ON SOUTHERN SWAN COASTAL PLAIN IRONSTONE (BUSSELTON AREA)

Interim Recovery Plan 44

2004 Annual Report

CALM Blackwood Team: Aaron Grant, Andrew Webb, John Carter, Janine Liddelow

Summary

Ironstone workshop

An ironstone workshop was held on the 23 and 24 November 2004 with the aim to define and implement management strategies for the next five years. Participants included representatives from CALM, Local community groups and major industry and were encouraged in an open forum, to provide discussion on the progress of management past and present.

The information has been collated and we are currently developing priorities, location goals and a works program for both the short and long term objectives. The presentations have been distributed to all participants.

Sussex, location 2561. (AKA Taylor's)

The purchase of Taylor's block this year continues the commitment to increase the public ownership of the Busselton ironstone community. Taylor's has a high representation of the community and is one of the best in regards to vegetation quality and health.

Lambertia echinata ssp. occidentalis

The translocation of 19 seedlings from the Williamson Road reserve to Kings Park Botanical Garden occurred this year. The seedlings have come from one of the original plants in population 1a which died approximately four years ago. The seedlings naturally germinated from within an old flower bud in situ and due to the mobility of the flower bud, created a rare opportunity to increase the gene mix from natural germinated plants. The translocates will be returned to Busselton for planting out in one of the translocation sites, most likely Negus block, at the end of 2005.

Goals / Scheduled Tasks 2005

It is proposed that the following new actions will be carried out in 2005. Other works will be ongoing from previous years such as Phosphite control, rabbit control, weed control, etc

- Relocate and rescore ironstone Gibson plots
- Development of 3 monitoring quadrats to assess the impact of kangaroos, and determine if they are the cause of the apparent heavy grazing being noticed on small remnant ironstone and other reserves within the highly cleared Abba plains.
- Continue translocation program to Negus, Oates and incorporate a new translocation site, into the program to increase security of DRF species
- Weed monitoring/control - development of monitoring methodology and incorporation into future works programs, continue weed control with opportunity to undertake grass control in higher quality vegetation areas
- As a result from the workshop develop recruitment monitoring to determine birth/death ratios, the target species is yet to be determined.
- Monitoring plots pre/post fire to measure impacts from fire disturbance events
- Secure a management agreement between CALM and Busselton Council in regards to Oates Road maintenance and the expansion in numbers of *Grevillea maccutcheonii* recruitments.

Recovery Actions IRP 44

Numerous actions were carried out and achieved throughout the year. Future direction again will be based on achieving desired outcomes and using the measures of success in the IRP to gauge output. The information gathered from the workshop will assist in providing direction for future actions. Below is a summary of the recovery actions undertaken in 2004.

IRP44/3.2 - Liaise with landholders, management bodies and managers

- Occurrences 1 -5 (Ruabon - Tutunup road)
 - Liaison is occurring on a regular basis, in particular with the Ruabon - Tutunup Rail Reserve Preservation Group (RTRRPG). The group has obtained responsibility for the area and is in the progress of developing and implementing a management plan, with input from CALM and other stakeholders. Funding for the development and implementation of this plan is likely to be made available through NHT2 funding from CALM and GeoCatch.

- The RTRRPG has applied for and obtained a Permit to Take for two DRF species (*Chamelaucium roycei* and *Grevillea elongata*) to burn a small area for community protection purposes. Blackwood District has worked closely with the RTRRPG to ensure acceptable conditions for the burn and follow up weed control and monitoring will occur. There was considerable effort involved in this issue and the time frame to obtain the Permit to Take did not allow for the burn to take place in spring 2004.
- Occurrences 7 - 8 (Williamson road)
 - The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the private property boundary of the Williamson road occurrences is undertaken.
 - Occurrence 9 (Smith road)
 - The community present on the private land is still under threat from land use practices. It shows that previous communication with the land holder has not had any beneficial effect. This matter has been forwarded to the Regional Wildlife Officer for investigation.

IRP44/3.3 - Monitor boundaries

- Occurrence boundaries are checked with the resources which are available. In some areas (Occurrence 8 -9, Williamson and Smith roads), vegetation mapping will also help define the boundaries and this is scheduled to be done in the 2005 reporting period.

IRP44/3.4 - Disseminate information

- An ironstone workshop was held Nov 2004 with an objective to share information between all stakeholders and develop a long term strategy in the management of the TEC. The workshop provided a useful forum in which large amounts of information, opinions and ideas were shared, resulting in the workshop being a success. The information is still being collated and as a result goals, prioritising and works plans are being developed to help aid the management of all occurrences over the next five years.
- Periodical articles to local media outlets are also planned during 2005 with an aim to increase community/stakeholder awareness of the importance of the TEC, what they can do to participate and what management guidelines are in place.

IRP44/3.5 - Install markers

- All markers have been checked in 2004.
- An additional set of markers are to be installed in the 2005 reporting period adjacent to Occurrence 6, to cover the growing number of natural *Grevillea maccutcheonii* recruits on the northern side of Oates rd.

IRP44/3.6 - Monitor flora

- A number of rare flora report forms were completed this year. With a new population for *Dryandra squarrosa* ssp. *argillaceae*, and re survey of species populations such as *Lambertia echinata* ssp. *occidentalis*.
- The locating/redefining of ironstone Gibson plots commenced in 2004. During 2005 all ironstone Gibson plots will be rescored, with the addition of line intercepts. This is to help incorporate additional information on weed spread, changes in diversity and composition into the overall data, giving appropriate measures of change within the community.

IRP44/3.7 - Monitor dieback

- Samples from non ironstone species showing pc symptoms in the near vicinity of *L.echinata* were collected and analyzed during April-May 2004. No positive pc results were returned.

IRP44/3.8 - Implement dieback treatments, and dieback hygiene

- Aerial application of phosphate was under taken at Occurrences 1-5, 8, 9 and Negus during 2004.
- A review of priorities and determining the spray areas for 2005 is currently being undertaken by the regional threaten flora officer.
- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff.

IRP44/3.9 - Monitor recovery from Armillaria

- No formal actions undertaken/required.
- No new outbreaks have been detected during routine inspections/observations of all occurrences.

IRP44/3.11, 3.11.1 - Develop and implement fire management strategy

- Fire response strategies for all occurrences in the IRP44 have previously been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

- A fire response plan has been written for the newly acquired Taylor's (Sussex Location 2561)

IRP44/3.12 - Monitor depth and timing of inundation

- Generalised observations of water inundation at occurrence 10 (Oates road) were taken.
- The development and implementation of a specific measuring protocol will occur during 2005 with the use of depth gauges at numerous sites.
- Liaison with appropriate organisations (DoA, DoE) to collate/obtain data for analysis has not yet been done and is scheduled for 2005.

IRP44/3.13 - Monitor weeds

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.6) will be developed in 2005.

IRP44/3.14 - Implement weed control

- All occurrences had some form of weed control implemented in the 2004 reporting period. Ranging from spray application of glyphosphate to hand weeding.

IRP44/3.15 - Develop strategy for ex-situ propagation

- Continuation of protocols developed through previous translocation proposals.
- Translocation of seedlings to KPBG for growing out.
- Planting out of advance plants from previously obtained cuttings.
- Development of a strategy to build seed nursery's at three TEC locations to remove the threat of a mass disturbance event destroying current parent/seed stock populations.
- Continuation of experimental works at Oates road.

IRP44/3.18 - Transfer care, control and management of road and rail reserve to NPNCA

- In December 2002, the Shire of Busselton on behalf of the Ruabon Tutunup Rail Reserve Preservation Group (RTRRPG) signed a lease agreement for 10 years with Westrail.
 - The lease was backdated to 1998 to when discussions regarding the shire obtaining this lease began. The lease was to allow the group to undertake management operations and for the provision of a heritage walk/bicycle trail along the rail alignment.
 - The Ruabon group has been active in notifying the Department of activities within the reserve that are adversely affecting the reserves conservation values (i.e.: the recently proposed horse endurance event).
 - The District believes that any move to take management vesting from the group prior to the expiry of the existing lease arrangements would be detrimental to promoting community involvement and support for the conservation of the reserves biodiversity values.
 - Future lease arrangements have been raised by the Ruabon-Tutunup group as a item needing attention in the management plan.

IRP44/3.19 - Develop management plan for road and rail reserves

- CALM with GeoCatch are assisting the RTRPG in seeking funding for the development and implementation of a management plan.
- A management plan is also being developed for the Taylor's (Sussex Location 2561) in association with a fire management strategy.

IRP44/3.20 - Fence private land / occurrences where necessary.

- Taylor's (Sussex Location 2561), has been fenced adjacent to private property to the western side.
- Gates have been erected to control access along the firebreak/railway reserve in the eastern section of TEC on Ruabon-Tutunup rd.
- Other occurrences fences/gates were checked and repaired if required.

IRP44/3.21 - Access funding incentives for conservation

- See 3.19

IRP44/3.22 - Seek to acquire community on private land. (Occurrences 2 and 9)

- Occurrence 2 (Ruabon - Tutunup road): see IRP44/3.18

- Occurrence 9 (Catalano's): no formal action taken
- On the 19/02/04 observations of the private property (Location 2629) noted that degradation of the TEC was continuing. Livestock were present within the community and it seemed a recently constructed fence around the community was keeping them in. It was also noted that possible clearing of the North eastern boundary may have occurred. The observations were recorded, placed on file and also referred to the regional office for further investigation/follow up.

McCutcheon's Grevillea
Grevillea maccutcheonii
Interim Recovery Plan 144

Summary

Grevillea maccutcheonii is continuing to recruit along the verge of Oates road in the area of the original population. The last count (as of Jan 2005) was 27 new plants ranging in size from germinate to 1 year old growth). The main threat is grader operations from the shire road works program. We have already lost some plants, and the markers, which were placed prior to the last grade to prevent any damage.

The plants are growing at a significant rate and will pose a problem in regards to road maintenance and travel ability in the near future.

Permanent DRF markers will be installed on the northern road verge in 2005.

Goals / Scheduled Tasks 2005

- Continue and expand translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs
- Development of a road maintenance protocol in which all stakeholders agree and understand the requirements of species preservation.

Recovery Actions

IRP 144/2 Weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP 144/3 Control rabbits

- No actions at district level undertaken 2004
- Applications for 1080 one shot oats baiting at numerous locations are being completed with the aim to bait prior to Spring 2005

IRP 144/4 Maintain disease hygiene

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP 144/5 Continue to apply phosphite

- Aerial application of phosphate was under taken at the Negus translocation site during 2004.
- Oates road is not part of the application program.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP 144/7 Translocations

- No G.mac translocation was undertaken during 2004.
- The existing translocation proposal documentation is currently being expanded to include Oates 2 and a new site in the western section of the District (See IRP44/3.15)

IRP 144/8 Rehabilitate habitat

- Continuation of the Oates 1 project and the new Oates 2 development.

IRP 144/11 Monitor populations

- Translocates at Oates and Negus's were monitored twice in 2004 with assistance from CALM Science staff.
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP 144/12 Conduct further surveys

- Resurveying of known populations occurred
- No new populations discovered

IRP 144/14 Promote Community awareness

- See IRP44/3.4

Western Prickly Honeysuckle***Lambertia echinata ssp. occidentalis*****Interim Recovery Plan 133****Summary**

The translocation of 19 seedlings from the Williamson Road reserve to Kings Park Botanical Garden occurred this year. The seedlings have come from one of the original plants in population 1a which died approximately four years ago. The seedlings naturally germinated from within an old flower bud insitu and due to the mobility of the flower bud, created a rare opportunity to increase the gene mix from natural germinated plants. The translocates will be returned to Busselton for planting out in one of the translocation sites, most likely Negus block, at the end of 2005.

Goals / Scheduled Tasks 2005

- Continue and expand translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions**IRP 133/2 Maintain disease hygiene**

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP 133/3 Apply phosphate every two years and monitor impact

- Aerial application of phosphate was under taken at numerous locations during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP 133/4 Map critical habitat

- No actions at district level undertaken

IRP 133/5 Implement the fire management strategy

- No action required, previously completed.
- Review process is underway.

IRP 133/6 Continue translocation

- Planting out of Translocates to Oates 1, 2 and Negus block occurred. However due to time plants remained in pots prior to delivery, they became root bound and subsequently most have died within a month of planting out.
- Monitoring of translocates formally occurred twice in the reporting period
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)
- A new translocation site is being discussed (IRP44)

IRP 133/7 Liaise with land managers

- The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the boundary of the Williamson road occurrences is undertaken to obtain maximum benefit in the protection of the area

IRP 133/8 Monitor population

- Monitoring of translocates formally occurred twice in the reporting period under the direction of CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP 133/9 Continue weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP 133/10 Continue rabbit control

- Grazing pressure trials have been developed and works and monitoring will occur at numerous locations in 2005
- Applications for 1080 one shot oats baiting at numerous locations are being completed with the aim to bait prior to Spring 2005

IRP 133/11 Conduct further surveys

- Resurveying of know populations occurred
- No new populations discovered

IRP 133/12 Collect seed and cutting material

- See summary in regards to translocation of seed germinates

IRP 133/14 Stimulate the germination of soil-stored seed

- Germination of soil-stored seed is occurring; however the longevity of the seed is approximately 2 months before death occurs. Observations and grazing protection have occurred. The seedlings are still dying after they are caged from grazing. Further investigation is required and continuing.

IRP 133/15 Promote awareness

- See IRP44/3.4

IRP 133/17 Rehabilitate habitat, if necessary

- Continuation of the Oates 1 project and the new Oates 2 development

Ironstone Petrophile
Petrophile latericola ms
Interim Recovery Plan 93

Goals / Scheduled Tasks 2005

- Continue and expand translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions

IRP 93/2 Apply phosphite.

- Aerial application of phosphate was under taken at numerous locations during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP 93/3 Monitor the impact of phosphite application.

- Regional floral officer routinely monitors foliar uptake

IRP 93/4 Implement disease hygiene measures.

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP 93/5 Develop and implement a drainage management strategy.

- No drainage maintenance from other stakeholders undertaken

IRP 93/6 Install Declared Rare Flora markers.

- See IRP 44/3.5

IRP 93/8 Undertake and monitor translocation.

- Planting out of Translocates to Oates 1, 2 and Negus block occurred. However due to time plants remained in pots prior to delivery, they became root bound and subsequently 98% died within a month of planting out.
- Monitoring of translocates formally occurred twice in the reporting period with assistance from CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)
- A new translocation site is being discussed (IRP44)

IRP 93/9 Undertake weed control.

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP 93/10 Develop and implement a fire management strategy.

- No action required, previously completed.
- Review process is underway.

IRP 93/11 Monitor populations.

- Monitoring of translocates formally occurred twice in the reporting period under the direction of CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP 93/13 Notify and liaise with relevant land managers.

- The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations

between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the boundary of the Williamson road occurrences is undertaken to obtain maximum benefit in the protection of the area

IRP 93/17 Promote awareness.

- See IRP44/3.4

Whicher Range Dryandra *Dryandra squarrosa ssp. argillaceae*

Goals / Scheduled Tasks 2005

- Continue translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions

IRP Action 3 Install DRF markers

- See IRP44/3.5

IRP Action 5 Conduct further surveys

- Resurveying of know populations occurred
- 2 populations were recorded and surveyed: Williamson road (ABBA Block) and Population 14 on Goodwood road prior to translocation projects

IRP Action 6 Maintain disease hygiene

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP Action 7 Continue to apply phosphite

- Aerial application of phosphate was under taken at occurrences during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP Action 10 Rehabilitate habitat

- Population 14 - The local LCDC is currently working on a translocation and rehabilitation project

IRP Action 11 Develop and implement a fire management strategy

- No action required, previously completed.
- Review process is underway.

IRP Action 13 Develop a kangaroo management strategy

- Grazing exclusion trials have been developed and works and monitoring will occur at numerous locations in 2005

IRP Action 14 Undertake weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP Action 15 Control rabbits

- No actions at district level undertaken 2004
- Applications for 1080 one shot oats baiting at numerous locations are being completed with the aim to bait prior to Spring 2005

IRP Action 16 Remove rubbish

- Rubbish and Car bodies were removed from numerous locations through out the reporting period

IRP Action 17 Monitor populations

- The locating/redefining of ironstone Gibson plots is currently underway. During 2005 all ironstone Gibson plots will be rescored, with the addition of line intercepts to incorporate the collation of data in regards to weed infestation, plant diversity and composition.
- Monitoring of translocates formally occurred twice in the reporting period with asistance from CALM Science

- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP Action 18 Liaise with land managers

- Occurrences 7 - 8 (Williamson road)
- The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the boundary of the Williamson road occurrences is undertaken to obtain maximum benefit in the protection of the area.

IRP Action 20 Promote awareness

- See IRP44/3.4

ABBA Bell
Darwinia* sp. *williamson
Interim Recovery Plan 139

Goals / Scheduled Tasks 2005

- Continue and expand translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions

IRP 139/2 Maintain disease hygiene

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP 139/3 Continue Phytophthora control

- Aerial application of phosphate was undertaken at numerous locations during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP 139/5 Implement the fire management strategy

- Review process is underway.

IRP 139/6 Continue the translocation process

- Monitoring of translocates formally occurred twice in the reporting period with assistance from CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)
- A new translocation site is being discussed (IRP44)

IRP 139/7 Liaise with land managers

- The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the boundary of the Williamson road occurrences is undertaken to obtain maximum benefit in the protection of the area

IRP 139/8 Monitor Populations

- Monitoring of translocates formally occurred twice in the reporting period.
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP 139/9 Continue weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP 139/10 Control grazing

- Grazing pressure trials have been developed and works and monitoring will occur at numerous locations in 2005
- Applications for 1080 one shot oats baiting at numerous locations are being completed with the aim to bait prior to Spring 2005

IRP 139/11 Conduct further surveys

- Resurveying of known populations occurred
- No new populations discovered

IRP 139/15 Promote awareness

- See IRP44/3.4

Butterfly-Leafed Brachysema
Gastrolobium papilio
(Formally known as *Brachysema papilio*)
Interim Recovery Plan 85

Goals / Scheduled Tasks 2005

- Continue translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions IRP 85

IRP85/2 Apply phosphite.

- Aerial application of phosphate was under taken at occurrences during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP85/3 Monitor the impact of phosphite application.

- Regional floral officer routinely monitors uptake.

IRP85/4 Implement disease hygiene measures

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP85/5 Propagate plants for translocation.

- No new plants were propagated in this reporting period

IRP85/6 Undertake and monitor translocation.

- Monitoring of translocates formally occurred twice in the reporting period under the direction of CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)
- A new translocation site is being discussed (IRP44)

IRP85/7 Undertake weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP85/8 Develop and implement a fire management strategy.

- Review process is underway.

IRP85/9 Monitor population.

- The locating/redefining of ironstone Gibson plots is currently underway. During 2005 all ironstone Gibson plots will be rescored, with the addition of line intercepts to incorporate the collation of data in regards to weed infestation, plant diversity and composition.

IRP85/11 Liaise with relevant land managers.

- Occurrences 7 - 8 (Williamson road)
- The final stages of the mining operations adjacent to these occurrences are now in place. Negotiations between Cable Sands and CALM are under way to ensure the rehabilitation of a buffer zone along the boundary of the Williamson road occurrences is undertaken to obtain maximum benefit in the protection of the area.

IRP85/14 Promote awareness.

- See IRP44/3.4.

Ironstone Grevillea
Grevillea elongata
Interim Recovery Plan 131

Goals / Scheduled Tasks 2005

- Continue and expand translocation program and incorporate a new translocation site into the program to increase security of DRF species
- Weed monitoring/control - development of methodology and incorporation into future works programs

Recovery Actions

IRP 131/3 Undertake weed control

- Weed inventory and monitoring plots (in association with the flora monitoring IRP44/3.3, 3.4, 3.6) will be developed 2005
- Observations of occurrences for weeds
- See IRP44/3.13 and 3.14

IRP 131/4 Implement fire response strategy

- Review process is underway.

IRP 131/6 Maintain disease hygiene

- All personnel are aware of hygiene requirements and permits have been issued to appropriate staff

IRP 131/7 Continue Phytophthora control

- Aerial application of phosphate was under taken at numerous locations during 2004.
- The regional threaten flora officer is resetting priorities and determining the spray areas for 2005 to ensure efficient use of the application and chemical is achieved to maximum benefit.

IRP 131/9 Monitor populations

- Monitoring of translocates formally occurred twice in the reporting period under the direction of CALM Science
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections (IRP 44)

IRP 131/10 Conduct further surveys

- Resurveying of know populations occurred
- No new populations discovered

IRP 131/14 Promote awareness

- Periodical articles to local media outlets are also planned to be written during the next reporting period, this is to increase community/stakeholder awareness of the importance of the areas, what they can do to participate and what management guidelines are in place.
- See IRP44/3.4

2004 Annual Report
Scott River Ironstone and Associated DRF

Contents

- **Scott River Ironstone**
- **Ironstone Brachyscias**
Brachyscias verecundus
- **Scott River Darwinia**
Darwinia ferricola ms
- **Scott River Lambertia**
Lambertia orbifolia ssp. scott river plains
- **Scott River Boronia**
Boronia exilis

Compiled By

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SCOTT RIVER TEC ASSOCIATION

2004 Annual Report

Summary

Goals / Scheduled Tasks 2005

It is proposed that the following new actions will be carried out in 2005.

- Vehicle access into occurrence 39 will be re-opened.
- All occurrences will have boundary fence status and weed invasion extent established. A weed control program will be developed.
- All occurrences will be mapped/sampled for occurrence and extent of Dieback disease.

Recovery Actions

Actions achieved during the year

Liaise with Land Managers

- Occurrences 17 & 32 : An idea is being investigated to construct a stock route under the Western Power alignment along the edge of Governor-Broome road. Liaison with the farmers, Western Power and local NRM groups is being undertaken through the guise of the national "Hotspot" project being coordinated by Geocatch and CALM.

Monitor the extent and boundaries of occurrences

- Opportune inspections have been undertaken on several occurrence boundaries, although further work is required and will be undertaken in 2005.

Install DRF markers

- All markers have been checked in 2004.

Confirm the presence of dieback disease and monitor

- Dieback samples were taken at *Lambertia orbifolia* site on Dennis Road . Results from samples were negative. Some mycelium was found on sampled roots raising the possibility of an *Armillaria luteobubalina* infestation. However, this can only be confirmed by observation of the fruiting body. Root tissue was also taken and inoculated with *Phytophthora cinnamomi* and showed a negative result to susceptibility to dieback. As root tissue was relatively old the confirmation that it is a non susceptible species will require further testing. Further work on this dieback susceptibility and potential *Armillaria* presence will be undertaken in 2005.

Develop and implement a fire management strategy

- Emergency response strategies for all occurrences in the IRP have been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

Ensure fire suppression actions do not impact the community

- No fire suppression activities this year impacted the community

Maintain strategic fire breaks

- Strategic firebreaks around Gingilup NR have been upgraded.

Fence occurrences on road reserves if deemed necessary

- See: Liaise with Land Managers

Access funding incentives for conservation

- See: Liaise with Land Managers

Ironstone Brachyscias *Brachyscias verecundus*

Recovery Actions

Control rabbits

- Applications for 1080 one shot oats baiting at numerous locations are being completed with the aim to bait prior to Spring 2005

Develop and implement a fire management strategy

- Covered by response plans for Tutunup Rd occurrences of the Busselton Ironstone.

Install DRF markers

- All markers have been checked in 2004.

Undertake weed control

- All occurrences had some form of weed control implemented in the 2004 reporting period. Ranging from spray application of glysophosphate to hand weeding.

Monitor populations

- Rare flora report forms are being completed 2 yearly on all occurrences and will be up to date shortly.

Conduct further surveys

- Resurveying of know populations occurred
- No other populations discovered, although an area of ironstone vegetation burnt early 2005 will be regularly inspected for post-fire regrowth of this species.

Promote Community awareness

- See IRP44/

Scott River Darwinia *Darwinia ferricola ms*

Recovery Actions

Monitor dieback disease

- Undertaken in conjunction with monitoring of flora occurrences.

Develop a kangaroo management strategy

- Grazing pressure trials have been developed and installed within isolated Busselton reserves under similar apparent kangaroo pressure, results from these trials should be able to be applied across other vegetation occurrences.

Formally notify adjacent landowners

- Previously completed

Install DRF markers

- All markers have been checked in 2004.

Develop and implement a fire management strategy

- Review process is underway.

Continue the translocation process

- A new translocation site is being discussed (IRP44)
- Is continuing through conjunction with IRP 44

Monitor populations

- Rare flora report forms are being completed 2 yearly on all occurrences and will be up to date shortly.
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections

Undertake weed control

- Observations of occurrences for weeds

Conduct further surveys

- Resurveying of known populations occurred
- Non new populations discovered

Promote awareness

- See IRP44/3.4

Scott River *Lambertia*

Lambertia orbifolia* ssp. *scott river plains

Recovery Actions

Formally notify adjacent landowners

- Previously completed

Describe the sub species

- Previously completed

Monitor dieback disease

- Dieback samples were taken at *Lambertia orbifolia* site on Dennis Road . Results from samples were negative for the presence of dieback. Some mycelium was found on sampled roots raising the possibility of an *Armillaria luteobubalina* infestation. However, this can only be confirmed by observation of the fruiting body. Root tissue was also taken and inoculated with *Phytophthora cinnamomi* and showed a negative result to susceptibility to dieback. As root tissue was relatively old the confirmation that it is a non susceptible species will require further testing. Further work on this dieback susceptibility and potential *Armillaria* presence will be undertaken in 2005.

Develop and implement a fire management strategy

- Fire response strategies for all occurrences in the IRP have been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

Develop a kangaroo management strategy

- Grazing pressure trials have been developed and installed within isolated Busselton reserves under similar apparent kangaroo pressure, results from these trials should be able to be applied across other vegetation occurrences.

Monitor populations

- Rare flora report forms are being completed 2 yearly on all occurrences and will be up to date shortly.
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections

Conduct further surveys

- Resurveying of know populations occurred
- No new populations discovered

Promote Community awareness

- See IRP44/3.4

Scott River Boronia

Boronia exilis

Recovery Actions

Install DRF markers

- All markers have been checked in 2004.

Confirm Existing Populations and Conduct further surveys

- All known populations were visited. However, three appeared to show a decline in plant number with only the population at the cnr of Gov-Broome and Scott River road seeming healthy. It is unsure if this is a timing of inspection or seasonal variation. All populations will be re-inspected in 2005.
- No new populations discovered.

Formally notify adjacent landowners

- Previously completed

Monitor dieback disease

- In conjunction with monitoring flora

Develop and implement a fire management strategy

- Fire response strategies for all occurrences in the IRP have been completed and await implementation should a fire event occur.
- A review and update of these strategies is currently underway and will be completed prior to the 2005/06 wildfire season.

Develop a kangaroo management strategy

- Grazing pressure trials have been developed and installed within isolated Busselton reserves under similar apparent kangaroo pressure, results from these trials should be able to be applied across other vegetation occurrences.

Monitor populations

- Rare flora report forms are being completed 2 yearly on all occurrences and will be up to date shortly.
- Observations/inspections also occurred periodically in conjunction with overall ironstone inspections

Promote Community awareness

- See IRP44/3.4

REPORT 2003/2004

SCP Type 3c Critically Threatened Ecological Community (TEC)

**Yarloop (Occurrence 6)
Waterloo (Occurrence 7)**



Figure 1:

Flora Survey, South West Region Herbarium Team, Waterloo.

By

Darren Harvey, TEC Officer (Wellington)

March 2005

Department of Conservation and Land Management
North Boyanup Rd
Bunbury WA 6230

Executive Summary

There was limited progress with Interim Recovery Plan (IRP) action items for 2004. This was due to the TEC Officer being absent for the majority of the year (with long service leave then personal leave following a motor vehicle accident). The District was unable to cover this work due to a further diminished Nature Conservation Team as a result of secondments and acting arrangements. This report documents the current state of affairs for the occurrences, containing 2003 works (as these were only presented not hardcopy reported on), 2004 works and future directions/goals.

During 2003 the focus for ground works was once again weed control and basic community monitoring/inspections. Weed control continued with increased areas targeted and results appearing successful for primary targeted weed species (Bridal Creeper and Watsonia). There is still a requirement to better deal with secondary weed species (e.g. *Babiana stricta* and *Freesia sp.*). Ongoing follow-up is still crucial with only the *Yarloop* occurrence being chemically treated in 2004. Establishment of native revegetation has not been further pursued other than via continued monitoring of herbicide treatments and native regrowth therein. It is planned in 2005 to compile existing native flora characteristics, start seed collection and trial re-vegetation methods if sufficiently researched/prepared.

A new flora plot was established and scored at *Waterloo* with the assistance of the South West Region Herbarium Team (SWRHT) in 2003. Planned plot re-score at *Yarloop* has not occurred and is still considered a major priority for the 2005 season. Liaison with external groups in regards to external agencies and community groups having a greater role in the community has been maintained with some involvement of the SWRHT and local community groups. This liaison and resultant planning will have to be continued and extended in order to encourage further external management. Further work will need to be done on the development and implementation of community awareness plans.

DGPS and data loggers have continued to be used to map and monitor community characteristics. Differences in "local" and "corporate" boundary datasets has been recognised and needs to be addressed. A new regional Fire Emergency Response Plans database gis system is being developed and is planned to be in place for the 2005/06 fire season. This system will allow easier updating of details and creation and distribution of maps/plans. There is still the requirement to develop a Fire Management Plan that deals with long-term fire use and its potential positive and negative impacts on the community.

It is considered that UCL Reserve 2806 (*Waterloo*) has conservation value, containing occurrences of the 3c community type (though greatly degraded). The vesting of this reserve with the Conservation Commission is to be pursued in 2005. Preliminary enquiries to pursue the vesting of Reserve 22215 (*Yarloop*) encountered no objections and now requires follow-up. Water monitoring was not carried out with the requirement now to set up minor bores at each occurrence using a professional drilling rig. Will need to further pursue the Water and Rivers Commission (DOE) to see what they have available in way of ground water-monitoring history.

Although there have been good results in weed management and continued progress in some IRP action items, progress in others has been less satisfactory. In 2004 this was compounded with the TEC Officers absence for much of the year. 2005 is now considered a critical year in order to get some IRP action items back on track and others further progressed.

Introduction

The Swan Coastal Community Type 3c are *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands plant communities located on heavy soils. This Threatened Ecological Community is classified as Critically Endangered. These two occurrences within the South West Region (occurrences 6 and 7) represent approximately 4.5 ha of a total of approximately 43 ha over 7 occurrences (Interim Recovery Plan, Val English, 1999).

There was only minor progress with Interim Recovery Plan (IRP) action items for 2004. This was due to the TEC Officer being absent for the majority of the year (with long service leave then personal leave following a motor vehicle accident). The District was unable to cover this work due to a further diminished Nature Conservation Team as a result of secondments and acting arrangements. This report lists the goals for 2004 and 2005, then details works and progress for occurrences 6 and 7 for the year 2003/2004, as set out in the IRP action items. Planned works for 2005 and future directions are also discussed.

Goals for 2004 (IRP action items):

Primary:

- 1) Complete floristic re-survey of Gibson plots (3.6).
- 2) Continue weed monitoring/control and trial revegetation methods (3.9, 3.10).
- 3) Gather hydrological information and establish monitoring (3.13).
- 4) Assess ecological value of Reserve 2806 (*Waterloo*) and if appropriate pursue vesting with the Conservation Commission (3.25).

Secondary:

- 1) Increase proactive liaison with interested groups in regards to implementation of IRP recommendations (3.2).
- 2) Disseminate information via the development and implementation of community awareness plans (3.5).
- 3) Update and improve Fire Response Plans as required and continue work towards a more complete Fire Management Plan (3.7.1).
- 4) Install gates to better control access (3.8).
- 5) Pursue vesting of reserve 22215 (*Yarloop*) with the Conservation Commission (3.25).

Goals for 2005 (IRP action items):

The goals for 2005 are similar to 2003/2004 .

Primary:

- 1) Complete floristic re-survey of *Yarloop* Gibson et. al. plot (3.6).
- 2) Continue weed monitoring/control (3.9, 3.10).
- 3) Gather hydrological information and establish monitoring (3.13).
- 5) Pursue vesting of reserves 22215 (*Yarloop*) with the Conservation Commission (3.25).
- 6) Pursue vesting of reserve 2806 (*Waterloo*) with the Conservation Commission (3.25).

Secondary:

- 1) Increase proactive liaison with interested groups in regards to implementation of IRP recommendations (3.2).
- 2) Disseminate information via the development and implementation of community awareness plans (3.5).
- 3) Instigate new regional Fire Emergency Response Plans database gis system and continue work towards a more complete Fire Management Plan (3.7.1).
- 4) Install gates (*Waterloo*) and examine fencing (*Yarloop*) to better control access (3.8).
- 5) Compile existing native flora characteristics and collection of seed (3.10).
- 6) Trail re-vegetation methods if sufficiently researched/prepared(3.10).

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3.2 Liaise with current vestees, owners, land managers, and other interested groups to implement IRP recommendations

Yarloop

There has been minimal contact with the Waroona Shire. There has been contact with the local Landcare Officer in regards to the focusing local groups. This interest is in Yarloops surrounding bushlands as a whole and includes the potential to identify other threatened ecological communities on private land.

Waterloo

The South West Region Herbarium Team (SWRHT) were again involved in floristic surveys (see 3.6). There has also been some liaison with the Shire of Dardanup (see 3.25).

General

Proactive liaison in 2003/2004 with interested groups in regards to implementation of IRP recommendations was minimal. This needs to be improved and where possible expanded in 2005 if we are to encourage a more active external involvement. It is acknowledged that such external involvement can result in a large time/supervision commitment being required.

3.3 Clarify and continue to monitor the extent and boundaries of all known occurrences of the community

There is a requirement to monitor boundaries (though exact boundaries can be somewhat subjective) over time. The "local" boundary dataset differs significantly to the "corporate" dataset maintained by WATSCU (**Figure 2**). This is due to District ground truthing and dgps mapping. This has resulted in more specific boundaries but does not then take into account continuums of bushland between types (e.g. community types 3b and 20b in Yarloop). It has been recognised that these differences exist and need to be taken into consideration.

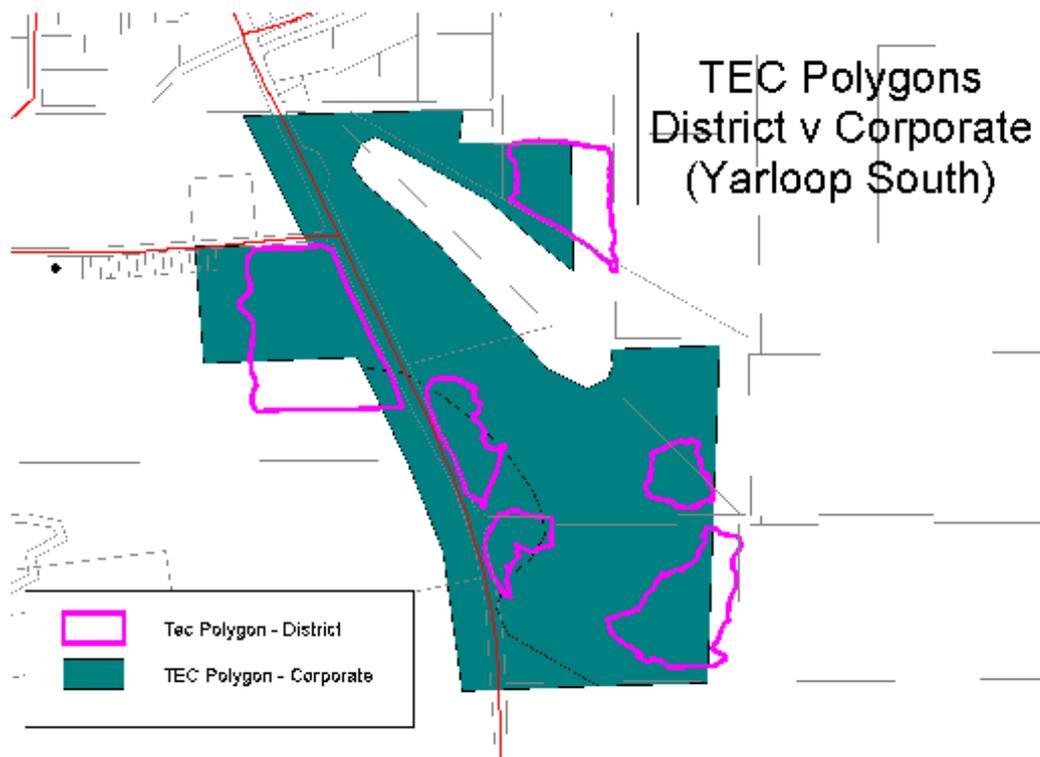


Figure 2:

TEC Boundary Information, Corporate vs. District.

Have also mapped a small structurally significant area near the *Waterloo* occurrence and have continued to update weed and spraying areas for 2003/2004.

3.4 Determine management requirements of any other identified occurrences

Other than conformation of Reserve 2806 at *Waterloo* status (see 3.25) there were no newly identified occurrences in 2003.

3.5 Disseminate information about the community and install markers to indicate the locations of occurrences of the community alongside tracks, firebreaks or roads

Information dissemination has been maintained albeit on an ad hoc basis. There has been an increase in the number of tours by local groups (e.g. Weed Control group from Burekup at *Waterloo*) and other interested people. It will be desirable provide to provide environmental education material to the relevant Shires.

Rare Flora markers remain in place and have now had the "flag" section (rather than base section) spray painted red (**Figure 3**) in accordance to arrangements made with the Main Roads Department (MRD).



Figure 3: Red flag roadside TEC marker at Waterloo.

3.6 Monitor Flora

Extensive searching has failed to locate the Gibson *et al* flora plot at the *Waterloo* occurrence. A new flora plot has been established and scored with the assistance of the SWRHT (**Figure 1**). Results will to be forwarded to Science Division for analysis.

Yarloop was scheduled but not completed. This is an important task for the 2005 season.

3.7 Develop a Fire Management Strategy

3.7.1 Develop and implement a fire management strategy that encompasses the following (3.7.1 - 3.7.4) and includes an annual fire monitoring and reporting schedule.

In 2003 the intention was for Fire Emergency Response Plans (FERP) to be further distributed so that in addition to key staff and Shires/Brigades, more fire operational staff would have copies and spotter pilots would have maps to make them aware of all areas. This has been superceded by a more coordinated and somewhat automated gis database mapping system being created for the South West Region. This work is being done by Richard Ford (Information Management Branch, Bunbury) with input from the local TEC Officers, District and Regional Nature Conservation Program Coordinators. The system is now progressing well and is envisioned will be in place by spring 2005 and provide an easily updateable format to be widely distributed.

Discussions in 2002 with the spotter aircraft Chief Pilot determined it was impractical to manually mark all areas on flight plans due to their short lifetime. The above gis system may be used to provide datasets to be used at the initial map production stage.

As stated in previous reports:

A fire management strategy that deals with long-term fire use and its positive and negative impacts on the community still needs to be developed. This needs to be developed in conjunction with other CALM districts as well as other stakeholders and will depend on the implications of findings from such areas as flora monitoring and other research into the community (English, 1999).

To date only preliminary work has begun on the strategy with further input and direction still required. Results of flora plot monitoring may be of use but total assessments of areas floristics (see 3.10) and fire responses may be required and could be the basis of a number of "student" projects.

There was a small fire in the south-west corner of Reserve 22215 (*Yarloop*) in spring/summer 2004. There were no instances of fire at *Waterloo* in 2003/2004.

3.7.2 Ensure maintenance of strategic firebreaks to help prevent fire spreading to the community

Established firebreaks have been maintained at *Waterloo* this year. Creation of new firebreaks are considered either impractical or potentially damaging / threatening to the Type 3c community and surrounds. The entire aspect of the use of firebreaks will continue to be considered as part of the ongoing overall Fire Management strategy.

Yarloop is contained within a drainage network with no existing or required firebreaks.

3.7.4 Ensure fire suppression strategy does not impact the community

Appropriate strategies were previously developed as part of the Fire Response Plans. The basic strategy put forward for both occurrences is:

- 1) Protection of life and property
- 2) No mechanical disturbance directly on site
- 3) Direct attack with hose lay
- 4) No chemical disturbance (foams/retardants) directly on site (including water bombers)
- 5) Dieback Hygiene considerations required.
- 6) If unable to contain, allow to burn out.

The use of retardant on significant environmental sites in regards to flora impacts was investigated with a student project (Edith Cowan University) in 2002. Results have suggested retardant continue to be excluded from use.

3.8 Ensure hygiene conditions

All CALM operations have considered and met hygiene requirements. In an effort to restrict other public access at *Waterloo*, gates signed with "Management Access Only" are planned for all access tracks into the reserve. These are currently under design and construction. These will be sturdy and lockable but will not be locked at this stage. There have been a couple of instances of vehicles driving into Reserve 22215 (*Yarloop*) in the last few years. It is the intention now to pursue vesting of this currently Waroona Shire reserve with the Conservation Commission (see 3.25) and physically restrict access.

3.9 Assess and monitor weed populations

2003 works and weed populations were monitored with primary weed species control considered to be progressing well. This has resulted in significant reduction in *Watsonia* regrowth and Bridal Creeper control within and for the surrounds of both communities.

Waterloo

There are extensive *Watsonia* infestations mainly in the areas to the east (Reserve 2806) and west of the TEC type 8. Sections of Reserve 2806 have been identified as having the basic structure of the type 3c community but greatly degraded and lack the floristic diversity due to this weed invasion. There are also extensive infestations of *Babiana stricta*, Freesia and Bridal Creeper in these areas. The type 3c community itself appears relatively weed free (compared with some surrounds). There are small areas of Veld Grass, African Lovegrass, Freesia and some *Watsonia*. *Babiana stricta* is however scattered throughout most of the community and is proving difficult to control. Other small infestations of Bridal Creeper were discovered within the community and immediate surrounds after the first being noted in 2002. Other weeds include Cape Tulip and Kikuyu Grass.

Yarloop

There was an extensive *Watsonia* infestation mainly adjacent to the South West Hwy and running along the drain that forms the northern boundary to the community. Ongoing chemical control has greatly reduced the amount of regrowth and resulted in what was a thick dead biomass of *Watsonia*. This biomass is now slowly decaying and visually reducing in volume. The old track that runs through the reserve had a moderate amount of Veld and African Lovegrass that is now encroaching and establishing into the native vegetation. There is some Bridal Creeper within the community with substantial infestations nearby. The Melaleuca swamp to the north of the community has substantial populations of Blackberry and a species of Bamboo. Other weeds include Cape Tulip, Pines and Tagasaste. An opportune visit in 2003 also noted *Briza maxima* at its most "green" stage as being much more extensive than was noted when dried off though this impact has not been quantified.

General

DGPS weed mapping has continued in both communities.

3.10 Implement weed control, and replanting where necessary

In 2003 weed control was again primarily focused on *Watsonia* and Bridal Creeper with an increased Bridal Creeper area again treated in the surrounds at *Waterloo*. Bridal Creeper was targeted early in the season and control has proven very effective to date with only limited regrowth in targeted areas. *Watsonia* control continues to appear to be successful in reducing regrowth and limiting spread. In both areas continued follow-up is still crucial and will be for the foreseeable future. In 2004 only the *Yarloop* area was chemically treated. Bridal Creeper "rust" (fungus *Puccinia myrsiphylli*) was released at a number of points along the drain south of the Railway Line along the entire length of Railway Rd (*Waterloo*).

Waterloo

There was no weed control work done in 2004 other than the release of Bridal Creeper "rust" at a number of points along the drain south of the Railway Line along the entire length of Railway Rd. Areas targeted for *Watsonia* and Bridal Creeper control in 2003 are shown in **Figure 4**.

Watsonia spraying in 2003 covered basically the same areas as in 2002. There were only a few small individual *Watsonia* plants still occurring within the community. These were hand sprayed along with some infestations north of the hay paddock and along the drain separating the type 3c from the type 8. Spraying of *Watsonia* in the southern section (divided by drain) of Reserve 2806 covered all known plants. The section of Reserve 2806 north of the drain contains extensive very dense areas of *Watsonia*, which have yet to be targeted.

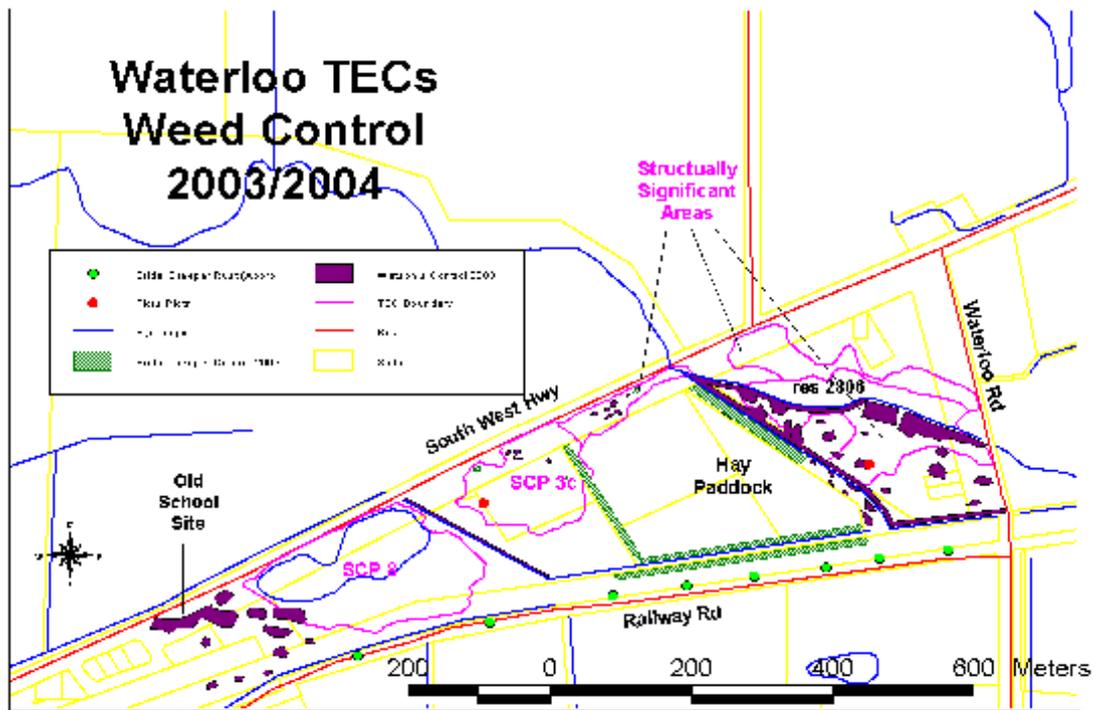


Figure 4: Waterloo TECs Weed Control 2003/2004.

Small infestations of Bridal Creeper were noted within the type 3c community near the South West Highway. Extensive threatening populations in the immediate surrounds were follow-up sprayed. As planned, target area included sections further south of the drain (south of hay paddock) as sprayed in 2002 for the first time. Follow-up spraying was also carried out in Reserve 2806 south of the drain. These were substantial populations in 2001 that had only minor regrowth in 2002 with similar reductions in 2003. (not shown in **Figure 4** as clashes with *Watsonia* control mapping). In general results continue to be promising with only minor re-growth in all follow-up areas but there are still "new" plants being found each season as is expected with Bridal Creeper still being extensive in some of the surrounds. Due to there still being a lot of this source Bridal Creeper (e.g. along Railway Rd to the south of entire Nature Reserve and the north section of Reserve 2806) follow-up spraying is still crucial in order to target new infestations as well as any regrowth

In 2003 follow-up spraying was also completed to the west (near old school site) adjacent to the type 8 TEC and in some seasonally inundated sedgeland and surrounds. Areas further west than this have extensive dense infestations that were not sprayed. Secondary species opportunely targeted during spraying included Bridal Creeper (where missed with initial control), Freesias, *Babiana stricta*, Veld Grass and African Lovegrass. A concerted effort at *Babiana* (widely spread throughout the type 3c TEC) control was planned in 2004. Monitoring plots were established but control never commenced. This is still intended for 2005.

Yarloop

Areas targeted for *Watsonia* and Bridal Creeper control are shown in **Figure 5**. Area covered has been basically the same each year since 2001 with results continuing to be considered effective. Cape Tulip was again hand pulled and proved easily manageable with this being the fourth year of treatment. Small *Tagasaste* was again pulled after removing the larger plants in 2001.

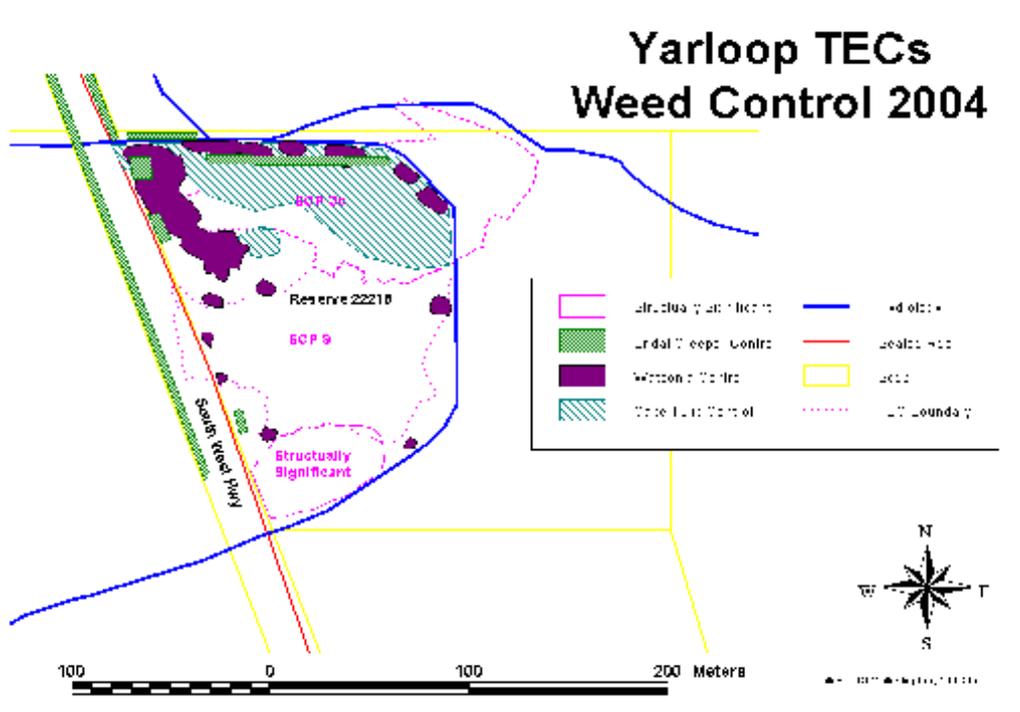


Figure 5: Yarloop TECs Weed Control 2004.

Opportunistic weed establishment continues to be a problem where target weeds have been controlled/removed in both occurrences. Veld Grass and African Lovegrass continues to invade the native vegetation at *Yarloop* and control needs to be better addressed. *Babbiana* and *Freesia* continue to proliferate in some areas of *Waterloo* where *Watsonia* has been effectively controlled. This changing of the weed regime to smaller, potentially more difficult to control weeds still needs to be better addressed.

Weed Control, General Comments

Weed control method of application has been primarily with ute mounted spray units with handguns (short with no lance) and hand sprayers.

To date weed control can be considered successful in so much as halting the frontal spread of *Watsonia* and the establishment of new infestations of *Bridal Creeper*. It has also resulted in a reduced amount of regrowth for both these primary targeted weed species. In some small sections these primary weeds have been all but eliminated. These were small areas with dense infestations and few non target natives to protect. There has been less success in areas where the weeds are amongst more intact native vegetation. It is suggested that this can be attributed to desirable full plant coverage at applicable herbicide rates being more easily achieved where non target species are not a concern.

At *Waterloo* there were non target deaths/effects noted early in 2003 for a number of grass trees (*Xanthorrhoea preissii*) on the edge of a powerline (Figure 6).



Figure 6: Grass

Trees (*Xanthorrhoea preissii*) Deaths/Effects due to Herbicide.

These native plants had a moderate infestation of *Watsonia* associated with them. Deaths were attributed to the previous seasons *Watsonia* treatment with a glyphosate based non selective herbicide. As a response the more selective herbicide *Brush-Off* (600g/kg metsulfuron methyl) was used extensively on both *Bridal Creeper* and *Watsonia* where non target natives were an issue. This treatment was trailed in a number of nature conservation weed spraying areas. The results were to be assessed in spring 2004 via monitoring plots that were established (to monitor both weeds and natives) but this did not occur.

Native re-establishment in controlled sites is the ultimate goal of this weed control, though potentially difficult and expensive. At the end of the 2001 spraying season three simple monitoring plots (no controls) were established (two at *Waterloo* and one at *Yarloop*). The *Waterloo* plots were located in Reserve 2806 in particularly dense *Bridal Creeper* and *Watsonia* areas that had been sprayed for two seasons and had practically no native understorey due to initial density of weeds. The intention was to see what if any native species germinated/regrew after intense chemical control of the existing weeds (without dead biomass removal) and how they compete with new weeds. This was not done in conjunction with any secondary weed control methods. In 2002 the plots still had a thick dead biomass remaining with only minor *Bridal Creeper* regrowth, a small amount of grasses and no native species. There were a few tree, shrub and the odd herb species recorded in 2003 along with some *Bridal Creeper*. The *Yarloop* plot was located in Reserve 22215 in the dense *Watsonia* infestation adjacent to the South West Highway that had also been sprayed for two seasons and had practically no native understorey due to initial density of weeds. This plot has had a similar result with only some introduced grasses and the odd *Watsonia* to date. Neither *Waterloo* nor *Yarloop* plots were monitored in 2004.

It was suggested for 2002 that the small area of *Watsonia* at *Yarloop* adjacent to the South West Hwy might be burnt to remove the dead *Watsonia* biomass and see what native soil stored seed germinates. Fire could also be used to promote new growth on the African Lovegrass clumps, leaving them more susceptible to chemical control. A prescription was not prepared in 2004 as hoped. This approach has been considered too simplistic for *Waterloo* and in 2005 it is planned to compile existing native flora characteristics, start seed collection and trial re-vegetation methods if sufficiently researched/prepared. Any such trialing utilising fire will require a prescription approved by the District, Region and WATSCU.

It is planned for 2005 to re-establish follow-up of all areas from 2003, in places expand these weed controls as ongoing works and continue monitoring. Involvement with other stakeholders has yet to be pursued.

3.11 Fence remnants that contain the community, where necessary

It had been considered that these occurrences did not require fencing. However in an effort to restrict access at *Waterloo*, gates signed with "Management Access Only" are still planned for all access tracks into the reserve. These are currently under design and construction. These will be sturdy and lockable but will not be locked at this stage. There have been a couple of instances of vehicles driving into Reserve 22215 (*Yarloop*) in the last few years. It is now the intention to pursue vesting of this currently Waroona Shire reserve with the Conservation Commission (see 3.25) and physically restrict access.

3.12 Monitor for dieback

Waterloo was mapped for dieback occurrence in 1999 with the area and surrounds being either dieback infected or uninterpretable. The implications for the future biodiversity within the occurrence still need to be quantified. *Yarloop* has yet to be interpreted but given the small size of this occurrence, opportune interpretation may be done in 2005 but is not planned at this stage.

3.13 Assess hydrological information

Although the IRP does not mention the South West Region occurrences, there has been consideration given to assessing historical monitoring data and to pursue options for future monitoring. The intention for 2004 was to set up some seasonal water monitoring with minor bores at both occurrences. Manual installation techniques chosen proved to be ineffectual with a drilling rig required. One has been sourced through the Forest Product Commission Collie with work planned for 2005. This monitoring will be focused on physical properties (e.g. dissolved oxygen, pH and conductivity) as opposed to hydrological history/movement for which we need to further pursue the Water and Rivers Commission to see what they have available.

3.14 Design and conduct research

Basic weed control trials and monitoring were continued in 2003 and are again planned for 2005, including monitoring native regrowth in weed control areas. Fire assisted weed control and revegetation trials will be implemented if sufficiently researched/prepared (see 3.10). There is still a requirement to consult with WATSCU and Science Division to consider design and other research required.

3.16 Investigate re-vesting of areas that contain the community in the NPNCA if conservation management seems unlikely, or if the areas become available

See 3.25

3.25 Acquire unvested land that contains the community and vest the area in the Conservation Commission (previously NPNCA)

Waterloo

Areas of UCL containing all type 3c (and adjacent type 8) TEC in *Waterloo* were transferred to the Conservation Commission as Nature Reserve on 29 March 2000.

Another area noted in the 2001 and 2002 report was the *Waterloo* UCL Reserve 2806 (east of community) with sections previously being identified as having the basic structure of the type 3c community but lacking the floristic diversity due to weed invasion. A drain divides the area with the northern section having widespread dense *Watsonia* infestations and the southern section *Watsonia* to a lesser degree. Weed control

has continued to be carried out in the area south of the drain. Russell Smith (Ecologist, CALM Bunbury) has inspected the area and confirms that it contains the 3c type throughout though greatly degraded (personal comment). The area was also inspected by WATSCU representatives in July 2004 (as part of a tour during Annual Recovery Plans Reporting) and general comment was that vesting should be pursued.

Given the small amount of type 3c total area known (43.4 ha), it is considered that this area has significant value as target of rehabilitation and trialing. Vesting with the Conservation Commission will now be pursued. Factors such as the responsibilities inherited with the acquisition of such weed-degraded have been considered.

The Shire of Dardanup applied to the Department of Land Administration (DOLA) for the granting of a Management Order over Reserve 2806 for the purpose of recreation in early 2002. DOLA contacted the District office to provide consideration and comment to the application. The District responded that we would strongly oppose the granting of such a Management Order to the Shire of Dardanup at this time. This was on the basis (as outlined above) that the District wished to assess the ecological value of the area and if deemed appropriate (dependant on results) pursue a Management Order with the Conservation Commission. The District indicated that we would be in a better position to provide comment at the end of 2002 however further assessment was required and no further information has been provided to the now Department for Planning and Infrastructure (DPI). The Department (CALM) now needs to inform the DPI of its intentions and begin the process of pursuing a Management Order with the Conservation Commission. Further formal correspondence will be dealt with through the Department's Regional Planning Officer.

Yarloop

The *Yarloop* community occurs on a small Drainage and Camping Reserve 22215 vested with the Waroona Shire and as such is under no immediate conservation threat. However given the critically endangered classification of the type 3c and that together with the adjacent type 9 TEC they make up over 50% of the reserve, vesting with the Conservation Commission has been considered. Preliminary informal queries to the Shire of Waroona Planning Officer and the Department's Regional Planning Officer have revealed no obvious objections. It is now the intention to pursue a Management Order with the Conservation Commission in 2005.

Summary

(see also "Executive Summary")

Although there have been good results in weed management and continued progress in some IRP action items, progress in others has been less satisfactory. In 2004 this was compounded with the TEC Officers absence for much of the year. 2005 is now considered a critical year in order to get some IRP action items back on track and others further progressed