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# PURCHASE OF THREATENED ECOLOGICAL COMMUNITIES

**S**ome very significant communities have been recognised in the project to identify and conserve threatened ecological communities of plants and animals in the South-West Botanical Province. Two of these communities occur near Perth on the Swan Coastal Plain in areas which have been extensively cleared, and both are critically endangered. An area containing an occurrence of each of these communities is to be purchased jointly by CALM, and the Australian Nature Conservation Agency - who also fund the Threatened Ecological Community project.

The first of these communities is the tumulus (from the Latin meaning "little mound") springs which are spongy peaty mounds which continuously seep water. These were identified as biologically significant and as containing unusual and diverse invertebrate fauna by Ms Edyta Jasinska and Dr Brenton Knott, Department of Zoology, The University of Western Australia. The plant community associated with these mounds is also special in that it contains species which normally occur in the far south west of the state, and require a permanently moist environment.

One of the two known remaining tumulus springs was on a property owned by Mr Bevan Peters at Muchea who was very sympathetic to conserving the site and soon accepted an offer to purchase. The area will be a nature reserve managed by CALM.

Another threatened ecological community - "shrublands on Muchea Limestone" is an extremely unusual

plant community that occurs on the eastern side of the Swan Coastal Plain. This community contains a number of plants which commonly occur on limestone near the coast. However, this community exists quite a distance from the coast, in black clay soils which mostly appear near the escarpment and along streamlines. The limestone in the soils in these areas may occur as a result of spring activity, and the sites may indeed historically have contained tumulus springs.

Only a few very small and mostly degraded areas of this community are known. Perhaps the area of this community in best condition was identified on a property in Gingin which was for sale. Again, the owners had recognised the unusual and significant nature of the site and were keen for it to be conserved. CALM had soon negotiated an agreement with the owners, and the area will soon be purchased and become a nature reserve.

The two purchases are a very heartening beginning to practical outcomes from the Threatened Ecological Community project. The speed of negotiations was largely due to the enthusiasm and support of Chris Marmion, Paul Brown, Rob Towers and other staff of CALM's Swan Region, and Land Administration Branch.

Val English

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## RECOVERY TEAM REPORTS FOR 1995

*Annual Reports of Recovery Teams have been submitted to CALM's Corporate Executive and where Commonwealth funding is provided to the Australian Nature Conservation Agency. Summaries of these reports are reproduced below:*

### Woylie

*This has been the last year of actions to recover the woylie under the prescriptions of the Recovery Plan. All actions have been implemented with emphasis on the continuation of feral predator control at all mainland locations. This is an on-going commitment that will continue and expand in future years.*



A new population has been established at Julimar Conservation Park. This is the last of the key populations prescribed in the Plan for WA. It has been integrated into an Edith Cowan University project to study the genetic consequences of bottle-necking when new populations start from relatively small founder numbers. Under CALM's Operation Foxglove and the VBC Ecology Project 3.4, woylies have been introduced to nineteen monitoring sites in the northern jarrah forest where aerial baiting of foxes over 550,000 ha has been undertaken. Second generation young born in the new sites have been recorded for the first-established populations. This program is additional to the requirements of the Plan.

Further translocations of WA stock to SA and the removal of a rogue cat have established a population at Venus Bay Conservation Park. There was another attempt to diversify the genetic base of a SA island population by introducing wild-caught WA stock to the inbreed island population.

The Plan was modified as foreshadowed in last year's Annual Report and in November the Team reviewed the status of woylies using the IUCN Red List Categories (Version 2.2 published by IUCN/SSC in 1994). It concluded that

woylies did not meet any of the criteria that would warrant classification under the Threatened categories but did meet the criteria for Lower Risk (Conservation Dependent). It made appropriate recommendations to ANCA, CALM and SADENR.

Lessons learned in the process of writing, revising and implementing this Plan are outlined in the Conclusions Section where we make a recommendations for attention of people writing Recovery Plans in future.

We recommend that:

- Recovery Plans identify all the international, Commonwealth and State policies/statutes that will have to be considered in the re-evaluation of the status of a species.

- The primary purpose of species-specific Recovery Criteria should be to identify specific targets for an action program which will ensure that, at re-evaluation of the species status by the requisite international, Commonwealth or State policies/statutes, the stated Recovery Plan Objective for recovery will be achieved.

### Western Ringtail Possum

*A Recovery Team was set up for the Western Ringtail Possum in 1995 and has met once. The Recovery Team is developing an Interim Recovery Plan for the species as well as guidelines for carers who look after derelict animals.*

The Interim Recovery Plan will deal with management of habitat, the development of monitoring methods, the assessment of development proposals that may destroy habitat, the management of ringtails in roofs, and the release of ringtails taken from development areas or rehabilitated by carers.

### Chuditch

*It is now the fourth year of implementation of the Chuditch Recovery Plan. Financial support continued from ANCA's Endangered Species Program, Perth Zoo and CALM. Funding from WWF (utilising a*



*grant from Alcoa) enabled Community Involvement Program coordinator to be appointed part time.*

The Recovery Plan was published as a CALM Wildlife Management Program in January 1995. Satisfactory progress has been made on all actions. Studies into the impact of prescribed burning regimes and timber harvesting on Chuditch and other threatened mammals continued in the jarrah forest of south west WA. Preliminary results suggest that neither of these disturbances have a detrimental impact on Chuditch abundance or condition. Population monitoring continued at Mundaring, Batalling and Kingston as well as at several sites in the northern jarrah forest as part of the research associated with Operation Foxglove. The captive breeding program continued successfully at the Perth Zoo and 37 young were produced during the year. Monitoring of the reintroduced population at Julimar continued and numbers appear to have stabilised in the central part of the conservation park. However Chuditch do not appear to have expanded towards the eastern boundary and inadequate fox control is thought to be responsible for this. More intensive ground fox baiting was subsequently implemented. The area fox baited at Julimar expanded to include the southern half of the Bindoon military training area. There is concern that wheatbelt populations are continuing to decline and future work will focus on Chuditch conservation in this area. Planning commenced for a translocation to Lake Magenta Nature Reserve in September/October 1996.

### Djoongari

*This is now the fourth year of implementation of the Djoongari (Shark Bay Mouse) recovery plan. Financial support continued from ANCA's Endangered Species Program and CALM. In kind, support was received from Useless Loop Salt Pty Ltd.*

During 1995, the recovery plan revision was completed and this will be published in 1996. It was revised to reflect the changes in the translocation program and to recognise the longer time frame required to establish and

monitor translocated populations. The Bernier Island population was monitored once and this is maintaining distribution and abundance. An emphasis was placed on the restocking of Doole Island and this was successfully undertaken and monitoring continued. Problems were encountered in the establishment and monitoring of the Heirisson Prong population and a restocking with modified release techniques will be required in 1996.

### **Thevenard Island Mouse**

*The 1995 annual report documents continued progress during the second year of implementation of the Thevenard Island Mouse Interim Recovery Plan.*

Work has progressed considerably since 1994, although delays in the genetic and translocation components of the project were experienced. Genetic information for island and mainland populations of *Leggadina* has been obtained and will be analysed with the aim of taxonomically identifying the *Leggadina* population on Thevenard Island. Populations of House Mice and Thevenard Island Mice have shown dramatic fluctuations across seasons. House Mouse numbers remained higher at all times, and have continued to increase. Physiological work between species has identified that House Mice have a higher requirement for water and sodium than Thevenard Island Mice, and this difference will be developed towards a selective bait for control. The Murine Cytomegalovirus has been positively identified from House Mice on Thevenard Island, and work is continuing to ascertain its infection in Thevenard Island Mice. The translocation of a population of Thevenard Island Mice to Serrurier Island has been delayed because attempts to remove a feral cat from Serrurier Island have been unsuccessful. Financial support continued from ANCA's Endangered Species Program, West Australian Petroleum, CALM and The University of Western Australia.

### **Numbat**

*The numbat population at Dryandra is one of the only two original populations surviving, and has been used as the primary source of animals for the reintroduction program.*

In 1993, after rising steadily since the introduction of a fox-control program, the Dryandra population dropped to about half of its 1992 size. Since then, surveys in 1994 and 1995 have shown that the numbat sighting rate has remained close to the level it fell to by the end of 1993, indicating that population numbers have stabilised at the level that can be sustained by the resources available. Surveys at Boyagin NR, the first reintroduction site, and at Montague, an outer block of Dryandra, indicate a similar pattern of steady population increase, which has been followed in the longest-monitored populations (Dryandra and east Boyagin) by a rapid fall to a lower (sustainable) level. Monitoring of radio-collared animals at Dryandra has not revealed any unusual mortality there since early 1994.

Monitoring of radio-collared animals at reintroduction sites at Tutanning, Batalling, Karroun Hill, Yookamurra and Karakamia continued in 1995. Problems with radio-collars and/or batteries have led to loss of signals at all sites and obscured the status of the populations in some cases. These problems have been sorted out for future translocations, and driven surveys and diggings searches will be used more widely as an alternative to radio-tracking in 1996.

During 1995, a new reintroduction site was established at Dragon Rocks Nature Reserve between Lake Grace and Hyden. A fox control program comprising six ground and two aerial baitings each year was implemented in September and a numbat release site was chosen. In December twenty animals were translocated there from Dryandra, while nine were translocated from Dryandra to Batalling.

### **Gilbert's Potoroo**

*A captive breeding colony has now been established at Two Peoples Bay. Initially this consisted of five animals (including two females with pouch young), which were held independently in the noisy scrub bird cage facilities. A new captive breeding complex has been constructed specifically for Gilbert's Potoroo. Eight interconnecting enclosures are now available, each capable of holding three females and*

*one male. In July 1995 the animals were moved into the new pens.*

Currently there are four males and three females in the colony with none of the females carrying pouch young. Three of the males are rapidly approaching adult weight.

The status of Gilbert's Potoroo has been amended under section 18 (1) of the Endangered Species Protection Act 1992. The species has been deleted from Schedule 1, Part 3 - "Species that are presumed extinct" and added to Schedule 1, Part 1 "Species that are endangered".

Consultant biologist Wes Manson concluded his contract at the end of December 1995 and negotiations are proceeding to replace him. The project has progressed well during 1995 due to the financial support of ANCA and CALM and the commitment of Wes Manson. Support from District staff and from volunteers has been invaluable.

### **Noisy Scrub-bird**

*During 1995 Two Peoples Bay staff, facilities and equipment, assisted the rapid implementation of a recovery process for the critically endangered Gilbert's Potoroo. These resources are normally devoted to Noisy Scrub-bird management and research. As a result some curtailment of the usual scrub-bird program was unavoidable.*

It was fortuitous that the potoroo made its reappearance at Two Peoples Bay Nature Reserve where large areas of habitat were already protected and managed for several other threatened species and facilities for research already existed. Staff with considerable depth of experience in threatened species management and detailed knowledge of the reserve and surrounding areas were also on hand.

From December 1994 a small group of captive potoroos, the nucleus of a captive breeding group, were housed in the Noisy Scrub-bird aviaries until new pens, built specifically for the potoroos were available in mid-July 1995. During this time they were looked after by the Reserve Manager. Now, with established funding and staff, the potoroo program makes fewer demands on Two Peoples Bay staff time and resources.

## Western Bristlebird

*During 1995, some of the difficulties encountered in 1994 with respect to catching birds were overcome and extra survey was carried out.*

Much better catching success was achieved following use of the "lift-net" technique as used for Noisy Scrub-birds, but there remain difficulties with catching birds which give "B" calls (presumed females). Detailed reports on progress were prepared by Graeme Smith, Mike Bamford and Allan Burbidge for the recent Recovery Team meeting, and copies of these were forwarded to ANCA Endangered Species Unit in November 1995.

A parcel of land recently added to Fitzgerald River National Park was surveyed this year. This land was previously in private hands and had not been surveyed for bristlebirds. A minimum of 25 Western Bristlebirds were found in this area, demonstrating that it supports a significant "new" population.

The results of extra search effort in 1995 suggests that the area west of Fitzgerald River National Park and east of Bluff Creek does not support Western Bristlebirds and is a "real" gap as suspected. Tabulations of this year's search effort, prepared for the recent Recovery Team meeting, were forwarded to ANCA Endangered Species Unit in November 1995.

Progress was discussed at the last Recovery Team meeting on 22 November. At this meeting, it was decided that a trial translocation would be carried out in 1996. A number of preparatory steps will be required before a detailed program is decided on.

## Lancelin Island Skink

*Work was carried out during 1995 on behalf of the Lancelin Island Skink Recovery Team for the conservation of the Lancelin Island Skink, *Ctenotus lancelini*. The Team met on one occasion during the year (February 1995).*

The field ecological study of *C. lancelini* on Lancelin Island conducted by Barbara Jones since late 1993, continued throughout the year. Extensive data have now been collected on the ecology of the species. The population is estimated to number between 1 750 and

3 500 adults. Topography was found to be an important factor in explaining the abundance of the skinks, with northern and eastern aspects preferred. Survey work on the mainland failed to locate any further individuals despite intensive trapping, indicating this population must have a very low density.

The captive breeding program has continued with greater success during 1995. Three clutches of eggs from *Ctenotus labillardieri* captives are being incubated. Four gravid *C. lancelini* females were removed from the Island and three clutches of eggs are being incubated.

There was no further progress on trials on the impact of the herbicide 'Fusilade', or genetic examination of the relationship between *C. lancelini* and *C. labillardieri*. It is planned to carry out this work early in 1996.

## Western Swamp Tortoise

*It is a pleasure to report that during the past year there has been considerable progress towards implementing the actions contained in the Western Swamp Tortoise Recovery Plan and that implementation is on schedule.*

Highlights of the year included:

- Action 3.1.2, Removal of the 'nature reserve drain', at Ellen Brook Nature Reserve was completed. This is a major achievement that has been proposed for more than 20 years. In future all waters draining from Great Northern Highway and from land to the south of the reserve will drain into Ellen Brook via a new channel outside the fenced tortoise habitat, rather than draining through areas occupied by the last remaining wild population.

- CALM has reached agreement with the owner of lot 5, adjacent to Ellen Brook Nature Reserve, to swap an area of lot 5 which is suitable to rehabilitate for the Western Swamp Tortoise, for a section of the nature reserve unsuitable for the Western Swamp Tortoise and which is disturbed.

- Vermin proof fencing of the new section of nature reserve (Reserve A42124) adjoining Ellen Brook Nature Reserve to the south was completed at the end of March.

- Monitoring of the population at

Ellen Brook Nature Reserve shows a gradual increase in the number of tortoises over the past decade, but most of these are juvenile animals.

- Perth Zoo currently holds 117 tortoises in its breeding facility. The number is made up of 11 males, 12 females and 94 unsexed juveniles. The total number of eggs obtained in 1994 was 49, from which 39 animals successfully hatched, a hatching rate of around 80%. Forty six eggs were produced this year; ten of these are no longer viable and the remainder are developing.

- Groundwater was pumped to North West Swamp, Twin Swamps Nature Reserve, between mid - October and early December 1995; a total of 1367 kL being pumped.

- Of the 12 tortoises translocated from Perth Zoo into Twin Swamps Nature Reserve in 1994, only two are known to have died. The Recovery Team considered this to be an excellent result and decided that translocations should continue in 1995.

- Between 9 August and 15 September 1995, 32 Western Swamp Tortoises were translocated to Twin Swamps Nature Reserve. Radio-tracking showed that most did well, although one adult died and three of the smaller animals were killed by a predator, probably Australian Ravens. One additional juvenile was found with injuries consistent with Raven attack and has been nursed back to health, although it may lose its eyesight.

- A Western Swamp Tortoise nest was monitored for the first time at Twin Swamps Nature Reserve during the 1994/95 summer. Two of four eggs in the nest hatched.

- A measure of the international interest in the Recovery Plan is demonstrated by two sponsorships received during the year, one from Germany and one from Great Britain.

The children's book *Yakkinn the Swamp Tortoise - the Most Dangerous Year* by Gundi and Gerald Kuchling, was launched by Environment Minister Peter Foss in March. It was primary school category winner in the 1995 Australian Awards for Excellence in Educational Publishing, best children's book 1995 of the Royal Zoological

Society of New South Wales, and short listed for the Western Australian Premiers Book Award. Over two terms in 1995, the Fremantle Children's Literature Centre had an exhibition of the book and its art work and used it extensively for projects with primary schools. For the 1996 school year the WA Education Department will list it as a recommend non-fiction book for primary schools.

### Orange-bellied and White-bellied Frogs



*Implementation of the Recovery Plan for the Orange-bellied and White-bellied Frogs has been proceeding for four years and through the efforts of the Recovery Team a number of actions identified in the plan have been completed and others are progressing well.*

Improvements to our understanding of the ecology and biology of these frogs was achieved during the year and this will be further enhanced by the commencement of a new three year PhD research project to apply PVA techniques to both fenced and unfenced populations. The determination of the impacts of fire on frogs populations will continue to encompass the generation cycle of these species.

The most significant achievement during 1995 was the continuation of the Conservation Fencing Program and which has so far resulted in the fencing of 7 km of creeklines containing populations of *G. alba* on private property.

The completion of the Recovery Kit, Frog Calls of the South-Western Australia (audio tape) and Wildlife Aware Signage are expected to significantly raise the awareness and support amongst the local community during the coming year.

Continued expansion of the fencing program for *G. alba*, the maintenance of an effective pig control program for *G. vitellina* sites and the maintenance of a monitoring program within the fenced areas will be the major goals in 1996.

### Toolibin Lake

*In 1995 the momentum for recovery established in 1994 has been maintained. Major advances have been the implementation of:*

- Works to by-pass low volume, high saline flows around the body of the Lake.

- On-floor works that enable establishment of more extensive groundwater pumping whether or not the Lake is filled.

- Establishment of the Toolibin Alley Farming Trial.

- Continued revegetation and remnant protection works by local landholders.

These works would not have been possible without the earlier period of planning, design and research.

The great value of the Recovery Team and Technical Advisory Group as forums for decision-making and developing inter-disciplinary action has continued.

### Matchstick Banksia

*Funding from the Commonwealth Government's Endangered Species Program continued during 1995, which allowed for implementation of recovery strategies for the long term protection of eleven populations of the Matchstick Banksia (*Banksia cuneata*).*

Funding for 1995 was allocated to the following actions

- Acquire land for conservation of *B. cuneata*. Partially completed.

- Erect rabbit proof fencing on major populations Completed.

- Implement rabbit control programmes on all populations. Ongoing.

- Control salinity on populations at threat. On going.

- Improve the habitat of populations. Ongoing.

- Collect seed for permanent storage and seedling planting. Completed.

- Monitor and survey populations. Ongoing

In 1996, it is proposed to allocate funding to the following;

- Hold two Recovery team meetings in February and August 1996.

- Continue with land acquisition.

- Monitor the rabbit eradication program by 1080 trails, *Phostoxin*, and warren destruction.

- Monitor the effect of planting koala feed trees at Lazeaway # 8 to control rising ground water level at #8A.

- Enhance population #1 and #10. Carry out seedling planting of *B. cuneata* and scrub species.

- Enhance populations as described in the Draft "Translocation proposal for *Banksia cuneata*".

- Place photograph in the Cuballing, Brookton and Quairading shire offices for public information.

- Monitoring and reporting. Assess recruitment or population decline in all populations.

- Complete a proposal for the establishment of *B. cuneata* plants within the Cuneata Park at Quairading.

- Monitor and report of the 1995 establishment of seedlings at Stacey's property

- Complete one media release concerning the recovery programme of *B. cuneata*.

- Commence research project on the pollination biology of *B. cuneata*.

- Undertake research into the genetic variability of *B. cuneata* by Ms Tina Maguire, University of Adelaide.

### Rose Mallee

*After years of negotiations the area of land at Watheroo supporting the largest pure stands of *Eucalyptus rhodantha* was gazetted as an "A Class" Nature Reserve. Over 4 km of rabbit-proof fencing was constructed around the reserve boundary and population enhancement continued at selected sites with the planting of some 400 Rose Mallee seedlings.*

A new population of *E. rhodantha* was reported near Three Springs, significantly increasing the number of plants known from this area. Revegetation of the gravel pit in the centre of one of the Three Springs populations is progressing well.

RGC Mineral Sands Ltd. at Eneabba continues to cooperate with the project by propagating Rose Mallee seedlings for reintroduction.

Monitoring of the seed collections held at the Threatened Flora Seed Centre has shown that the seed responds well to -18°C storage.

### **Corrigin Grevillea**

*Grevillea scapigera* translocation trials were undertaken in June 1995. Fifty plants were translocated to Hartley's Reserve near Corrigin. The plants were placed on the site that gave the best results in previous years and accordingly protected by rabbit proof cages.

Monitoring of translocated and extant populations has been coordinated through the Recovery Team and is currently being carried out by a trained member of the Corrigin LCDC. This group is also conducting rabbit control.

Research (genetic variability, biology, seed biology, recruitment) is continuing with the view of long term conservation.

Public education through the cooperation of members of the local Corrigin community is useful in increasing the awareness of the farming community to the problems related to rare flora conservation.

### **Wyalkatchem Foxglove**

No formal meeting of the Recovery Team was held during the year, but representatives from CALM and Kings Park and Botanic Garden did meet on-site to undertake the planting for the translocations.

The recovery of the Wyalkatchem Foxglove was also discussed with members of the recovery team during meetings of the *Grevillea scapigera* and *Stylidium coroniforme* Recovery Team meetings in November and December 1995.

The Chairmanship of the Recovery Team will transfer to Merredin District in 1996, and the recovery of the Wyalkatchem Foxglove will be coordinated by the Merredin District Recovery Team.

Mr Llewyn Green is a farmer who lives adjacent to the second recovery site for this species. He has agreed to

undertake monitoring of the translocations, and provide reports on the sites.

### **Wongan Triggerplant**

*The Water Authority has completed both its restructuring and incorporation, and a consultant's report on the Water Reserve 16418. A meeting between WAWA, CALM and the Shire of Wongan-Ballidu is scheduled for late January 1996 to discuss the future tenure of the reserve.*

Implementation of the gravel pit rehabilitation project is progressing well since the appointment of new staff to CALM Merredin District. Actions already completed include:

- An access control plan is being implemented. Gates will be erected on essential tracks, signs have been ordered and padlocking arrangements have been agreed to.

- Two press releases have been drafted detailing the forthcoming rehabilitation site works and access control plans.

- The viability of seed collected for the rehabilitation project in 1992 has been tested, additional seed has been collected and 10,000 seedlings ordered from CALM Narrogin's Plant Nursery.

- Ministerial approval has been obtained for the taking of Declared Rare Flora during the rehabilitation.

The main issue that needs to be resolved before rehabilitation can progress further is the confirmation of Main Roads funding

Ongoing monitoring of the health of *Stylidium coroniforme* populations has found that all have experienced a significant decline in numbers in the last year. The Recovery Team has agreed on a series of field trials employing different recruitment techniques in the coming year. These trials are to be based around broad scale site treatments such as smoking and soil disturbance.

The recruitment trials will be complemented by seeding and planting trials to be undertaken to facilitate work on the establishment of new *Stylidium coroniforme* populations. The Recovery Team has also agreed on site selection surveys to be undertaken

to identify potential translocation sites.

Results from ongoing seed research suggests *Stylidium coroniforme* seed viability declines by between 13 and 19% after two years. Further experiments are required to confirm this trend.

### **Albany District Threatened Flora Recovery Plan**

*The Albany District Threatened Flora Recovery Team has been formed and a work program for the Assistant Conservation officer formulated. Three meetings have been held with subsequent reviews of priorities for action.*

The program of phosphonate spraying of rare flora populations threatened by *Phytophthora* has continued, with eight populations having been sprayed in 1995. In addition a number of other populations have been evaluated for the need for phosphonate spraying.

Intensive survey of existing populations and search for new populations of rare flora has been undertaken through 1995, particularly since August. 39 species comprising some 95 populations, 15 of which are new populations were located.

Issues involving track closures/re-alignment, roadside marking, weeding and fencing have been address as they arise and liaison with the relevant landowners/managers has been very positive in all cases.

### **Rulingia**

*During 1995 the establishment and appointment of a recovery team was completed. The purpose of this team is to implement, develop and co-ordinate the recovery of the Rulingia sp. (Trigwell Bridge).*

The recovery plan will aim towards achieving self sustaining natural populations, either in the form of extant or future translocated populations.

Monitoring and survey of the existing known population has given an insight to the strategies and proposals that are required for the recovery team to enhance this population. Progress was made through the year with a number of tasks being implemented and completed. Other tasks are in their

initial stages.

The existing site population is now enclosed within wire cages to prevent predation by wild and feral animals, an additional 0.5 metre wire skirt extended these enclosures.

In April of 1995, Dr Kingsley Dixon of the Kings Park and Botanical Gardens (KPBG) conducted smoke and smoke/water germination trials within the wire enclosures as yet with negative germination result.

Surveys for *ex situ* sites and vegetation association were conducted and have been completed, with four possible translocation sites surveyed in nearby CALM-managed reserves.

Continued seed and cutting materials were collected through 1995 by the KPBG to ensure a future genetic diversity base and source of propagation materials. Valuable information from seed viability experiments conducted by the KPBG gave a insight to this plants germination characteristics.

Soil and *Phytophthora* analyses were conducted from the existing population site with interesting analysis results of the soil samples and their composition. Further tests at the *ex situ* sites will be performed to compare these with the existing site.

The Interim Recovery Plan and translocation proposals are nearing completion and will be submitted in 1996.

### **Geraldton District Threatened Flora Management Plan**

*Progress on the Management Plan is proceeding according to schedule, which has been extended to the end of 1996. The main phase of information collation has been completed and the first two years of fieldwork have been undertaken.*

There have been three meetings of the Recovery Team during the year, and members are contributing to survey work.. Twenty-eight days of fieldwork have been undertaken during the year, with 153 populations surveyed in 1995 (415 in total ) and 159 of the listed taxa now having been surveyed in the field. 135 taxa have been added to the list to be considered for the District since the

original list was prepared, from 155 to 290 taxa but some of these have now been surveyed.

Information for additional taxa has been collated, and populations mapped. Some of the Poorly Known taxa have been found to be more common than our original information suggested. Several threatened taxa have been found to have declined. Of the total of 153 populations inspected during the year, these 120 are newly discovered populations, and of those 9 are newly discovered populations of Threatened Flora.

It has been concluded that in order to assess adequately the increased number of Threatened and Poorly Known taxa now known to occur in the District, it is desirable to extend the work for a further year.

Further field trips have been scheduled for 1996, with some additional funding having been obtained, particularly for work on Critically Endangered and Endangered taxa.

Work on the production of the final Plan has begun with accounts of 45 taxa written and draft maps of the distribution of all taxa completed and revised as new populations are surveyed.

### **Merredin District Threatened Flora Recovery Plan**

*In 1995 the Recovery Team was advised that ANCA would fund a three year extension to the original two year program. In October 1995 CALM appointed a new Reserves Officer to the Merredin District. Approximately 40% of their time will be taken up with threatened flora management.*

The Recovery Team has held two meetings in 1995. In 1996 the functions and membership of the Team will be reviewed to increase community consultation and communications.

Actions taken by the Recovery Team have included:

- Improvements to the threatened flora database, particularly with respect to population threat analysis.
- Continuing liaison and

information sharing with Local Government Authorities.

- Weed control at one critically endangered taxa's only population site.
- The translocation of a critically endangered taxa.
- Several highly productive surveys.
- The protection of a number of populations from damage by major site works through effective liaison (eg rail re-sleeper operations, optic fibre cable laying).
- The recruitment of 15 new volunteers and the completion of several successful volunteer survey programs.

However, during 1995 the expected decrease in the average ranking score of the DRF did not eventuate. This was due to some reductions in individual taxa rankings, stemming from new population discoveries, being balanced by the promotion of other taxa to more endangered classifications.

In 1996 the orientation of the implementation plan will be towards management of critically endangered taxa.

### **Central Forest Region Threatened Flora Recovery Plan**

*The team met on two occasions during 1995. A contract botanist Carol Mcpherson has been employed since February 1995 to prepare the draft management plan.*

During 1995, the following tasks have been carried out:

- Undertaken office based searches for all existing information pertaining to the species in the declared rare category, 32 species in all.
- Completion of update of all data collected to date to reflect the changes to the State-wide priority list which was updated in October 94, an additional 18 species.
- Identification of species for which little or unreliable information exists. These species may require urgent field work or liaison with original collectors.
- Collection of all office-based information on priority 4 species, 39

species in all.

- Preliminary draft of species information has recently been prepared and is to be presented to the next flora team meeting.

### ***Southern Forest Region Threatened Flora Recovery Plan***

Work carried out during 1995 included brief descriptions, distributions and habitat being drafted for most Declared Rare, Presumed Extinct, Priority 1, 2 and 3 flora and a number of currently unlisted taxa.

Contributions by Volunteers in search and survey has been considerable.

However, much of the planned field work for the project was disrupted by last minute diversion of conservation staff time to other works related issues. Many populations to be surveyed and reputed populations to be searched were missed during critical windows of opportunity this year.

Survey work for a number of summer flowering species will be followed up on over the next few weeks.

### ***Swan Region Threatened Flora Recovery Plan***

The Swan Region Threatened Flora and Communities Recovery Team (Swan Recovery Team) has been established for two years. The Region has 45 DRF and 206 priority species. The management of threatened species follows the Northern Forest Region (Kelly et al 1990) and Metropolitan Region (Kelly et al 1993) Wildlife Management Programs.

A total of 63 new DRF populations were discovered including eight different species. Les Robson located 61 of the 63 new DRF sites. It is an excellent result and certainly compares quite favourably with the 1994 effort of 69 new discoveries, the 38 in 1993, and 54 in 1992. The most significant of the new DRF discoveries for 1995 were 33 populations of *Stylidium scabridum*, 13 populations of *Pultenaea pauciflora*, 10 populations of *Schoenus natans* and Andrew Brown from WATSCU located a population of *Diuris drummondii*. Swan Region has recommended that *Stylidium scabridum* and *Verreauxia*

*verreauxii* be deleted from the schedule of DRF.

After a concentrated effort upon DRF over the past six years it is feasible to place more emphasis on the discovery of Priority 1, 2, and 3 listed flora species during 1996. Priority species "in need of urgent survey" will be identified and resources used to survey for them.

Kings Park have secured sponsorship from Western Power to conduct a three year research program on 11 threatened flora species within Metropolitan Perth. The first year of the project will be led by Kingsley Dixon and Andrew Batty and will work on the orchid groups *Drakaea* and *Caladenia*.

During 1995 the team has become more involved in the management and discussion of issues associated with threatened communities. Significant survey work by Science and Information Division (Gibson et al 1994) and the Department of Environmental Protection has provided a sound basis for identifying threatened plant communities on the Swan Coastal Plain. Regional staff have been involved in a wide range of management issues associated with processes threatening these communities. The major problems are associated with urban development, fire management, dieback disease and land acquisition.

Significant progress has been achieved in the management of threatened communities in the Swan Region. Two new nature reserves to protect threatened communities were acquired and another two will become nature reserves during 1996. Brixton Street Reserve has been fenced, rubbish removed, CALM signage erected and management guidelines completed. The Region has spent significant time advising managers of sites with a threatened *Banksia attenuata* woodland community on it.

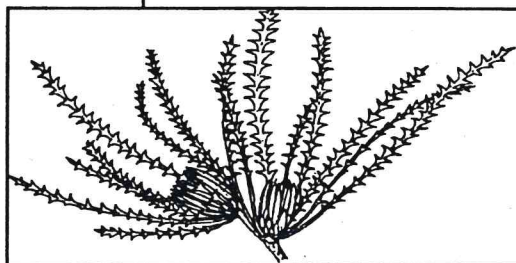
## ***WATSCU***

### ***DATA DIRECTORY***

Since the first disks were distributed last year (in June) the IUCN Red List Categories Version 2.2 have been assigned to 46 Critically Endangered (CR) 78 Endangered (EN) 165 Vulnerable (VU) and 1 Conservation Dependent (CD) taxa, as determined by the Scientific Ranking Panel for Western Australia's Threatened Flora and Fauna. Six fauna taxa and more than 1100 plant taxa have been added to the Directory. The flora additions are the Priority 1 and 2 plants and the Priority 3 and 4 plants should be added by Easter, when updated disks should be ready for distribution.

I would have to say that although some users have welcomed the Directory, the general response has been underwhelming. I realise that some District offices had difficulty installing the disks because of a minor glitch in the CONFIG.SYS file on their C drives (which should read: FILES = 50) but that is easily remedied and so far, of the 44 sets of disks despatched, only 13 sets have been returned. Rather than give away more disks with the updated version of the Directory, I'd prefer to dispatch copies only to those people who are prepared to actually use them for the purpose they were intended. If you want a copy of version 2 of the Data Directory would you please let me know.

*Hugh Clift*





The summary from the Annual Report for the following WATSCU project prepared by Andrew Brown and Felicity Bunney follows:

## INTERIM RECOVERY PLANS FOR 19 CRITICALLY ENDANGERED WESTERN AUSTRALIAN PLANT TAXA

Previously titled

### Preparation and initial implementation of Recovery Plans or Research Plans for 19 Critical Plant Taxa

In the absence of specific information being available for the development of full recovery plans, funding was sought from ANCA in 1994/95 to write Interim Recovery Plans (IRPs) as per CALM Policy No. 44 for 19 species listed as critically endangered following a trial ranking of 80 Western Australian ANZECC category E taxa in 1993 (in 1995 a further 21 taxa have been listed as critically endangered, following ranking of all Western Australian Declared Rare Flora). Since the commencement of the project in July 1994, field surveys have been conducted to view all 19 species during their flowering periods. During these surveys new populations were discovered, some in conservation reserves, resulting in five species being downgraded from critically endangered to vulnerable. A further species, *Brachysema papilio*, has been downgraded to endangered. *Myriophyllum lapidicola*, was not located during surveys over two flowering seasons. As it occurs in ephemeral rock pools and the area in which it grows has had two very dry years, it will be searched for again during a season of higher rainfall.

The five species that are now regarded as being adequately reserved or more common than previously thought are:

- ◊ *Acacia awestonia*-several large populations found in the Stirling

Range National Park.

- ◊ *Andersonia* sp. (Two Peoples Bay)-known from several large populations and not now thought to be vulnerable to *Phytophthora*, dieback disease.
- ◊ *Brachysema modestum* ms-two large populations known from State forest.
- ◊ *Stylidium scabridum*-a number of large populations found in State Forest and a conservation reserve.
- ◊ *Verticordia carinata*-several large populations found in the Stirling Range National Park.

This leaves 13 species for which Interim Recovery plans are being prepared. These are currently in final draft form and are expected to be endorsed by CALM in February, March 1996. The 13 species are:

*Brachysema papilio* ms,  
*Caladenia viridescens* ms,  
*Caladenia busselliana* ms,  
*Eremophila nivea*, *Daviesia bursarioides*, *Grevillea maxwellii*,  
*Grevillea calliantha*, *Grevillea pythara*, *Grevillea mccutcheonii* ms,  
*Orthrosanthos muelleri*, *Hemiandra rutilans*, *Verticordia albida*,  
*Pterostylis* sp. 3349 (Northampton)

Regional/ District based Threatened Flora Recovery Teams are in place for all species, except those found in the Moora District. This team is expected to be established in March 1996.

Available information on each of the 13 species has been collected and

collated from relevant literature, CALM files (electronic and hard copy) and the Western Australian Herbarium database. Other government agencies and individuals involved with the species have been contacted to familiarise them with the scope of the project and to enable them to pass on any new information that they may have.

Meetings between Kings Park and Botanic Garden and WATSCU have resulted in a commitment to the project and a pledge to support biological research on several of the species, including the maintenance of ex-situ populations.

Seed from select populations of most species has been stored at the threatened flora seed centre, situated at the Western Australian Herbarium.

Many of the species involved in this project have received little research attention in the past. Recommendations for relevant research have been included in each plan.

Management recommendations have been made for all species and some urgent management actions have been implemented.

Draft plans have been presented to the relevant CALM Regions, Wildlife Branch, relevant Science and Information staff and WATSCU for comment. The final drafts will be presented for comment and endorsement by CALM's Director of Nature Conservation in February 1996.

## *Back from the Brink - Refining the Species Recovery process*

The Commonwealth Endangered Species Advisory Committee, together with the NSW National Parks and Wildlife Service recently held a workshop on the Recovery Process in Sydney. The concept was to review the operation of the Endangered Species Program (ESP) which is aimed at preventing further extinction of Australian flora and fauna and to restore threatened species and ecological communities to a secure status in the wild. The program's main strategic tool is the Recovery Process (an article was written for *Landscape* 10(4), 10-16) and to find out just how effective this process is.

CALM has been involved in the conservation of threatened WA species before and since the Program's inception, and the importance of this area of work led CALM to set up WATSCU to coordinate all such work in WA. Accordingly all three specialist WATSCU staff, Andrew Burbidge, John Blyth and Andrew Brown were invited to attend the conference. Others from CALM included Keith Morris and David Coates, both from Science & Information Division.

Papers presented from WA were:

Essentials of a good recovery plan  
by Andrew Burbidge

District Flora Conservation  
Approach in WA by Andrew Brown,  
David Coates and Mike Fitzgerald

John Blyth was a leader of a workshop titled Ecological Communities, Groups of Species, Regions and Habitats.

Approximately 100 people from Australia and New Zealand attended the conference. These people were invited because of their expertise in

threatened species and ecological community issues.

All who attended agreed that it was a most worthwhile conference, with some constructive suggestions for improvement put forward. Papers from the conference will be published over the next few months.

## ***TRANSLOCATIONS - AN IMPORTANT PROCESS IN CONSERVING OUR UNIQUE NATIVE SPECIES***

Policy Statement No 29 *Translocation of Threatened Flora and Fauna* was revised in July 1995.

Since the new policy was introduced, many Translocation Proposal (TP) applications for threatened flora and fauna have been submitted.

Listed are examples of some of the TPs which have been approved.

### ***Definitions:***

- ◇ ***Re-stocking*** means the movement of numbers of plants or animals with the intention of building up the number of individuals of that species in an original habitat or of introducing greater genetic diversity.
- ◇ ***Introduction*** means releasing or establishing an organism outside its historically known native range.
- ◇ ***Re-introduction*** means the movement of an organism into part of its native range from which it has disappeared or become extirpated in historic times as a result of human activities or natural catastrophe.

It is important to note that a TP must be prepared and lodged with WATSCU at least 3 months before the proposed date of translocation. Policy Statement 29 covers these matters and outlines information needed to be included in a TP. A TP is refereed by two people and final approval is required by the Director of Nature Conservation.

Shark Bay Mouse	Bernier Island to Doole Island	Re-stocking
Wyalkatchem Foxglove	Kings Park & Botanic Garden Nursery to a Nature Reserve and private property in the Cowcowing area	Introduction/ Re-introduction
Boodie	Bernier Island to Yookamurra Sanctuary, SA	Re-introduction
Matchstick Banksia	CALM Nursery Narrogin to selected reserves between Popanyinning to Quairading	Re-stocking
Western Pebble-mound Mouse	Jimblebar Mine, near Newman to nearby sites	Re-introduction
Quenda	Swan Coastal Plain to Boyagin NR	Re-introduction
Numbat	Dryandra woodland to Dragon Rocks Nature Reserve	Re-introduction
Western Barred Bandicoot	Doole Island to Heirisson Prong, Shark Bay	Re-introduction
Western Swamp Tortoise	Perth Zoo to Twin Swamps Nature Reserve	Re-introduction

## SIGNIFICANT FIND IN SEARCH FOR TWO RARE *EREMOPHILA* SPP

Kim Kershaw, Gillian Stack (our volunteer) and myself had a successful field trip in December 1995 looking for two species of critically endangered *Eremophila*.

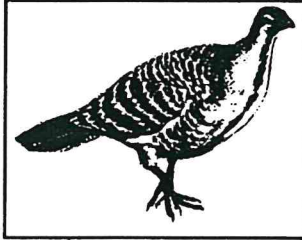
At Hunt Range in the Goldfields Region, (76 km north of Koolyanobbing), we bumped up the number of plants of *Eremophila caerulea* subsp. *merrallii*, to over 12 500.

We surveyed a site at Cheriton's Find in the Merredin District where only one plant of *Eremophila caerulea* subsp. *merrallii* had previously been recorded in 1988, but had not been seen since, even after numerous searches. We discovered this elusive population consisting of over 1 000 plants!

In Hopkins Nature Reserve, south-east of Kulin, we discovered one new population of *Eremophila veneta* and rediscovered three populations scattered throughout the Narrogin and Katanning Districts. These populations were believed to have disappeared as they had not been seen since 1962, 1976 and 1981 respectively.

Kim and I are now in the process of writing the *21 Interim Recovery Plans*, with no field trips in sight until May.

*Emma Holland*



### The Marvellous Malleefowl

It's Gnow or Never

A new Malleefowl brochure (with the above title) has been produced for the Malleefowl Preservation Group Inc. It gives information on the conservation of the Malleefowl and details activities of the Group and how you can assist them with the preservation of this bird.

*Copies of this brochure have been sent to CALM Region and District offices which embrace the distribution area of the Malleefowl.*

*Should you wish to receive copies of the brochure for distribution, please contact the Editor.*

Editor: Jill Pryde

WA Threatened Species & Communities Unit

CALM, Wildlife Research Centre, PO Box 51, Wanneroo WA 6065

Ph: 9 405 5128 Fax: 9 306 1066, E-mail [jillp@wood.calm.wa.gov.au](mailto:jillp@wood.calm.wa.gov.au)