SWAN REGION
THREATENED FLORA AND COMMUNITIES
RECOVERY TEAM

ANNUAL REPORT

1999

by

The Swan Region Threatened Flora and Communities Recovery Team

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SUMMARY

The Recovery Team includes representatives from three districts, CALM specialist branches, Kings Park and Botanic Garden and local government and community groups. The Team met three times in 1999.

The region continued searches for new populations of DRF and priority species resulting in discovery of 79 populations of 10 DRF species and 121 new populations of 33 species of Priority Listed Flora Species. This includes 11 species (3 DRF, 8 Priority) where greater than 10 new populations and/or tens of thousands of plants have been found. A large number of these discoveries were by volunteers. In addition over 15% of DRF populations known in the Swan Region were resurveyed in 1999.

Management of threatened flora in 1999 included installation of roadside markers, weed control, liaison with other agencies, establishment and monitoring of fire research plots, translocation and ex-situ propagation.

An application submitted to the NHT program to write a threatened flora recovery plan for the Swan Region was successful and the project commenced in September 1999.

The program to translocate *Lechenaultia laricina* continued with an additional 155 plants planted in 1999. Two hundred and forty nine plants survived into October 1999.

There are 9 Critically Endangered, 5 Endangered and 6 Vulnerable communities recorded from the Swan Region. Interim Recovery Plans were prepared for the 9 Critically Endangered Communities occurring in Swan Region in 1997 and separate Recovery Teams are established for 3 of the Critically Endangered communities.

Reduction in groundwater levels at Yanchep continues to require urgent actions to protect occurrences of the caves aquatic root mat community, including artificial watering of individual root mats.

INTRODUCTION / THE RECOVERY TEAM

The Swan Region Threatened Flora and Communities Recovery Team (SRTFCRT), the Recovery Team, was established in October 1993 to coordinate management of threatened flora and ecological communities in the Swan Region. Recovery actions for the Recovery Team are taken from the Wildlife Management Programs covering the former Northern Forest Region and former Metropolitan Region (Kelly et al. 1990, Kelly et al. 1993), as well as from Interim Recovery Plans for Critically Endangered species and ecological communities that have been recently produced.

Activities carried out in the Swan Region are predominantly funded from CALM budget, although some funding received by WATSCU from NHT Funding (Endangered Species Program and Bushcare Program) are used to implement actions in the Swan Region. Also some activities are funded from Landscope Visa Card. In September 1999 a NHT (Bushcare Program) funded project to rewrite the regional Threatened Flora Recovery Plan commenced. Kings Park and Botanic Garden also obtain sponsorship and NHT funding for some of their work, in addition to funding from their operational budget.

In 1999 Val English replaced Andrew Brown as the WATSCU representative on the Recovery Team. The membership of the Recovery Team is currently as follows:

David Mitchell (Chair)	CALM Swan Region
Les Robson	CALM Swan Region
Murray Love	CALM Dwellingup District
John Carter (proxy Alan Wright)	CALM Mundaring District
Lyndon Mutter (proxy Stephen King)	CALM Perth District
Neil Gibson	CALM Woodvale Research Centre
Ken Atkins	CALM Wildlife Branch
Val English	CALM WATSCU
Kingsley Dixon (proxy Andrew Batty)	Kings Park and Botanic Garden
Sandra McKenzie	WA Threatened Species Network
Wayne van Lieven	City of Gosnells

The Recovery Team met three times in 1999 (March, August and November).

THREATENED FLORA LISTING

Table 1 gives a summary of the changes that have occurred in the latest update (17 December 1999) in the list of Declared Rare and Priority flora species recorded from the Swan Region. In this latest schedule there have been 2 taxa that have been raised to a higher ("more threatened") status and 24 taxa reduced to a lower ("more secure") status, including 12 that have been removed from the list entirely. There have been 1 DRF and 13 priority species added to the list, mainly due to discoveries of these species in the region over the previous year.

Table 2 provides a summary of the numbers in each status category in the Swan Region and Statewide in the 1999 and in previous listings.

Table 1: Changes in Declared Rare and Priority flora list 14/7/98 to 17/12/99.

1 DRF species removed from DRF list, now P4
1 Priority 1 species raised in status to DRF
1 new DRF species found in region
11 Priority species reduced to a lower priority status, including 6 lowered to P4
12 Priority species removed from the list (4xP1, 1xP2, 4xP3, 3xP4)
1 Priority species raised to a higher priority status (P3->P2)
13 new Priority species added to the list (3xP1, 4xP2, 4xP3, 2xP4)

Table 2: Numbers of flora taxa in each category in the Swan Region and Statewide in 1999 and in previous listings.

	declared rare flora		Priority Codes				TOTAL
	R	X	1	2	3	4	
"Swan 1990/93"[1]	34	9	33	26	24	16	142
Swan 14/9/95	41	4	56	49	54	47	251
Swan 21/10/96	42	2	52	53	68	53	270
Swan 3/12/97	51	1	48	55	71	53	279
Swan 15/7/98	52	1	43	54	70	61	281
Swan 17/12/99	53	1	38	54	71	67	284
State 1990/93							1602[2]
State 14/9/95	280	37	584	558	381	215	2055
State 21/10/96	302	27	591	611	437	227	2195
State 21/12/97	330	27	601	629	468	228	2281
State 15/7/98	327	23	591	640	477	251	2309
State 17/12/99	334	22	545	623	548	268	2340

[1] Derived from combining Kelly et al. 1990 and Kelly et al. 1993, there may be errors due to changes in listing of species between the differing dates of these 2 reports.

[2] Total of DRF and Priority flora in 1993 (from CALM Annual Report July 1992 to June 1993).

Of the 53 extant Declared Rare Flora species recorded from Swan Region, 12 are ranked Critically Endangered, 23 ranked Endangered and 18 are ranked as Vulnerable.

PLANNING FOR THREATENED FLORA

Recovery actions for the Recovery Team are determined from the two Wildlife Management Programs covering the former Northern Forest and Metropolitan Regions. (Kelly et al. 1990, Kelly et al. 1993). The first of these is now 9 years old and does not provide as much detail as do recent plans (especially regarding priority species).

In light of this, an application was submitted to the 1998 round of the Natural Heritage Trust program to write a threatened flora recovery plan for the Swan Region. Advice was given in late December 1998 that this application was to be funded from the Bushcare program. Most of this funding was to employ an officer to carry out this project and the successful applicant, Rebecca Evans, commenced in September.

Of the twelve Critically Endangered species occurring in the Swan Region, Interim Recovery Plans (IRPs) have been prepared for seven of these (prepared under 2 WATSCU projects funded by NHT in 1998). These IRPs will be included in the Regional recovery plan when written and updated if necessary.

THREATENED FLORA SURVEYS

DRF and Priority Species – New Finds

New populations of DRF and Priority flora are found in searches specifically targeted to locate new populations as well as opportunistic finds and searches carried out prior to disturbance activities. Details of new populations of DRF and Priority species are recorded on local office files as well as on Head Office files and the departmental DEFL database.

Table 3 provides a summary of the finds of new populations of DRF and Priority flora species in 1999. A more detailed population by population report is available.

During 1999 there were 79 new populations of 10 species of DRF discovered by Swan Region staff or volunteers, including a significant find of 27 populations (39 000 plants) of the DRF species *Hemigenia viscida*, this species had not previously been recorded from the Swan Region and was only known from the Wongan Hills and Tammin. There were 121 new populations of 33 species of Priority Listed Flora Species found in 1999 (See Table 3). These finds include 11 species (3 DRF, 8 Priority) where greater than 10 new populations and/or tens of thousands of plants have been found. A significant majority of these discoveries were by volunteers Fred and Jean Hort.

Some of these species have since had their status revised in the recent gazettal of DRF and Priority flora list update on 17 December 1999 and summarised in Table 1.

DRF resurveys

Fifty eight populations of 22 species of DRF were formally resurveyed during 1999 as part of the project to rewrite the regional threatened flora plan. This is approximately 15% of the total number of DRF populations. In addition other populations were resurveyed by CALMScience, WATSCU and other specialist staff (although the numbers are not recorded here). A number of populations had brief site inspections to confirm that no disturbance to the site had occurred. These visits did not result in submission of rare flora report forms.

Table 3: Finds of DRF and Priority Flora from the Swan Region in 1998.

Species	Status	Pops	Plants	Notes
Anigozanthos humilis subsp. *chrysanthus*	R	18	963	
Anthocercis gracilis	R	2	1800	
Diuris drummondii	R	1	2500	
Eleocharis keigheryi	R	5	9500	
Eucalyptus argutifolia	R	6	64	
Hemigenia viscida	R	27	39019	New species for region
Lasiopetalum pterocarpum	R	1	9	
Leschenaultia laricina	R	1	6	
Pimelea rara	R*	12	460	
Pultenaea pauciflora	R	4	81	
Verticordia plumosa var. *pleiobotrya*	R	2	65	
Baeckea sp B Darling Range	1*	8	48087	
Microcorys longifolia	1*	19	16916	
Nemcia alternifolia ms	1*	5	37405	
Stenanthemum nanum	1*	2	340	
Astroloma foliosum	2	2	45	
Bossiaea modesta	2	1	500	
Dryandra insulanemorecinta (seedlings)	2	2	30500	New species for region
Stylidium paulineae	2	2	2685	
Stylidium rigidifolium	2	5	1153	
Tetratheca similis	2	1	752	
Tetratheca sp *Granite* ms	2*	1	660	
Verticordia bifimbriata	2*	8	8760	
Chorizema ulotropis	3*	3	1600	
Darwinia pimelioides	3*	4	4028	
Hakea myrtoides	3*	6	3104	
Leucopogon oliganthus	3	1	25	
Nemcia acuta	3	2	4890	
Stenanthemum coronatum	3	1	542	
Synaphea acutiloba	3*	5	2455	
Synaphea damopsis	3*	1	225	
Synaphea pinnata	3	2	1030	
Tetratheca pilifera	3	3	548	
Verticordia huegelii var. *decumbens*	3	13	135481	
Darwinia sp *Dryandra* ms	4	1	200	New species for region
Dryandra drummondii subsp. *hiemalis*	4*	1	30000	
Grevillea cirsiifolia	4	2	4835	
Grevillea pimeleoides	4	1	25	
Hydrocotyle lemnoides	4	6	43100	
Lasiopetalum bracteatum	4	1	160	
Schoenus natans	4	6	39000	
Stenanthemum pumilum	4*	5	5606	
Verticordia lindleyi subsp. *purpurea*	4	1	600	
Villarsia submersa	4	1	2	
Grand Total		**201**	**480 000**	

* Species had change of status in 17/12/99 listing. The status indicated in this table is that prior to this date, i.e. as shown in the 15/07/98 listing.

RECOVERY ACTIONS

Recovery actions for threatened species in the Swan Region were concentrated on those species ranked Critically Endangered. These included weed control (*Calytrix breviseta* subsp *breviseta, Epiblema grandiflorum var. cyanea, Lasiopetalum pterocarpum*), preparation of Interim Management Guidelines for the reserve containing *Epiblema grandiflorum var. cyanea* with protocols for monitoring and managing water levels, and collection of seed (*Epiblema grandiflorum var. cyanea, Lasiopetalum pterocarpum*).

Actions on other DRF species included monitoring of populations, installation and maintenance of roadside markers, weed control, liaison with other agencies, through to ex-situ propagation and storage of germ plasm.

Further detail of recovery actions can be located in the minutes of the Recovery Team and on departmental file.

TRANSLOCATION – *LECHENAULTIA LARICINA*:

In 1997, 134 plants of *Lechenaultia laricina* (propagated from cuttings of plants from the adjacent roadside) were planted into Cullen Nature Reserve. The plants were initially given no after care or supplementary watering, however a very long and dry summer resulted in only 27 surviving to January 1998. At this stage the remaining plants were watered until the opening rains in April (as it was obvious they would not survive without it). These plants survived until the end of 1998. No supplementary water was given to these plants in the summer of 1998/99 and at 20 May 1999, 23 plants were still alive.

An additional 130 plants were planted in 1998 and received supplemental watering over the 1998/99 summer (in addition the season was more mild than the previous summer, with significant rain associated with summer thunderstorms). At the seventh resurvey of these plants on 20 May 1999, seventy four of the original 130 were alive.

In June 1999 a third re-introduction of 155 *L. laricina* seedlings into the Cullen Nature Reserve was carried out. Re-inspections of these seedlings were carried out in August and October 1999. Table 4 below gives a brief summary of the October resurvey showing that 152 plants had survived. These plants will be provided with supplemental watering (by hand) over the 1999/2000 summer. This watering commenced on the 10 November 1999.

Table 4: Translocated *Lechenaultia laricina* –Second Resurvey 26/10/99.

Total No. of plants	Excellent condition	Good/ Excellent	Good	Fair to Good	Fair	Dead
155	46	37	40	20	9	3

Thus at the end of 1999 there were 249 (23/134, 74/130, 152/155) surviving plants. In 2000 an effort will be made to determine and report on the flowering and seeding success of these plants.

FIRE RESEARCH:

Les Robson continued monitoring of fire research plots established by Swan Region in previous years. In addition, one new plot was established this year. Details of establishment and monitoring results are recorded on department files, with a brief summary of monitoring recorded below.

Pultenaea pauciflora – A new fire plot was established on the 18 May 1999. Prior to burning, the 10 x 10m fenced plot supported 10 healthy *P. pauciflora* plants.

At the first re-inspection on 1 November 1999 rootstock regeneration was observed on 5 of the 10 burnt plants and there appeared to be scattered seedlings around the other 5 plants but it was not possible to confirm their identity. Another inspection is programmed for May 2000.

Stylidium scabridum (previous DRF Species) – Fire Research Plot No 1 - Kent Road. Autumn burnt on 21 April 1995. Re-inspected May 1999 and December 1999.

The resurvey revealed an increase in the population size from 45 in 1998 to 57 in 1999. These plants flowered in 1998. It is not intended to continue to monitor this plot as the species will regenerate from seed following an Autumn burn.

Asterolasia nivea - Fire Research Plot No 1 - Flat Rock Gully NR. Established 3 May 1994 (autumn). Re-inspected May 1999 and Dec 1999.

Still ~ 70 seedlings with no mortalities since the previous survey in 1998. The plants are still small and slow growing 5 years since the burn.

Lechenaultia pulvinaris - Fire Research Plot No 2, Wandoo Conservation Park. Spring Regeneration Burn in October 1995. Re-inspected June 1999 and Jan 2000.

These inspection revealed that the 4 rootstock regenerated plants from the original 10 plants burnt have put on new growth after quite a bit of the centre of the plants had died off during the last summer. The January 2000 inspection confirmed that all of the plants and seedlings were in good condition.

Lechenaultia laricina - Plot No 2 - Wandoo Conservation Park. Established October 1995. Re-inspected in June 1999 and Jan 2000.

From the original 5 mature plants burnt the 3 plants that previously regenerated from rootstock are still surviving and were in good to excellent condition in the June check. All 8 remaining seedlings were in very good condition with lush new foliage evident and no mortalities.

Dryandra aurantia – Fire Research Plot No. 1. Established (burnt) 16 April 1997. Re-inspected in May 1999 and December 1999.

Of the 12 mature plants burnt, 10 resprouted from "rootstock" and all were in excellent condition in May and December 1999. Overall there were 78 locations of regrowth from underground branches. No seedlings were observed.

THREATENED ECOLOGICAL COMMUNITIES

There are now 9 Critically Endangered, 5 Endangered and 6 Vulnerable Threatened Ecological Communities (TECs) recorded from the Swan Region. Interim Recovery Plans were prepared for Critically Endangered Communities (including those in Swan Region) in 1997 using WATSCU funds.

Individual Recovery Teams have been established for 3 of the Critically Endangered TECs, namely:

- Sedgelands in Holocene dune swales of the southern Swan Coastal Plain (Gibson et al. 1994: type 19)
- Stromatolite like community of coastal freshwater lakes (Lake Richmond)
- Aquatic root mat community number 1 of caves of the Swan Coastal Plain

The remaining 6 Critically Endangered communities (and the other 11 TECs) continue to be managed within the scope of the Swan Region Threatened Flora and Communities Recovery Team (SRTFCRT). It may be appropriate in future to create a new recovery teams for the Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) as this is based on a fauna assemblage, and retain the remaining five vegetation communities in the Recovery Team.

- Eucalyptus calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain (Gibson et al. 1994: type 3a)
- Eucalyptus calophylla - Xanthorrhoea preisii woodlands and shrublands, Swan Coastal Plain (Gibson et al. 1994: type 3c)
- Shrublands and Woodlands of the eastern side of the Swan Coastal Plain (Gibson et al. 1994: type 20c)
- Perth to Gingin Ironstone Association
- Shrublands and Woodlands on Muchea Limestone

WATSCU applied in 1998 for NHT funding for implementation of Interim Recovery Plans for 16 Critically Endangered TECs in the southwest. This was successful (funded by Bushcare Program) and the project commenced in 1999 with the employment of Alex Agafonoff. Alex also had input to the Greencorp project discussed below.

The WWF (and Western Australia Threatened Species Network) with CALM prepared a continuing project for Green Corps teams to undertake on ground recovery actions for Threatened Ecological Communities (TECs) and associated threatened species on the Swan Coastal Plain. The project aims to create a situation where Green Corps trainees can work alongside community members so that skills learnt and applied by the Green Corps trainees are transferred to the community. Once completed the work will have provided a strong baseline for continual recovery work and monitoring of TECs.

Green Corps teams have carried out works at occurrences of Tumulus Mound Springs and at Muchea limestone, including weed control, local seed collection.

The Western Australia Threatened Species Network was also successful in gaining funding for a project "Restoring Ecological Communities on the Swan Coastal Plain". This project will run from November 1999 to May 2000.

Aquatic root mat community number 1 of caves of the Swan Coastal Plain.
The level of groundwater in caves at Yanchep continues to be of concern. Perth District again carried out actions to protect occurrences of this community over the 1998/99 summer (and is likely to do so again over the 1999/2000 summer). This involves creating pools and supplementary watering of individual root mats to maintain the moisture regime. An MOU has been agreed between the Water and Rivers Commission and CALM in relation to thinning of pines and this thinning has commenced. However there have as yet been no regional increases in groundwater levels observed.

Perth District received funding from Landscope Visa Card to commence a study to determine the critical area of influence for the Cave root mat community and identify the parent trees.

Perth to Gingin Ironstone Association.
A recently purchased occurrence of Gingin Ironstone community is now a CALM managed Nature Reserve (to be named Timaroo NR) and, using Landscope Visa Card funding, has been fenced and had signage installed

REFERENCES

Kelly, A.E., Coates, D.J., Herford, I., Hopper, S.D., O'Donoghue, M and Robson, L. (1990) Declared Rare Flora and Other Plants in Need of Special Protection in the Northern Forest Region. Wildlife Management Program No 5. Department of Conservation and Land Management

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