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SYMPOSIUM ON PROGRESS WITH THREATENED ECOLOGICAL COMMUNITIES ~ Val English

Inside this Issue:

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The Department of Conservation and Land Management (CALM) hosted a Workshop on 2 December to provide an update on progress with identifying and conserving Threatened Ecological Communities (TECs) in WA. Over 100 people from very diverse backgrounds including Environmental Consultants, conservation groups, industry, developers, Natural Resource Management groups, other State Government Departments, Local Government Authorities, Universities and other research institutions, the Conservation Commission, and CALM staff attended this one day event.

Two previous workshops had been held in 1994 and 1996 to invite public comment on the project to develop procedures to identify and conserve TECs in WA and to provide information and gain feedback on the results of the first TEC project.

CALM's Executive Director, Keiran McNamara opened the Symposium on behalf of the Minister for the Environment and Heritage with a discussion of the importance of the south west of Western Australia as a 'Biodiversity Hotspot', and CALM's responsibility to maintain this biodiversity and prevent extinctions. He then explained that conserving biodiversity is a major objective in CALM's Corporate Plan, and that identifying and protecting

Gwalia Reserve, Kemerton
Photo: Jill Pryde

threatened species and ecological communities is one of the strategies to achieve that objective. Keiran then said that it is intended that the new Biodiversity Conservation Act for WA will provide TECs with similar protection to that already afforded to threatened species.

John Blyth from CALM's WA Threatened Species and Communities Unit (WATSCU) described the recovery process and discussed the new draft Policy on Conserving Threatened Species and Communities. Dr Mick Brown (former Chief Scientist with Forestry Tasmania) then provided a general discussion of the classification and conservation of plant communities. Adrian Moorrees from the Victorian Department of Sustainability and Environment provided an alternative view in his presentation about how TECs are dealt with in his home state. Bill Humphreys (WA Museum); Val English, Greg Keighery, Kim Williams and Rosemarie Rees (all CALM staff) provided a suite of examples of West Australian TECs. Each example included discussion of how the community was identified, threats, and ways land managers are tackling these problems. Dave Mitchell (CALM's Swan Region

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Leader Nature Conservation) presented information about the recovery of TECs through an 'All of Government Approach' – Bush Forever.

There was time for a short discussion period after most talks, and a more general discussion occurred at the end of the day.

Gordon Wyre, CALM's Director of Nature Conservation chaired the Symposium. In summing up Gordon said that the TEC concept is sound and that there always needs to be rigorous science behind the identification and ranking of TECs. He also reiterated that that it is intended that the new Biodiversity Legislation will include measures equivalent to those for threatened species, to ensure the protection of TECs in WA.

Workshop proceedings can be viewed on

CALM's *NatureBase*

(late December 2003)

http://www.calm.wa.gov.au/plants_animals/

Inering Catchment Group protecting a Threatened Ecological Community ~ Rosemarie Rees

A small group of farmers are working with the WA Threatened Species and Communities Unit to protect a Vulnerable Threatened Ecological Community only found on private farmland in the Shire of Carnamah.

The Inering vegetation system was originally described by the plant ecologist John Beard who found the plant assemblages that remain on parts of the Inering Hills once covered four hill ranges around Carnamah. The vegetation system is described as a collection of plant assemblages that vary across the landscape depending on the geology and topography of the land. Tamma (*Allocasuarina campestris*) scrub is found in areas of chert and granite; Tamma thicket with scattered Jam (*Acacia acuminata)* and Rock Sheoak (*Allocasuarina huegeliana)* grows in areas of brown sandy loam over laterite and other stony summits and slopes; Mixed *Acacia* low woodland is found on red/brown sandy loam over granite on summits and slopes; Tangling Melaleuca (*Melaleuca cardiophylla)* thickets with scattered York Gum (*Eucalyptus loxophleba)* and Salmon Gum (*Eucalyptus salmonophloia)* grow in areas of granite on the lower slopes and foothills; and York Gum woodland occurs on the clay loam of the foothills.

Landholder, Max Levitt

Photo: Rosemarie Rees

Several species of declared rare flora are also found in the Inering Hills including the Prostrate Flame Flower (*Chorizema humile)* and the Carnamah Harliquin Bell (*Darwinia* sp. Carnamah). In September 2000 the uniqueness of the Inering Hills System was formally recognized when it was listed as a vulnerable Threatened Ecological Community (TEC).

When WATSCU started looking at the vegetation that remained on the Inering Hills they found various threatening processes including clearing, grazing, inappropriate fire regimes and weed invasion had reduced the community to 30% of its original distribution. All the remnants were privately owned, most were not fenced and were immediately surrounded by agricultural land or bordered by roads.

The landholders lucky enough to have portions of this plant community on their properties have long recognised the beauty and uniqueness of the hills and have been keen to protect them. Now, thanks to collaboration between the Yarra Yarra Catchment Management Group and the Department of Conservation and Land Management, this has been realized: the Department and the Yarra Yarra Catchment Group sought funding from Lotterywest for five farming families to erect approximately 50 km of fencing around remnants of the Inering Hills. This will help to protect 200 Ha of this TEC. The fencing project was completed during spring 2003 with Lotterywest providing the funds for the fencing material and the landowners contributing the cost of erecting the fences.

For further information contact Rosemarie on 08 9405 5167 or email: rosemarier@calm.wa.gov.au

Margaret River (Hairy) Marron ~
John Blyth and Brett Molony

The type specimen of Marron (*Cherax tenuimanus*) was collected from the Margaret River and named in 1912. It was apparently not realized at the time that the type specimen, and almost certainly all other Marron in the Margaret River, were distinctly different from Marron elsewhere in the humid southwest of WA. Both the common and scientific names were applied to all Marron, whether from the Margaret River or elsewhere.

However, over the last fifteen or so years, fisheries officers and zoologists working on freshwater crayfish realized that the Margaret River Marron had a consistently hairier carapace and several other structural differences from other marron (commonly known as 'smooth' marron). It became common practice to refer to it as a separate subspecies (the Margaret River 'hairy' marron).

During that time it was recognized that the hairy form was no longer alone in the Margaret River, but had been joined by the widespread smooth form and that the hairy form was declining in both abundance and distribution along the Margaret River . A 2002 paper by Chris Austin (ex UWA, now Deakin University) and Steve Ryan made a strong case, based on minimal hybridization in mixed populations, and on morphological and genetic differences, that the Margaret River Marron is a separate species to smooth marron, and described it as such.

The hairy marron are now only found in the upper reaches of Margaret River, within the State forest. In the middle and lower reaches of the River, only "smooth" marron are present.

The abundance of hairy marron is continuing to decline and it seems that smooth marron outcompete hairy marron in sections of the river that are degraded. It seems that smooth marron do better in degraded areas of the river, for instance where riparian vegetation has been lost or modified, while hairy marron prefer the better water quality of the upper, forested reaches of Margaret River. It may be that degraded sections of river are adjacent to farmland, containing dams, and that most dams have been seeded with smooth marron. Thus, smooth marron may be 'leaking' into Margaret River from farm dams.

After discussion with the various people familiar with Margaret River Marron it became clear that the taxon merited consideration for listing as threatened under the Wildlife Conservation Act. The Austin and Ryan paper suggested that the species is critically endangered and it was nominated to the WA Threatened Species Scientific Committee under that category by John Bunn, of Edith Cowan University, who was completing a Masters study on the species. The Scientific Committee considered the nomination at its March 2003 meeting and recommended that the Margaret River Marron be gazetted as Critically Endangered.

Following discussions between CALM and the Department of Fisheries, it was agreed that the two agencies would work together to develop and implement an interim recovery plan for the Margaret River Marron, with the Department of Fisheries as the lead agency.

Some of the identified threats to Margaret River Marron are also threatening other endemic species and the catchment as a whole. They include a range of introduced species in the river and private dams, including yabbies, mosquito-fish, silver perch, carp and smooth marron. In addition, it is likely that most farm and private dams contain smooth marron. As marron can walk-out of a dam, or be flushed out during overflow events, these private dams may be continually supplying smooth marron into Margaret River. It is likely that actions that assist in the recovery of the hairy marron, will also benefit other endemic species in Margaret River and complement other ongoing restoration projects in the catchment.

In October 2003, a working group reviewed the status of hairy marron, reviewed threats and discussed potential strategies to assist in the recovery of the hairy marron. It was decided that community support was critical to the success of the recovery program for hairy marron and one of us (BM) organized a public workshop in Margaret River in late November this year to canvas public interest in the recovery program. Community groups and members of the public are supportive of assisting in recovery projects and a wide range of ideas were provided by the community at the public meeting. These ideas are now being developed into an Interim Recovery Plan, currently being drafted.

There is still the opportunity to reverse the decline in hairy marron. The species may be used as a local icon for Margaret River and as a flagship species for river and catchment restoration and management. Hairy marron may also be used to monitor river health, providing a unique and iconic monitoring tool. Further, any recovery projects will provide an example of a whole of Government approach to managing natural resources. Our two agencies will work closely with the Margaret River community and other agencies and NGOs to develop plans to attempt to recover the hairy marron.

Dr Brett Molony is a Senior Research Scientist with the Department of Fisheries and has considerable experience in studying hairy and smooth marron

Mound spring walk with Catchment Group ~ Val English

On Saturday 25 October Val English from WATSCU and Brenton Knott (Zoology Department, University of WA) met with the Ellens-Brockman Integrated Catchment Group for an informative ramble around the mound springs in Neaves Rd, Bullsbrook. Dallas Lynch, Catchment Group Coordinator, organized the walk.

The group were presented information about the significance of, and threats to, the springs. The springs are a Threatened Ecological Community, ranked as Critically Endangered due to major threat from falling water levels in the Gnangara Mound that feeds them, and weed invasion. The spring on Neaves Rd is one of three remaining springs that are still vegetated, and two of these have been purchased as reserves. The third is a Bush Forever site, and is recommended for future reservation. The other springs of this type were cleared early on and packed with limestone, because they were too wet for agricultural use. The permanent wetness of the springs provides ideal habitat for development of dense vegetation that results in build up of the mounds of peat that give the springs their name.

An 'Endangered' article in CALM's *Landscope* magazine in 1996 featured the tumulus (meaning 'little mound') springs. Prompted by the article, Doug Kennedy, who is a member of the Ellens-Brockman Integrated Catchment Group, contacted the authors about an area on his neighbours' land that he believed may also be a 'tumulus spring'. Permission was granted for Doug, Val English, and Brenton Knott's then PhD student, Edyta Jasinska, to visit the site. The Neaves Rd site was, indeed, found to contain a virtually pristine area of tumulus springs. The landowners wished to subdivide and sell the site, and following some negotiation, a 9ha site was purchased in 2001. Doug also came along for the first part of the October 2003 spring walk, and was able to hear about how the conservation of the springs had progressed following his initial involvement.

Mound Spring
Photo: Val English

Members of the Ellens-Brockman Integrated Catchment Group's visit to the mound springs
Photo: Val English

A new genus of beetle never recorded anywhere else in the world was located at the Neaves Rd spring site, and a fern (*Cyclosorus interruptus*), a sedge (*Cyathochaeta teretifolia*), and a buttercup (*Hibbertia perfoliata*) that are uncommon on the Swan Coastal Plain and are only found in permanent freshwater seepages or springs in this area, were also located there.

Brenton Knott talked about the species that inhabit the springs. He explained that the springs were one of the very few permanently wet areas in an otherwise arid environment. This permanent wetness in the mound springs had been found to be associated with very unusual suites of species. Some of the plants in the springs were only otherwise found in the far south west of the state in very wet areas. He explained that the spring sites were areas where a suite of species could occur way outside of their 'normal' range due to the permanently wet habitat.

Major efforts have been put into weed control in the Neaves Rd spring by staff from CALM's Swan Coastal District. The hydrology that drives the springs is very complex and is not well understood, so a consultant hydrologist was employed to complete a preliminary investigation to provide better information to help manage the hydrology in future.

The catchment group was then provided with information about how we might all be able to help ensure the continued existence of these springs by carefully controlling our use of household water. This will help to ensure that the Gnangara Mound water will continue to drive the springs for many years to come.

For further information contact Val on 08 9405 5169 or email: vale@calm.wa.gov.au

Declared Rare Flora surveys ~ Robyn Luu

As reported in the previous *WATSNU* article, funding was received through the State Salinity Strategy (SSS) for a two year project to write and implement Interim Recovery Plans (IRPs) for Declared Rare Flora and threatened ecological communities (TECs) in areas at risk from hydrological change due to broad-scale clearing. The species are located throughout the south-west of Western Australia.

Using these funds Diana Papenfus was employed to undertake surveys for a number of Declared Rare Flora listed under this project. Diana previously worked with the Department within WATSCU as well as undertaking Priority flora surveys for Science Division, and is very experienced in the survey process. Although the results are somewhat preliminary with specimens yet to be confirmed, the following is a brief summary of findings for each taxon.

Centrolepis caespitosa (Matted centrolepis)

This species is a small annual herb that forms a dense cushion up to 2cm in diameter. It has been poorly surveyed and is small and difficult to locate. However, it has previously been collected from an extensive area, from Albany to north of Perth. Diana located a new subpopulation in a reserve near Perth where the species was known to occur.

Conospermum densiflorum subsp. unicephalatum (One-headed smokebush)

This taxon was collected in the past from near Gingin, between Midland and Moora. However it is currently only known from one location. Despite searching in areas east of the known population, no new populations have been located.

Frankenia parvula (Drummond's frankenia)

Up until 1998 this species was only known from one collection made in the Mount Caroline area by James Drummond in 1847. Mike Lyons from CALM's Science Division discovered new populations in the Cunderdin and Yellowdine areas in 2000. These locations were mapped and another new population was located north of Yellowdine, approximately 7 km away from the population that Mike located. Diana collected a specimen near Kellerberrin that is also thought to be this species. The identification of this collection however, has yet to be confirmed.

Frankenia conferta (Silky frankenia)

This species was also thought to be extinct as it hadn't been located since 1890 when it was collected from east of York. Mike Lyons rediscovered this species on a lake shore north-north-west of Ballidu. Numerous searches by Diana resulted in the discovery of five new populations of this species, north and south of Koorda. These populations were quite large and the range of this species may turn out to be quite extensive.

Roycea pycnophylloides (Saltmat)

This species grows on bare grey-brown clay in open sandy saline flats. Recent surveys by Mike Lyons and Kim Kershaw (Narrogin District) have resulted in the discovery of several new, large populations in the Narrogin, Merredin and Katanning Districts. Surveys conducted by Diana located 10 new large populations of the species. Some of these populations however are severely threatened by salinity, rising groundwater and siltation. Although the species does appear to have some salt tolerance, the threat of increasing salinity may have severe implications for all populations in the future.

Calytrix breviseta subsp. *breviseta* (Swamp starflower)

This taxon is only known from two populations in one location south east of Perth. Survey was undertaken for this taxon in areas of similar habitat but no new populations were located.

Conostylis setigera subsp. *dasys* (Boscabel conostylis)

A reserve with similar soil type near Kojonup in the Katanning District was surveyed for this taxon but no new populations were located.

Goodenia integerrima (Gypsum goodenia)

This species is known from one population in the Lake King area growing on elevated gypsum dunes in sandy-clay soils with samphire and other dwarf shrub species. Areas of similar habitat type were surveyed but no new populations were discovered.

Ptilotus fasciculatus (Fitzgerald's Mulla-mulla)

Four new populations of this species were discovered in Narrogin and Merredin Districts while surveying salt lake areas for other species mentioned above.

For further information contact Robyn on 08 9405 5165 or email: robynl@calm.wa.gov.au

South Coast Threatened Birds Recovery Team ~

Sarah Comer and John Blyth

This recovery team expanded from the Noisy Scrub-bird Recovery Team in 1996 to incorporate recovery planning and management issues for a total of five taxa of threatened birds: Western Ground Parrot (Endangered), Western Bristlebird (Vulnerable), Noisy Scrubbird (Vulnerable) and Western Whipbird (Western Heath subspecies Vulnerable, and Western Mallee subspecies Near Threatened). There is considerable overlap in the distribution of these taxa, and threats and many management issues are largely common to all of them, hence the decision to tackle management of a number of species through one coordinated recovery team.

A sixth species 'on the books' of the recovery team is the presumed extinct western subspecies of the Rufous Bristlebird. In the unlikely event of the subspecies being rediscovered the recovery team would develop emergency actions for its conservation.

Recovery programs were already in place for the Noisy Scrub Bird, Western Ground Parrot and Western Bristlebird when the composite recovery team was formed. Elements of these programs, such as survey for Western Ground Parrots and translocation programs for each of the three taxa, are still dealt with by sub-groups taking responsibility for each taxon. However, because a number of people are involved in recovery actions for more than one of these taxa, the full recovery team is needed to coordinate programs and ensure appropriate allocation of the various tasks.

The full recovery team is most important in considering broad management issues, such as management of fire and dieback, which affect whole areas on which several or all of the taxa may occur.

In particular, over the last year or so the team has been considering the complex issue of fire management for the benefit of the five threatened species and other key elements of biodiversity. This has required close consultation between nature conservation staff and experts in fire management and control. A draft discussion paper was circulated early this year and a two day workshop was held to discuss the issues raised. The various issues being addressed, and options to be considered, have been added to the next version of the discussion paper and answers to several detailed questions are being pursued. Ultimately it is intended to seek public involvement in the development of Regional policy on the integration of biodiversity conservation into overall fire planning.

Recovery actions for the three most threatened taxa continue and the following are examples of some of these actions.

- *The exclusion of fire from Two Peoples Bay Nature Reserve, consistent with the recovery plan for the Noisy Scrub Bird, has provided major benefit to that species as well as to Western Bristlebird and Western Whipbird. Translocation programs for the scrub bird and bristlebird have been able to take advantage of these enhanced numbers to create new populations elsewhere.*
- *Recent surveys for Western Ground Parrot have had conflicting results. The rediscovery of an apparently significant number of birds on Cape Arid National Park was great news, given that they had not been reliably reported there since before 1990. On the other hand, survey results at Fitzgerald River and Waychinicup National Parks indicate considerable decline of both of those populations, to such an extent that the taxon now fits criteria for Critically Endangered! These declines have been observed at sites including the one intended to act as the source of birds for a planned translocation of ground parrots this year, and that project will require re-planning.*
- *Monitoring continues of translocated populations of Noisy Scrub-birds in the Darling Range and Western Bristlebird in Nuyts Wilderness. Both of these are important steps in the recovery process, attempting to establish populations within their historical range and well away from the very restricted areas in which the species currently occur. It is still too early to decide whether these translocations have succeeded in establishing breeding populations at the new sites.*

The recovery team is currently coordinating the writing by Sandra Gilfillan of a combined recovery plan for all species for which it is responsible. This work is being funded by the National Heritage Trust.. The plan will include detailed actions both for the broad area management relevant to areas occupied by the five extant and one presumed extinct taxa and for the specific matters relevant to individual species

The South Coast Threatened Birds Recovery Team is chaired by Alan Danks, Regional Leader for Nature Conservation in CALM's South Coast Region. Membership includes other CALM staff from South Coast, Warren and Midwest Regions and from WATSCU and Science Division, as well as members of Birds Australia and local community groups. All have in common an interest in, and capacity to contribute to, the recovery of these five taxa of birds that occur only on the south coast of WA.

For further information contact Sarah 08 9842 4513 or email sarahc@calm.wa.gov.au or John on 08 94055 161 or email johnbl@calm.wa.gov.au

Report on the South Coast Region flora project

~ Andrew Brown, Sarah Barrett and Ryan Butler

In August 2003 we were successful in obtaining $111, 603 through the NHT 2 funding. This grant was for a project titled *Recovery of Critically Endangered Flora and Threatened Ecological Communities in the South Coast Region of WA.* This project aims to implement essential recovery actions for 19 Critically Endangered flora taxa, one Critically Endangered Threatened Ecological Community and one Endangered Threatened Ecological Community in CALM's South Coast Region. It is being carried out under the auspices of the Albany and Esperance Districts Threatened Flora Recovery Teams.

The following actions have been completed to date.

An Albany district threatened flora recovery Team meeting was held at Ongerup in September and an Esperance District Recovery Team meeting was held in November at Esperance. During these meetings recovery actions for threatened flora and ecological communities covered by this project were discussed and included in works programs for 2003-04.

A field trip was conducted over several days in mid November to survey areas of potential habitat for *Eremophila subteretifolia* and *Anigozanthos bicolor* subsp. *minor* north-east of Ravensthorpe. Both taxa are believed to be disturbance opportunists and it was thought that they might appear following the large wildfires that have occurred in the area. The location of an old Herbarium record for *Eremophila subteretifolia* was extensively surveyed and, as the habitat did not appear suitable, it is now believed that the locality information on the specimen may be in error. A great deal of what appeared to be eminently suitable habitat was surveyed for *Anigozanthos bicolor* subsp. *minor* but plants of this elusive subspecies were not found.

In October, populations of *Andersonia axilliflora, Leucopogon gnaphalioides, Persoonia micranthera* and *Dryandra Montana*, all threatened by dieback disease, were monitored on Bluff Knoll. Survival since autumn has been good overall. Flowering of *Andersonia axilliflora* juveniles (burnt 1991) was assessed in November 2003 and 14 of 40 individuals had flowered. In October-November 2003 another two individuals of *Dryandra montana* were caged to protect them from grazing. Material for tissue culture at Kings Park Botanic Gardens was taken from all four species in November 2003.

A seed orchard was established for *Dryandra montana* in August 2003 to preserve the germplasm of this highly threatened species and to obtain seed for *in situ* restocking. In October 2003 a water tank was installed for irrigation and in December 03 plants were monitored. Plants appeared healthy with all showing substantial new growth.

Dryandra montana

Photo: Andrew Brown

Anigozanthos bicolor subsp. *minor*

Photo: Andrew Brown

Populations of *Calectasia cyanea, Caladenia bryceana* subsp *bryceana, Drakaea confluens, Grevillea maxwellii, Isopogon uncinatus, Lambertia orbifolia* subsp. *Orbifolia* and *Banksia brownii* have been monitored, threats assessed and recovery actions planned. In November 2003 *Calectasia cyanea* was monitored and juveniles assessed to see if they had flowered. Grazing is having a significant impact on this species and a proportion of the juvenile population has been caged to protect them. Young seedlings of *Grevillea maxwellii* were also caged to protect them from grazing.

A significant new population of *Caladenia bryceana* was found by an Albany Threatened Flora Recovery Team member in September 03 and, following a full survey with volunteer assistance, some 100 + plants were located.

Calectasia cyanea and *Scaevola macrophylla* were surveyed in September 2003. No new populations were located, however, two new sub-populations of *Calectasia cyanea* were found and the total plant numbers increased from 20 to 60 mature individuals and from 16 to 22 juveniles.

Further survey for *Drakaea confluens* was limited due to heavy rains which restricted access to the areas targeted in the Stirling Range National Park. However, during monitoring it was found that the Camel Lake population of *Drakaea confluens* had increased from 1 to 8 individuals. Seed was collected from the population in November 2003 and is stored at Kings Park. A new population of *Banksia brownii* was located on

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Banksia brownii

Photo: Andrew Brown

Wedge Hill in dieback free habitat. This is the only disease free population known but unfortunately consists of just one plant.

A survey of the Endangered Montane mallee TEC has commenced and the impact of *Phytophthora* has been assessed towards the preparation of an Interim Recovery Plan (IRP). Fire ecology research and monitoring for the Montane Thicket TEC have been completed.

An ABC radio interview was conducted which covered recovery actions for *D. montana, C. bryceana* and *C. cyanea.* A recovery team member participated in a Japanese TV documentary covering the impact of *Phytophthora cinnamomi* on the Montane mallee TEC of the Stirling Range National Park and what recovery actions were being implemented.

A fire management plan for both of the Stirling Range TECs has been initiated.

For further information contact Andrew on 08 9405 5166 or email: andrewbr@calm.wa.gov.au or Sarah Barrett on 08 9842 4521 or email sarahba@calm.wa.gov.au Or Ryan Butler 08 9071 3733 or email ryanb@calm.wa.gov.au

Monitoring of TECs gets underway ~

Melissa Hoskins

The monitoring of four Threatened Ecological Communities (TECs) on the Swan Coastal Plain has kicked off at Ambergate Reserve in Busselton and at Hay Park in Bunbury with the assistance of some very keen volunteers and CALM district staff.

As reported in the last issue of *WATSNU* (June 2003), this program is a result of a recommendation by the Threatened Ecological Communities Scientific Committee.

WATSCU staff spent half a day with five members of the Busselton Naturalist Club at Ambergate Reserve, an approximately 75 hectare remnant of the once widespread Swan Coastal Plain vegetation that is now greatly cleared and under threat from weed invasion, altered fire regimes etc. A single transect has been established at this site, and others, in order to detect changes in the condition of plant-based TECs over time. The volunteers were involved in the setting up of the transect, and recording, identifying and collecting species. The Reserve contains the endangered community 'Southern wet shrublands' (Swan Coastal Plain community type 2).

At Hay Park two TECs are being monitored – 'Herb rich shrublands in clay pans' (SCP community type 8), and 'Shrublands on calcareous silts' (SCP community type 18), both of which are classified as 'vulnerable' TECs. Again we were lucky to have the help of CALM district staff Darren Harvey and his crew. With the entire occurrence of community type 8 having been burnt last year the results of the monitoring program should prove interesting in terms of how fire affects the floristics and structure of this occurrence over time.

Thank you to Dennis Cooper, Brian Green, Jenny Jones, Fred Taylor of the Busselton Naturalists Club and to CALM staff Darren Harvey, Tenielle Brown, Debra Stewart and Mark Barendrecht from the Wellington district. Your support and assistance with this project is greatly appreciated.

Fred Taylor, Dennis Cooper, Jenny Jones assist Melissa Hoskins at Ambergate Reserve

Photo: Jill Pryde

For further information contact Melissa on (08) 9405 5170 or email on melissah@calm.wa.gov.ua or Jill Pryde on (08) 9405 5128 or email on jillp@calm.wa.gov.au

Progress on the Yanchep Caves recharge scheme! ~ John Blyth

The second trial of the recharge scheme to attempt to protect the Critically Endangered fauna and ecological community of the Yanchep Caves, referred to in previous editions of WATSNU, was concluded successfully at Crystal Cave early in November 2003. Many practical and technical problems had to be overcome, and the Recovery Team appreciates very much the efforts of the many people who contributed. In particular, Wayne Bartley of the Water Corporation, who acted as Project Manager, Gerald Drummond and his colleagues at Yanchep National Park, who did much of the on-ground work and monitoring, and Dr Adrian Peck, CALM's consultant on hydrological issues for the project made invaluable contributions.

With the knowledge that artificial recharge has reestablished cave streams and pools in two quite different cave systems, the Recovery Team and its Technical Advisory Group can now begin finalizing the design of a full recharge system with some confidence. This full system is to be established in two stages. The first stage, intended to be in place for summer 2004\05, is to provide water for the five 'central Yanchep' faunal caves – Crystal, Cabaret, Boomerang Gorge, Carpark and Water Caves. The second stage, which may not able to be constructed until the following year, would provide water to the two most southern Yanchep caves,

Twilight and Gilgie Caves.

Preliminary investigation relating to the first stage suggests that a large bore, of the type used routinely by the Water Corporation for urban water supply, could be placed at the old CALM settlement to the south and east of Loch McNess. However, the availability of sufficient volumes of water is yet to be confirmed.

A submission for funding of the full caves recharge scheme has been submitted to Cabinet and subsequently referred to the Expenditure Review Committee (ERC). The Department has more recently suggested an alternative funding proposal for the first year of the project, utilizing part of the proceeds from a land sale. This recommendation has also been referred to the ERC. Hopefully, the funding source will be finalized soon.

More good news is that the Department will be able to use some NHT funds, provided for recovery work on the Yanchep caves, to begin a pilot project for the broad survey of aquatic invertebrates of the Gnangara Mound proposed by Brenton Knott and Andrew Storey of the University of Western Australia.

For further information contact John Blyth on 08 9405 5161 or email johnbl@calm.wa.gov.au

Implementing Recovery Actions ~ Vanessa Clarke

Hook-point Poison *Gastrolobium hamulosum.*

Vanessa has recently been appointed on a 10 month contract to implement recovery actions for nine taxa of Western Australia's most threatened flora that occur across more than one agricultural region. For the past 5 years Vanessa has been working as a botanical/environmental consultant, working mainly within the Northern Sandplains, the Goldfields and on the Swan Coastal Plain.

The nine flora taxa are:

Sprawling Spiky Adenanthos *Adenanthos pungens* subsp. *effusus*

Hinged Dragon Orchid *Caladenia drakeoides*

Crown Smokebush *Conospermum densiflorum* subsp. *unicephalatum*

Wongan Cactus *Daviesia euphorbioides*

Purdie's Donkey Orchid *Diuris purdiei*

Silky Eremophila *Eremophila nivea*

Beaked Eremophila *Eremophila rostrata*

Varnish Bush *Eremophila viscida* and

The aim of this project is to improve the conservation of threatened flora by implementing the highest priority recovery actions in the most efficient manner, through a State-based project. This project has been funded by the National Heritage Trust for recovery actions such as: further survey in an attempt to discover new populations, carry out weed control, monitoring of existing populations, habitat rehabilitation, fencing and translocation trials.

These actions are among those listed within the Interim Recovery Plans (IRPs) written for each species (two IRPs are in the process of being written). Vanessa will be working with the Conservation Officers and Recovery Teams within each district and hopefully with interested locals, friends of groups and any other community groups or individuals interested in conserving our State's threatened flora.

For further information contact Vanessa on 08 9405 5168 or email: anessac@calm.wa.gov.au

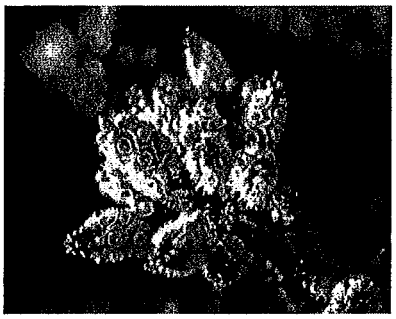
What's flowering?

~Andrew Brown

Although the soil is now starting to dry out and the weather is warming up, many species of threatened Western Australian flora continue to flower into the summer and some only flower then. A selection of these are described and illustrated below. If you think that you have seen any of these rare species please contact the nearest CALM office or you can contact me via my email address andrewbr@calm.wa.gov.au .

Many *Verticordia* species flower during the summer months. Commonly known as featherflowers because of their fringed 'feathery' sepals there are some 97 species currently known of which 12 are listed as threatened. Three rare ones to look out for over the summer are *Verticordia albida*, *Verticordia carinata* and *Verticordia hughanii.*

***Verticordia albida*, white Featherflower**

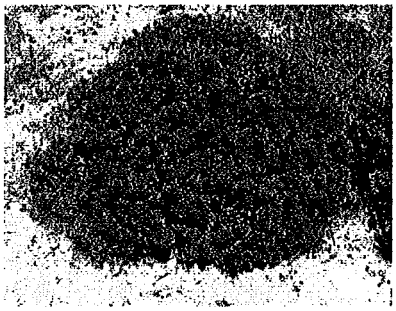


White Featherflower is an attractive single-stemmed shrub to three metres high which, as both its common and scientific names suggest, produces large white feathery flowers in the summer. The species is known from three populations with a total of around 300 plants, growing on a narrow road verge and on private property west of Three Springs and Coorow. Habitat is white-grey to yellow sand over gravel in scrub or thickets where it grows with acorn banksia and pricklybark. Flowering is between November and February.

***Verticordia carinata*, Stirling Range featherflower**

Stirling Range featherflower is a spindly, erect shrub to 1 m high, with small, well-spaced leaves and unusual, beautiful bright magenta pink pea-like flowers. As its common name suggests it is endemic to the Stirling Range where it is known from just 2 populations over a 6 km range. However, the second, more recently discovered population has only 2 plants. Habitat is open low woodlands of marri, jarrah and bull banksia in pinkish-grey sandy soils. Flowering is between December and May.

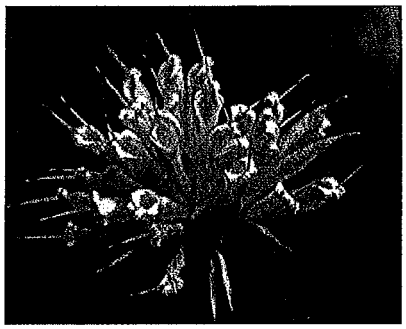
***Verticordia hughanii*, Hughan's featherflower.**



Hughan's featherflower is a small, spreading shrub 20 to 40 cm tall by 60 cm wide, with oblong leaves and extremely attractive red flowers that are produced between December and February. It is similar to Drummond's featherflower (*Verticordia drummondii)*, but has smaller flowers and lacks fringed margins on the petals. The species is known from just two populations – one small population on a nature reserve and a much larger one on private property. Both occur in the Dowerin area. Habitat is grey sandy soil in low shrubland on a rise above a saline flat.

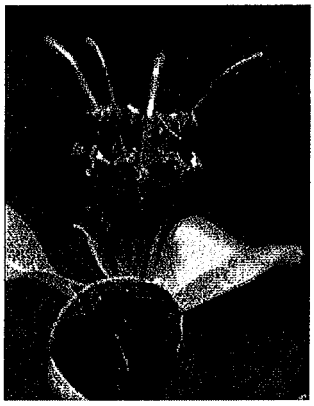
Two native honeysuckle species to look out for are *Lambertia echinata* subsp. *occidentalis* and *Lambertia orbifolia* subsp. *orbifolia.*

Lambertia echinata subsp. *occidentalis*, western prickly honeysuckle.



When mature, western prickly honeysuckle develops into a large shrub with many branches at the base and a few long, erect floral branches that extend to 3 m high. During summer attractive yellow inflorescences can be found crowded at the ends of branchlets. The subspecies is confined to the Whicher Range area where the single known population grows in shallow soils over sheet ironstone amongst scrub heath and sedges with scattered banksias and marri. Like other *Lambertia* species western prickly honeysuckle is susceptible to dieback (*Phytophthora cinnamomi*) and the only known population is very close to infected sites. Flowering is from October to January.

Lambertia orbifolia subsp. *orbifolia*, round-leaf honeysuckle.



This attractive summer flowering plant develops into an erect shrub or small tree to 4 m high with hairy stems and more or less circular leaves that are held in opposite pairs or in whorls of three. When in bloom it produces heads of four red flowers that are surrounded by a whorl of overlapping bracts. Round-leaf honeysuckle is found in just a few populations in the Narrikup area all of which are highly susceptible to dieback (*Phytophthora*). Habitat is gravely, sandy loam generally associated with laterite, under open jarrah woodland. Flowering occurs throughout the year, but is mainly between November and May.

Quite a few threatened species of *Eremophila* flower during the summer months and two of these (*Eremophila resinosa* and *Eremophila subteretifolia*) are described below. Other summer flowering species to look out for include *Eremophila denticulata* subsp. *denticulata, Eremophila pinnatifida, Eremophila ternifolia* and *Eremophila verticillata.* For information on these refer to *Western Australia's Threatened Flora* which can be obtained from the Department's CALM Kensington office.

Eremophila resinosa, resinous eremophila.

This species is so-named because of the small, resinous projections on most parts of the upper stems, including the petals. It is small spreading shrub 40 to 60 cm high by 1 m across with sticky new growth and warty branches that are densely covered with white hairs. The flowers, which are tubular in shape, are an attractive violet colour. The species is found in the Cowcowing and Westonia areas where it grows amongst open mallee scrub on light brown sandy clay loam soils. With much of its habitat cleared for agriculture the species is now known only from a few disturbed road verges, a mine site and a partly disturbed rail reserve. Flowering is between September and February.

Eremophila subteretifolia ms, Lake King eremophila.

Lake King eremophila is a ground-hugging, mat-like plant to 10 cm high and 1.5 m in diameter with unusual erect, orange flowers that emerge through its distinctive glossy, green leaves. The species is known from just 4 populations in the southern Wheatbelt between Lake King and Ravensthorpe, growing under eucalypt species around salt lake margins in light, slightly saline, sandy loams over clay. A population between Ravensthorpe and Munglinup has not been seen since 1968 and could be extinct. The main flowering period is between July and March but the species appears to have a few flowers at any time of the year.

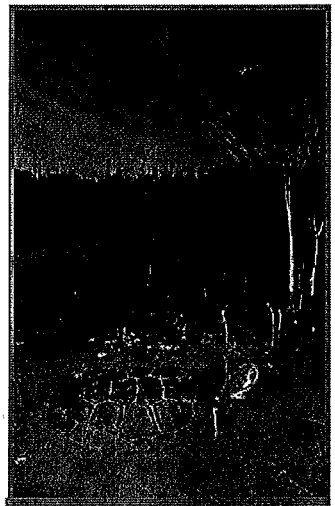
One rare *Grevillea* species that is still in flower is *Grevillea dryandroides* subsp. *hirsutus.*

Grevillea dryandroides **subsp. *hirsutus*, hairy phalanx grevillea.**

Hairy phalanx grevillea is a tufted, suckering, ground-hugging shrub, 10 to 30 cm high and up to 1 m in diameter with racemes of dull red flowers that look somewhat like a toothbrush. These are held at the ends of long, bare, ground-hugging stems. The specific name refers to the leaves, which are similar to those of *Dryandra* species while the subspecific name refers to the persistent hairy covering on the leaves. It differs from phalanx grevillea (*Grevillea dryandroides* subsp. *dryandroides*) in having hairy, rather than smooth leaves. The subspecies is confined to the Corrigin - Quairading area where it occupies remnant areas of low heath. Most known populations are on disturbed roadsides, which are severely weed infested. Flowering is between September and March.

WESTERN STERN SWAMP TORTOISE (*Pseudemydura umbrina*) RECOVERY PLAN (3RD EDITION)

By Andrew A. Burbidge and Gerald Kuchling for the Western Swamp Tortoise Recovery Team



Western Swamp Tortoise
Photo: Gerald Kuchling

This is the third edition of the Recovery Plan. It will cover the period January 2003 – December 2007 and if the species is still ranked as critically endangered at the end of the term in 2007, the Western Swamp Tortoise Recovery Team will prepare a further edition of the Plan before it expires. Implementation of this Recovery Plan has been funded by the Western Australian Government through the Department and Perth Zoo and by the Commonwealth Government through the Endangered Species Program (now part of the Natural Heritage Trust). Additional funds and resources have been provided by The University of Western Australia's Zoology Department, The School of Biomedical Sciences at Curtin University of Technology, the Western Australian Water Corporation, the World Wide Fund for Nature Australia, and several companies, conservation groups and schools. Without this support, the recovery of the Western Swamp Tortoise would not be as advanced as it is.

Recovery actions in the Recovery Plan include:

1. Employment of a Chief Investigator
2. Management of Ellen Brook, Twin Swamps and Mogumber Nature Reserves
3. Tortoise population monitoring
4. Captive breeding
5. Translocations
6. Education, publicity and sponsorship.

This recovery Plan has been endorsed by the Western Australian Minister for Environment and Heritage and CALM will be submitting the plan for adoption under the *Environment Protection and Biodiversity Act* 1999.

Preparation of 5 year Interim Recovery Plans ~

Gillian Stack and Julie Patten

Funding has been obtained through the Natural Heritage Trust to prepare a number of Recovery Plans suitable for adoption under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). A total of 42 Interim Recovery Plans will be prepared for flora taxa, to be completed by 30 June 2004. This large project will be completed by a number of people. WATSCU has employed two project officers, and ten Recovery Plans will be completed by CALM Regional staff.

Julie Patten will be completing 18 Recovery Plans for taxa in the Perth Hills, Moora, Merredin, Narrogin, Katanning, Blackwood and Esperance Districts. These include *Andersonia gracilis*, *Anigozanthos bicolor* subsp. *minor*, *Banksia oligantha*, *Caladenia busselliana*, *C. viridescens*, *Conospermum densiflorum* subsp. *unicephalatum*, *Dryandra nivea* subsp. *uliginosa*, *D. squarrosa* subsp. *argillacea*, *Eremophila virens*, *E. viscida*, *Eucalyptus balanites*, *E. phylacis*, *Grevillea scapigera*, *Myriophyllum lapidicola*, *Rhizanthella gardneri*, *Roycea pycnophylloides*, *Verticordia hughanii* and *V. staminosa* subsp. *cylindracea* var. *cylindracea*. Three of the 18 taxa have no previous Recovery Plan. Nine other Recovery Plans will be updates of relatively recent Interim Recovery Plans.

One of these taxa, *Eucalyptus phylacis*, is currently known from a single population, which comprises around 27 ramets (groups of stems belonging to the one clone) near Meelup in the State's south west. A very rare tree and possibly the world's oldest eucalypt at 6380 years, *Eucalyptus phylacis* was originally thought to be a hybrid, as it had not produced any viable seed. However, three seeds collected this September germinated, and extensive searches throughout the region have failed to find a second parent taxon that may have hybridised with *E. decipiens*, a close relative of *E. phylacis*. The main threats to the existing population are poor regeneration, insect damage, aerial canker, road maintenance activities, inappropriate fire regimes and poor genetic diversity. Recent recovery work has involved the successful propagation of the species by tissue culture by staff from Botanic Garden and Parks Authority, control of insect borers using insecticides, identification of the causal organism associated with stem canker disease, and rehabilitation of a car park immediately adjacent to *E. phylacis*. A large number of stems within the population have died and bark splitting and severe canker development is evident on almost all the remaining stems. Coppice stimulations recently carried out on one of the ramets show promise in aiding the recovery and promoting the health of the population.

Juvenile leaves of *Eucalyptus crucis* subsp. *praecipua*
Photo: Gillian Stack

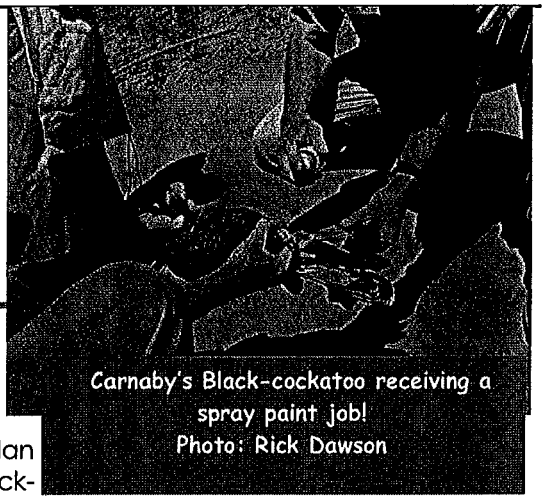
Recovery Plans for 14 taxa from Geraldton and Moora Districts will be completed by Gillian Stack. These taxa are *Acacia splendens* ms (ex-*A.* sp. Dandaragan), *Conostylis micrantha*, *Daviesia bursarioides*, *Drummondita ericoides*, *Eucalyptus crucis* subsp. *praecipua*, *E. dolorosa*, *E. impensa*, *E. leprophloia*, *Hemiandra gardneri*, *Leucopogon obtectus*, *Patersonia spirafolia*, *Pterostylis* sp. Northampton, *Verticordia spicata* subsp. *squamosa* and *Wurmbea tubulosa*. Nine of the fourteen taxa have no previous Recovery Plan.

Eucalyptus crucis subsp. *praecipua* is known from just 56 plants restricted to a single large granite rock on a pastoral station in the Paynes Find area. Genetic work has established that this subspecies is highly distinct from its two closest relatives, *E. crucis* subsp. *crucis* and *E. crucis* subsp. *lanceolata*. It is naturally rare, and genetic evidence suggests that it has long been isolated from other *E. crucis* populations. It is threatened by grazing by feral goats, and lack of recruitment. Liaison between CALM's Geraldton District Conservation Officer, Alanna Chant, and the managers of the pastoral station has resulted in a degree of destocking and several musters of feral goats in an attempt to reduce their numbers and grazing damage. Reducing the number of feral goats in the Paynes Find area will also help to protect other important areas, including the Mt Singleton Range which supports several other Declared Rare and priority flora species.

For further information contact Gillian Stack on 08 9405 5157 or email: gillians@calm.wa.gov.au or Julie Patten on 08 9405 5172 or juliepa@calm.wa.gov.au

Have you seen Carnaby's Black-Cockatoos with painted tail feathers?

~ Leonie McMahon



Carnaby's Black-cockatoo receiving a spray paint job!
Photo: Rick Dawson

In the coming weeks a small number of Carnaby's Black-Cockatoos will fledge from their hollows with their usually white tail panels brightly coloured.

This is not a genetic aberration, but rather the result of a plan cunningly conceived at the July 2003 Carnaby's Black-Cockatoo Recovery Team meeting. The decision was made at this meeting to trial a means of marking Carnaby's Black-Cockatoos in a manner that made them easily able to be tracked and to gather information about where cockatoos from particular breeding populations travel to after they leave their breeding sites.

It was decided we would mark the white tail panels of chicks between 7 to 10 weeks of age (ie in the weeks prior to fledging) with paint of the type used by landholders for marking sheep. This paint was tested on captive cockatoos and found to be acceptable in that it does not concern the birds, has adhered well, has not been preened or worn off and is clearly visible when the birds are either perched or flying. The colours that have been used on wild birds are **red, green, blue, orange** and **purple.** The different colours denote different breeding sites in the northern wheatbelt.

As at mid December, some tail painting was still going on. It is estimated 30 to 35 birds will be marked in this way by the end of the breeding season. Most of the marked chicks will also be weighed, measured, DNA tested and banded. The tail painters include DCLM's Rick Dawson, Peter Mawson, Nick Phillips and Adam Meyer, myself from Birds Australia and Ron Johnstone and Tony Kirkby from the WA Museum.

Birds Australia is coordinating the tracking of the cockatoos and this will rely to a large extent on members of the public contacting us with their observations. The trial has been publicised in publications local to the target areas (the coastal plain to the north of Perth and the Greater Perth area).

We'd appreciate it if DCLM staff would keep an eye out for marked Carnaby's Black-Cockatoos in the coming months. You can record your observations by:

Calling the Birds Australia office during office hours (9.30 am to 12 noon weekdays) on 9383 7749;

Emailing the Carnaby's Black-Cockatoo Recovery Project officer, Leonie McMahon, at ljmcmahon@bigpond.com;

Faxing information to the Birds Australia office on 9387 8412; or sending information to 71 Oceanic Drive, Floreat, WA 6014.

The sort of information we need:

- **Date and time of observation**
- **Colour of paint**
- **Number of marked birds**
- **Number of birds accompanying marked birds**
- **Location (be as specific as you can eg place name, property location number, distance from closest road intersection, GPS reading if you have it, distance and direction from nearest town)**
- **Your contact details**

If you happen to be in the unusual situation where you can read a band those details would be very valuable. Hopefully there won't be too many dead cockatoos but if you find one would you please wrap it in a couple of sheets of newspaper, bag it and freeze it. Any of the above-mentioned people can then be contacted for retrieval.

The trial is a joint effort between the Carnaby's Black-Cockatoo Recovery Project being run by Birds Australia, the Carnaby's Black-Cockatoo Recovery Team, Department of Conservation and Land Management and WA Museum.

Bankwest *Landscope* Conservation Visa Card ~ Jill Pryde

Submissions were recently invited for the next round of funds to be distributed to small projects that should directly and clearly benefit a species or ecological community currently ranked as Critically Endangered or Endangered. Projects to gather Information on species or communities thought to be Critically Endangered or Endangered so their listing and ranking can be undertaken and projects on species that are under consideration for ranking as Critically Endangered, are also considered.

The following lists the successful projects for 2003-2004. Once the projects are completed a summary of the report will be reproduced in future issues of *WATSNU.*

Project Title	Proponent/s
Captive breeding of the Central Rock-rat (*Zyzomys pedunculatus*)	Keith Morris (CALM Science Division) and Colin Hyde (Perth Zoo)
Gilbert's Potoroo Recovery - measuring pre-disposal to oxalosis in wild potoroos	Tony Friend (CALM Science Division)
Undertake monitoring of the Lancelin Island Skink	Rebecca Carter (CALM Midwest Region, Jurien Bay)
Guppy removal from globally significant critically endangered ecosystems at Cape Range	Ben Fitzpatrick (Nature Conservation Officer, Ningaloo Marine Park)
2005 Calendar Featuring Declared Rare Flora of the Wongan Hills	Shari Dougall Wongan Ballidu Bush Care and Kate Roy-Chowhdury (CALM Merredin)
Cutting and Propagation of Critically Endangered *Lysiosepalum abollatum*	Kate Roy-Chowdhury, (CALM Merredin)
Propagation of the Critically Endangered *Acacia subflexuosa* subsp *capilltata*	Kate Brunt (CALM Merredin)
Merredin District Critically Endangered Poster Development and Distribution	Kate Brunt (CALM Merredin)
Identification of translocation sites for Critically Endangered terrestrial orchids	Andrew Batty (Botanic Gardens and Parks Authority)
Disturbance regeneration trials for two Critically Endangered taxa *Eremophila lactea* and *Daviesia microcarpa*	Ryan Butler (CALM Esperance)
Mingenew Nature Reserve – chemical control of a declared noxious weed	Deanne Pember (CALM Geraldton)
Genetic and taxonomic status of *Eucalyptus absita* populations	Margaret Byrne (CALM Science Division)

Translocation of Threatened Flora and Fauna

Three translocation proposals have been approved since the last edition of *WATSNU.* The following provides details of the translocations.

Species	Translocation	Proponent/s
Grevillea humifusa	Seed was sourced from the natural population and plants grown at Botanic Gardens and Parks Authority were introduced to Coomallo Nature Reserve	Leonie Monks / Gina Broun
Darwinia ferricola *Dryandra nivea* ssp *uliginosa,* *Grevillea brachystylis* ssp *australis,* *Lambertia orbifolia* ssp Scott River Plains	Four species of Declared Rare Flora from the Scott Coastal Plain Ironstone Communities to the BHP Billiton Beenup Rehabilitation Project	Jocelyn Bird, Environmental Officer, BHP Billiton with assistance from Bob Dixon, Botanic Gardens and Parks Authority
Western Swamp Tortoise	Trial introduction to Harry Waring Marsupial Reserve. Animals were sourced from captive bred population at Perth Zoo	Gerald Kuchling, Chief Investigator (University of WA)

Interim Recovery Plans

Another eighteen Interim Recovery Plans have recently been approved by the Acting Director of Nature conservation. Some of these IRPs have been revised now making them compliant with Commonwealth requirements and suitable for adoption under the *EPBC Act 1999.*

IRP No.	Species	Author/s
135	Remote thorny lignum, *Muehlenbeckia horrida* subsp. *abdita*	Robyn Phillimore, Matt Giraudo & Andrew Brown
136	Gypsum Goodenia, *Goodenia integerrima*	Robyn Phillimore, Andrew Brown
137	Varnish Bush, *Eremophila viscida*	Robyn Phillimore, Rebecca Evans, Andrew Brown & Val English
138	Recurved-leaved Swordfish Dryandra, *Dryandra mucronulata* subsp. *retrorsa*	Robyn Phillimore, Andrew Brown & Bethea Loudon
139	Abba Bell, *Darwinia* sp. Williamson	Gillian Stack, Val English
140	Gingin Wax, *Chamelaucium* sp. Gingin	Gillian Stack, Val English
141	Hinged Dragon orchid, *Caladenia drakeoides*	Emma Holland, Andrew Brown, Kim Kershaw
142	Whorled eremophila, *Eremophila verticillata*	Robyn Phillimore, Andrew Brown
143	Narrow-petalled Featherflower, *Verticordia plumosa var pleiobotrya*	Robyn Phillimore, Rebecca Evans
144	McCutcheon's Grevillea, *Grevillea maccutcheonii*	Gillian Stack, Andrew Brown, Val English
145	Small-flowered Snottygobble, *Persoonia micranthera*	Gillian Stack, Andrew Brown
146	Thick-billed Grasswren (western subspecies), *Amytornis textilis textilis*	Belinda Cale (nee Brooker)
147	Giant Andersonia, *Andersonia axilliflora*	Rebecca Evans, Sarah Barrett, Gillian Stack, Andrew Brown
148	Trigwell's rulingia, *Rulingia* sp. Trigwell Bridge	Gillian Stack, Andrew Brown
149	Wongan Hills Triggerplant, *Stylidium coroniforme*	Gillian Stack, Nicole Willers, Andrew Brown
150	Boscabel conostylis, *Conostylis setigera* subsp *dasys*	Bethea Louden
151	Beaked Eremophila *Eremophila rostrata*	Gillian Stack, Val English
152	Blunt Wattle *Acacia aprica*	Ben Bayliss

WATSNU

Editor: Jill Pryde, WA Threatened Species & Communities Unit, Department of Conservation and Land Management

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http://www.calm.wa.gov.au/plants_animals/watscu_splash.html