WATSNU

DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

The Newsletter of the Western Australian Threatened Species & Communities Unit

Volume 5 Issue 2 ***December 1998***

NEW FLORA BOOK PUBLISHED...

Thanks to the dedication and input of a plethora of people the new book "Western Australia's Threatened Flora" was officially launched by Environment Minister Cheryl Edwardes on 26 November 1998.

This book serves various functions including raising public awareness of rare flora, field identification, highlighting potential habitats, current management actions and possible future threats. The book has already proved useful to the wider community for identifying possible populations of threatened flora.

The book is divided into nine sections:

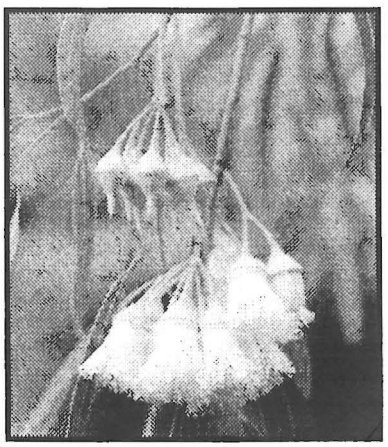
- Pilbara and Kimberley
- Northern Heathlands
- Wheatbelt and Goldfields
- Forest and Woodlands
- Winter-Wet Area
- Granite Outcrops
- Stirling Range and Surrounds
- Southern Heathlands
- Presumed Extinct

Each species is then described, with flowering times and distinctive features highlighted to aid identification. Where possible a photo has been included. The description of distribution and habitat will help clarify areas requiring further survey.

Other features include a description of potential threats, and current management actions used to alleviate these threats.

Thanks to the 24 contributing authors, we now have a comprehensive tool to aid in the conservation of the approximately 350 species of 'Western Australian Threatened Flora'.

Gillian Stack and Bec Evans



Eucalyptus beardiana

Western Australia's Threatened Flora Edited by Andrew Brown, Carolyn Thomson-Dans and Neville Marchant, retails at $29.95 and is available from all major book stores, WA Naturally in Fremantle and CALM headquarters in Como.

Inside this Issue

Review of activities on TECs

Since the last edition of *WATSNU* there has been good news for threatened ecological communities in relation to NHT grants for the year 1998/99. First, and most importantly, the ongoing projects being conducted by Val English and Sheila Hamilton-Brown (see separate reports in this issue) will be funded for the second of an intended three years. Secondly, all five proposals for acquisition of occurrences of TECs have been approved for joint funding by the National Reserves System Program and CALM (see below). Finally, a new project, intended to be for three years, to coordinate and promote the implementation of the interim recovery plans for 16 Critically Endangered communities, is to be funded by the Endangered Species Program.

The approved acquisitions are as follows.

- Nine hectares of Banksia scrub and wetland at Bullsbrook containing an occurrence of the Critically Endangered tumulus spring community. If and when this acquisition is completed, two of the three known surviving occurrences of this community will be in nature reserves.
- Negotiations have begun on up to 64 hectares of the Critically Endangered Muchea limestone community adjacent to an already purchased nature reserve of six hectares. This area is far and away the largest block of the Muchea limestone community in existence and its acquisition will be a major step towards its conservation.
- Twenty six hectares containing the Critically Endangered community, 'shrublands on southern ironstone' near Busselton will make the second nature reserve including this community. (The first was also acquired with the aid of money from the National Reserve System Program.) This is an excellent example of the community, supporting several species of Declared Rare Flora, and its acquisition will bring to almost 50% the proportion of the community in public ownership.
- A significant area of the Endangered community '*Banksia attenuata* over species rich dense shrubland' is to be acquired as a part of a 163 hectare acquisition adjoining Chandala Nature Reserve.
- The purchase of five hectares of 'herb rich saline shrublands on clay pans' at Gingin is currently being negotiated. Although only classified as Vulnerable the community continues to face considerable threats and is poorly represented in reserves. This is an unusual example of the community with an overstorey of *Casuarina obesa*.

The Australian and New Zealand Environment and Conservation Council (ANZECC) established an Endangered Ecological Communities Network in 1997 and its second meeting was held in October 1988. The network is intended to ensure a coordinated approach to the conservation of threatened ecological communities across State and Commonwealth governments in Australia. Draft nominations of sixteen Critically Endangered Western Australian communities were submitted to the Network for consideration for listing under the Commonwealth Endangered Species Protection Act (1992). If the Network and the Standing Committee of ANZECC are happy with these nominations they will be submitted to Environment Australia for forwarding to the Endangered Species Scientific Subcommittee for endorsement for listing under the Commonwealth Endangered Species Protection Act.

Activities being coordinated by the Toolibin Lake Recovery Team are reported on Page 4 of this issue, but brief reports from the three other TEC recovery teams are provided below.

Lake Richmond Thrombolite Community

The recovery team provided considerable input to the assessment by the Environmental Protection authority (EPA) of a large housing development adjoining the lake on the eastern side. That assessment has now been completed and conditions applied accepted by the proponent. The approximately one quarter of the bed of the lake, including some of the best developed thrombolites, owned by the developer will now become a part of the reserve, along with a land buffer of a minimum of about 70 metres. Negotiations are also in train with a second developer to the north-east of the lake about buffer widths and management needs.

Holocene Dune Swales community

Although the recovery team has not met for some time,

many actions are being pursued by individual members of the team. These actions include: continuing survey of areas likely to contain the community and inclusion of newly discovered occurrences in the draft Interim Recovery Plan (IRP); negotiations with various authorities over management needs in the event of development; and the identification of the best examples of the community type in the Lark Hill area and their nomination by the City of Rockingham for inclusion in the Rockingham Lakes Regional Park.

Root-mat communities of Yanchep caves

The groundwater pumping system in two of the caves with root-mat communities was continued until mid-winter, when rising water levels caused the streams in these caves to begin running again. The emergency action with the automatic pump had ensured that the root mats in all caves remained inundated throughout the driest part of the year and the species assemblage within the root mats remained viable. Weekly monitoring of all cave streams began at the end of winter and as water levels decline will be conducted over shorter and shorter periods to ensure that emergency pumping can be started before any caves dry out. The pine-thinning program for this year has been completed and monitoring results will be analysed carefully to see whether any effects upon water levels in the coming summer can be discerned. In any case, more thinning of pines in the groundwater catchment for the caves will be conducted next year.

For further information, contact John Blyth on 94055161 or johnb@calm.wa.gov.au

GREENCORP PROJECT ON MALLEEFOWL

World Wide Fund for Nature (Australia) (WWF) has been successful in setting up the WA Malleefowl Conservation Program with support from CALM, Perth Zoo, Birds Australia and four other community groups which work together as the WA Malleefowl Network. The fieldwork has been undertaken by Green Corps trainees as part of a six month intensive environmental training program. The Threatened Species Network (TSN) provided the training to Green Corps trainees and has been coordinating the field and community involvement.

Ten grids have been established throughout regional WA as part of a long term monitoring program, in places where malleefowl are known to occur and breed. The grids will allow community members to undertake periodic and systematic searches to determine how many malleefowl inhabit particular areas. Over the longer term the community should be able to determine fluctuations in malleefowl numbers and the success of conservation measures such as fox baiting and habitat rehabilitation.

The team has completed grids and searches at Old Well Reserve near Wubin; Jaurdie and Goongarrie stations near Kalgoorlie; and Canna and Koolanooka Hills reserves near Morawa; Lake Magenta; and Peniup and Corackerup reserves near Ongerup. The team will finish their program with three days at the Perth Zoo, refurbishing the Malleefowl exhibit and a two day search at Dryandra.

The team got off to a fantastic start in July at Nugadong Reserve, near Wubin where the TSN Coordinator trained the Green Corps team in malleefowl monitoring methods. Wubin appears to have quite a high density of mounds and most team members reported sightings of birds.

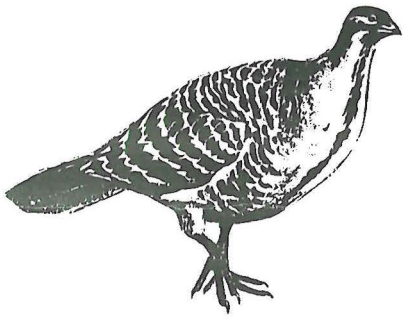
The team then visited Kalgoorlie in August where mounds were found in relatively open mallee and mulga areas. The density of mounds, as expected, was quite low. There was however an abundance of malleefowl footprints along the road sides. The birds seemed to be quite curious, often digging near the teams footprints and around the vehicle.

A higher density of mounds was found at Morawa, in the Canna reserve during September. The spring months are particularly interesting in this area with an abundance of orchids and seemingly endless everlastings. The team were also lucky to have the Golden West Network news team visit to film the team at Morawa and publicise the malleefowl's plight in regional WA.

After leaving Lake Magenta in October the team visited Ongerup. Here they were lucky enough to see birds working a mound and were able to use a GPS to precisely record mound locations. Overall the program has been very valuable in laying the ground work for the long term monitoring program. It is now up to the local communities to continue the success of this project.

It must be emphasised however that the core of the team's suc-

cess has been community involvement. Green Corps and the TSN have had a terrific response from the community. The TSN and Green Corps have held training days for the Kalgoorlie/Goldfields Naturalist Club, the Morawa LCDC, North Central Malleefowl Preservation Group and a social afternoon with the Ongerup based Malleefowl Preservation Group. CALM also played a vital role in ensuring the smooth running of the Kalgoorlie and Lake Magenta surveys. With the air of enthusiasm apparent, it is hoped that this monitoring program will continue to be successful in the future.



If you would like to learn more about the WA Malleefowl Conservation Program and how you can help, please contact the WA Threatened Species Network Coordinator, Sandra McKenzie or the Program Manager - WA Conservation, Denise True on: ph (08) 9387 6444 or fax (08) 9387 6180 or email wwf-perth@ozemail.com.au

Sandra McKenzie

Summary of activities at Toolibin Lake, July - December 1998

The Toolibin Lake Recovery Plan, in operation since 1994, aims to protect the Lake from rising saline groundwater and saline surface water inflows. With major funding from Environment Australia and the WA Salinity Action Plan, the Recovery Plan has achieved significant progress with the construction of a separator gate and diversion channel in 1995 and the installation of a groundwater pumping system in 1997.

Over the last six months, efforts have concentrated on a number of major activities. A digital groundwater model has been completed that investigated the groundwater impact of a number of different scenarios such as pumping under existing conditions, establishing new pumping wells and the impact of a proposed hydrogeological feature (a 'paleochannel'). A report on the model's predictions has made a number of recommendations on the location and pumping volumes of additional pumps on the lake-bed.

Surface water drainage commenced in the West Toolibin Flats in 1995 and has now been extended to North East Toolibin Catchment. Surveying of natural water pathways has been completed and the results are now being interpreted to determine the extent of drainage required to prevent waterlogging of agricultural land and nature reserve to the north east of Toolibin Lake.

In July of this year a Community Tree Planting Day was held at Toolibin Lake, where local schoolchildren, catchment landholders and CALM staff revegetated part of the bund and buffer zone adjacent to the diversion drain. Infill of the Toolibin Melaleuca Trial also occurred. The program to develop local species which are commercially prospective, and which meet biodiversity and land conservation needs, will continue in 1999, with revegetation trials planned for a property recently purchased using Recovery Funds.

A Recreation and Interpretation Plan for Toolibin Lake has been completed this year. On-site facilities to be implemented under contract early in 1999 include 2WD access, parking, toilets, picnic sites, an information shelter and a walk trail. Interpretative signs will focus on issues such as the significance of Toolibin Lake, catchment processes, the watertable, water birds, vegetation associations, groundwater pumping and monitoring, the separator gate and revegetation at the Lake and within the Catchment.

Amanda Smith

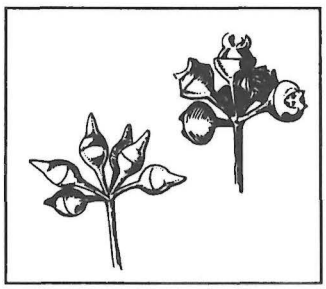
Amanda is Recovery Officer for Toolibin Lake and based at CALM Narrogin. For further information, contact Amanda on 08 98811113

PROGRESS ON IDENTIFYING AND CONSERVING THREATENED ECOLOGICAL COMMUNITIES IN THE WHEATBELT - Sheila Hamilton-Brown

The public response to the Wheatbelt Threatened Ecological Communities display at the Dowerin Field Days in August was encouraging. Many people were pleased to have the aims and approach of this project (funded by the Natural Heritage Trust) clarified by the display and by discussion with project staff. The Murdoch University consultant attached to this project, Robyn Shaw, found it a useful forum to trial a preliminary survey for assessing information needs for looking after threatened ecological communities. (see story on page 10).

As a result of the field show, and numerous articles and a radio interview on ABC Geraldton, more possible threatened ecological communities were identified and assessed. To date, 10 Wheatbelt communities are on the database and a number of these have been assigned a conservation category by the Scientific Advisory Committee.

In September, the second Scientific Advisory Committee meeting took place. The 'unwooded fresh water wetlands dominated by *Muehlenbeckia horrida* subsp. *abdita* and *Tecticornia verrucosa* across the lake floor of the southern Wheatbelt of Western Australia' and '*Acacia rostelliferа* low forest with scattered *Eucalyptus camaldulensis* on Greenough Alluvial Flats' communities were assessed as critically endangered. These communities - with their description and classification endorsed by the Director of Nature Conservation - will have interim recovery plans written for them, as well as nominations for listing under Schedule 2 of the Commonwealth Endangered pecies Protection Act 1992.



Eucalyptus camaldulensis

At the third Scientific Advisory Committee meeting in November, two wetland communities were recommended for addition to the database, and at the next meeting in February 1999, four more Wheatbelt communities will be presented to the Scientific Advisory Committee for assessment

This project has been awarded funding for another year (until February 2000). The northern Wheatbelt will be the next area of focus and there is already a list of 30 possible threatened ecological communities to assess. Another field display is also being considered for Wagin in March.

For further information contact Sheila on 08 94055167 or shamilton-b@calm.wa.gov.au

New Botanist in WATSCU

The Western Australian Threatened Species and Communities Unit (WATSCU) extends a welcome to Val English who joined the group as Botanist on 30 November. Val has been working as a consultant to WATSCU on external funds on threatened ecological community projects since mid-1994. Her hobbies of bushwalking, photography and travel will be put to good use in her new position.

Val graduated from Murdoch University in 1980 with a Bachelor of Science degree in Biology. As Research Officer, Val spent the eighties examining biochemical and molecular markers of liver and blood cancers at the Department of Physiology at the University of Western Australia. In 1990, Val went back to Murdoch University to gain a Postgraduate Diploma in Environmental Impact Assessment, with a view to a career in conservation biology.

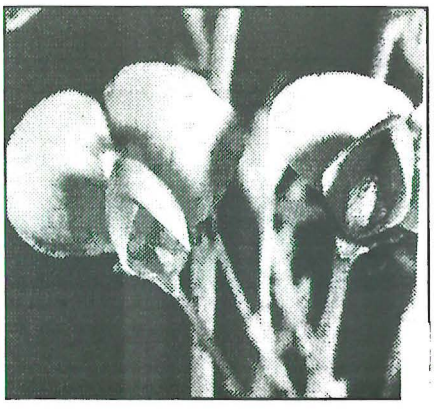
Val began work with the Environmental Consultants Mattiske Consulting in 1991. In her three years with the group, Val undertook botanical surveys in many parts of the state including the Wheatbelt, Northern Jarrah Forest, Eastern Goldfields, Great Southern, Northern Sandplain, Swan Coastal Plain and Pilbara regions. This provided her with good grounding for her next position, with WATSCU, which involved developing procedures for, and the identification of, threatened ecological communities throughout the

south west of the state. The project was funded by Environment Australia.

A second contract with CALM, funded by WATSCU, involved the drafting of Interim Recovery Plans (IRPs) for communities identified as critically endangered in the original project. In a third contract, again funded by the National Reserve System Program of Environment Australia, Val began identifying threatened ecological communities in parts of the state outside the southwest.

In her new position, Val will continue to spend some of her time on threatened ecological communities, and will also represent WATSCU in threatened flora work in CALM's Midwest, Swan and Central Forest Regions. This will mainly involve conservation work on critically endangered flora including developing and facilitating the implementation of Interim Recovery Plans, surveys, working with recovery teams and providing advice where necessary.

WATSCU's Andrew Brown will continue to perform these duties in the South Coast, Wheatbelt and Southern Forest regions.



Daviesia spiralis

MAMMAL MONITORING – BARROW ISLAND NATURE RESERVE - Andrew Burbidge

BACKGROUND

Barrow Island is one of the most important nature conservation areas in Western Australia. It has many values, but one of the most important is its mammals - it supports 13 terrestrial mammal species, of which five are listed as threatened pursuant to the Wildlife Conservation Act. Barrow Island is the site of WA's first commercial oilfield, which has been operated by West Australian Petroleum (WAPET) since the 1960s. Both CALM and the NPNCA have recently recommended that a formal mammal monitoring program be established there.

Keith Morris (CALMScience), Andrew Burbidge (CALM WATSCU and CALMScience) and Warren Boggs (CALM Pilbara Region) visited Barrow Island in November 1998. The following objectives were set for this visit:

1. Monitor abundance and condition of native mammals (apart from bats). Euros, Spectacled Hare-wallabies, Brushtail Possums and Boodies will be monitored via spotlight runs, while Boodies, Golden Bandicoots, Brushtail Possums, native rodents and small dasyurid marsupials will be monitored via trapping. Monitoring of rock-wallabies is not envisaged at present.
2. Monitor for incursion of exotic mammals, particularly rodents (Black Rats and House Mice).

Five trapping grids were selected. Each grid consists of 5 x 5 trapping stations, 20 m apart. Each trap point was marked by a dropper post with flagging tape attached. At each point a cage trap (Sheffield wire 20 cm x 20 cm x 50 cm), a medium Elliott (25 cm x 9 cm x 10 cm) and a pit (PVC tube 15 cm diameter x 40 cm deep) with a 5 m drift fence, was set. Two of the grids were in sandy soils, and were fully established and run for four nights. The remaining three, on rocky substrate, were each trapped for three nights using only the cage and Elliott traps. It is intended that pits will be installed at these sites (utilising a portable rock drill and explosives) in September 1999.

Elliott traps were set around WAPET Landing and the warehouse to survey for introduced House Mice and Black Rats. Twenty five Elliotts were also set at the Narrow Neck in Bandicoot Bay, the site at which Black Rats were first detected on Barrow Island in 1990. A Black Rat eradication project was carried out on Barrow Island in 1991.

Trapping with cage and Elliott traps was also undertaken on Boodie and Middle Islands. Boodie Island was trapped (20 cage traps and 25 Elliotts for two nights) to assess the success of a reintroduction of Boodies undertaken in December 1993, and Middle Island was trapped (2 x 25 Elliotts for one night) to assess abundance of Golden Bandicoots. A Black Rat control program was undertaken on these islands in 1985 and 1991 respectively. Both islands were inspected for Black Rat tracks and droppings.

RESULTS

Grid trapping. The Golden Bandicoot was the most frequently trapped mammal at all sites, with trap-success varying from 13.3% to 45.0%. Boodies were also trapped on all grids but at lower success rates (1.3 – 16.0%). Two Common Planigales were captured in pit traps. It can be anticipated that this species, as well as the Pilbara Pseudantechinus (which was not captured during this visit) and the Rock Rat will be trapped more frequently once pit traps have been installed in the three rocky habitat grids.

Opportunistic trapping. No introduced House Mice or Black Rats were trapped on Barrow, Boodie or Middle Islands. The trap success rate for Boodies on Boodie island was 75% and it was obvious from tracks that Boodies were moving over the entire island. Most activity was centred on the south east end of the island where most of the warrens are located in, or adjacent to, limestone outcrops. The trap success rate for Golden Bandicoots on Middle Island was 36%, similar to that obtained at the last monitoring in 1993.

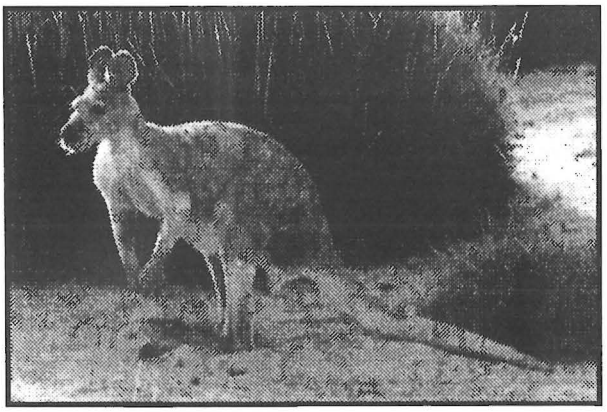
Spotlighting. Two spotlighting transects, one in the relatively undisturbed northern end of the island and one within the oilfield near the southern end of the island, have been established and monitored about every two years since 1973. Each of these transects was surveyed six times during the 1998 visit. There was no significant difference between total mammals spotted in the north and south runs. Numbers of animals sighted increased over the period of spotlighting; this may have been due to the spotlighters seeing more animals with experience or to warmer, less windy and moonless nights in the latter period of the trip.

Exotic mammals. The Rat eradication projects on Barrow, Middle and Boodie Islands (and other small islands near Barrow) have been successful. The introduction of exotic mammals is the single greatest threat to the integrity of the native fauna of Barrow Island. Good hygiene procedures are essential to prevent incursions of exotic animals, particularly rodents, and WAPET have maintained excellent hygiene procedures for many years. Barrow Island may be the largest land mass in the world with no introduced rodents — an enviable record that we should do everything possible to maintain. Hygiene procedures were re-examined and discussed during the November trip and WAPET will be considering possible improvements.

ACKNOWLEDGEMENTS

The trip would not have been possible without the assistance of WAPET, who provided free transport, accommodation and vehicles. WAPET staff based on the island also helped with much of the field work. Bristow Helicopters also assisted by providing helicopter access to Boodie an Middle Islands.

For further information contact Andrew on (08) 9405 5128 or andrewb@calm.wa.gov.au



Barrow Island Euro
Macropus robustus isabellinus

FLORA UPDATE - Gillian Stack, Robyn Phillimore and Rebecca Evans

Eremophila pinnatifida, Pinnate-leaved eremophila

Eremophila pinnatifida occurs in the Dalwallinu – Wubin area on heavy soils, largely cleared for agriculture. Until recently, it was known from only two populations with a combined total of five plants. These plants are currently producing almost no seed, despite flowering and fruiting reasonably well. It appears to be a species that regenerates from soil-stored seed after a disturbance event, has a life span of approximately 10 years, and then declines. In October 1998, Andrew Brown found a third population, containing 16 young and vigorous plants in flower. While the situation is still precarious, this find dramatically improves the outlook of this species.

Synaphea quartzitica, Quartz-loving synaphea

Synaphea quartzitica occurs in the Moora – Watheroo area. It occurs on uncommon soils derived from quartz in an area also widely cleared for agriculture. Like most *Synaphea* species, it produces very little viable seed, but has the potential to regrow from a lignotuber after fire. Several new populations of this species were located in the Watheroo National Park in August 1998. These generally appear healthy, although recruitment is low.

Symonanthus bancroftii, Bailey's symonanthus:

You may recall from the last issue of *WATSNU* that *Symonanthus bancroftii* was rediscovered in 1997, with Robyn Campbell's find of a single plant near Bruce Rock. Further surveys were conducted in July this year with the Bruce Rock LCDC. A second plant was found by Kim Kershaw adjacent to a railway line. Tissue culture material has been taken for cryostorage at Kings Park and Botanic Garden, and specimens collected for the W.A. Herbarium.

Daviesia cunderdin, Cunderdin Daviesia

This species consists of one small population on a degraded road verge north of Cunderdin, and with only four adult plants, is very close to the brink of extinction. However many CALM staff and local people are now involved in the recover of this species. Frank Obbens, Consultant at the WA Herbarium, has practically doubled the population number with some very neat disturbance and fire research, and with the aid of cool drink containers these seedlings will be watered over the summer months. This was made possible by the ingenuity of Alex Agafonoff, Conservation Officer, Merredin, and the time of Donna Canci, Cunderdin Land Care Officer, who will be watering the seedlings once a week over the next few months.

Darwinia carnea, Mogumber Bell

Mogumber bell is known from two widely separated locations near Narrogin and Mogumber. Just four populations containing around 250 plants occur within these areas, and all appear to be in decline. Management actions completed so far include the fencing of all populations to protect this species from grazing, and the collection of seed and cutting material. Recent monitoring of one population revealed that kangaroos were grazing some of the plants. Parrots had also been picking out and eating the seed. To prevent this, cages made from rabbit netting were placed around the plants and closed in at the top.

Acacia vassalii Vassal's Wattle

Vassal's Wattle is currently known from only four populations in the Wongan Hills, Moora and Watheroo areas. Regular monitoring of these populations has revealed that galls (1cm diameter) were covering whole Acacia flowers, possibly reducing seed set. Plant cuttings containing galls were taken to Andras Szito (Curator Entomology) of Agriculture WA where they were incubated. After some nurturing by Andras, the galls then hatched to reveal a wasp. Two species of wasp have now been identified.

Acacia cochlocarpa subsp. *cochlocarpa* Spiral-fruited Wattle

This species is known from only 117 individuals. Like Vassal's Wattle, rregular monitoring of these plants has revealed that galls (2-3cm diameter) were covering whole Acacia flowers, possibly reducing seed set. Plant cuttings containing galls samples were also

taken to Andras Szito of Agriculture WA where they were incubated. The galls then hatched to again reveal a wasp, which is currently being sent to an expert for identification for possible future control.

Adenanthos dobagii, Fitzgerald Woollybush

Only two populations are known of the Fitzgerald Woollybush and these are in a small, restricted area of the Fitzgerald River National Park. A survey was organised by Ellen Hickman, (Albany District Conservation Officer) with assistance from Leonie Monks (WA Herbarium), Anne Cochrane (WA Herbarium) and Robyn Phillimore (WATSCU), in November 1998. The aim of the survey was to check on the known populations after a wildfire had gone through half of the Fitzgerald River National Park in January 1998. The fire had destroyed some of the known populations, leaving a small number of adult plants. Further searching through the park revealed hundreds more adult plants as well as thousands of seedlings that had regenerated from seed stock after the fire. In view of its response to fire and numbers of plants found in the park, this species has been recommended for down-listing.

For further information contact Gillian and Bec on 08 94055172 or Robyn on 08 94055168
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rebeccae@calm.go.au
robynp@calm.wa.gov.au

Progress on the Statewide Threatened Ecological Community Project - Val English

The project funded by Environment Australia to conserve threatened ecological communities throughout Western Australia (particularly within the pastoral and mining regions) is progressing well.

A list of 175 possible threatened ecological communities in the more remote parts of the state has been developed from a literature survey and from information provided by scientists, Land Conservation District Committees, mining companies and many other groups. Information is being gathered about these communities both in the field and from desk-top studies to help assess the level of threat to them. To date, 24 communities have been investigated in the field.

Two communities were assessed as critically endangered, and one as lower risk at the June meeting of the new scientific advisory group for the threatened ecological community projects (*WATSNU* Vol 5, Issue 1). An additional four communities from the Pilbara region were then assessed at the November meeting of this group. One of the plant communities evaluated at the latest meeting is described as a grassland plain and is only known from one site that is under threat from grazing. The assemblage was assessed as vulnerable because although it covers a reasonably large area, grazing alters the composition of the community. It is hoped that some portion can be fenced from stock in the near future.

A community composed of a suite of herbs and grasses that occurs on cracking clay soils in the Pilbara was also evaluated in November. Nearly all of the known occurrences of the community are under threat from mining developments. The regional distribution of the community is not well known, however, and the advisory-group decided it was data deficient. They recommended that searches for the community be undertaken in likely areas.

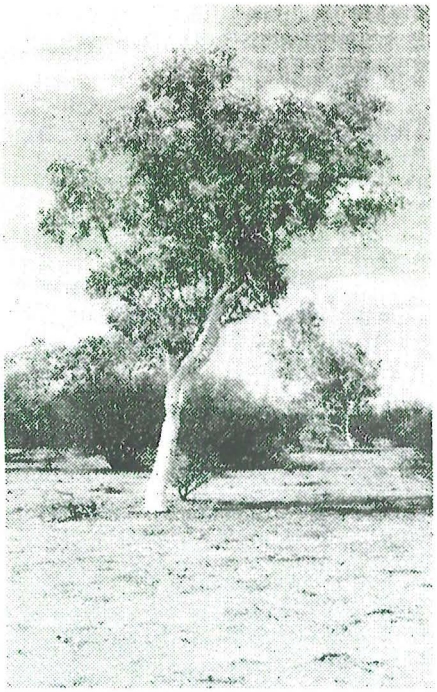
The overall distribution of a plant community dominated by coolibah (*Eucalyptus victrix*) is also unknown, so the community was also placed in the category of data deficient. The shrubs and herbs that occur with the coolibah are likely to be different in other parts of the state, so the advisory group recommended that this be investigated.

An ancient assemblage of subterranean invertebrate fauna that occurs in an extensive groundwater aquifer was evaluated at the November meeting of the advisory group. The fauna have links to late Jurassic times, some 140 million years ago, and are of great scientific interest. Again, there was not enough information to assess either the overall pattern of distribution of the community or the threat posed by water abstraction from the aquifer, and the community was placed in the category of data deficient.

Progress on the project to date is showing that there is regularly not enough information to assess communities that oc-

cur in the more remote parts of the state due to lack of detailed survey data. These communities will therefore be placed on a priority list, and efforts will be made to ensure future surveys provide enough information to allow evaluation of the regional distribution and level of threat. Once communities have been evaluated, conservation efforts can then be directed towards those under greatest threat. Such efforts are likely to include providing information and advice to help land holders manage communities sustainably, and acquiring land for reservation.

For further information, Val can be contacted on 08 94055169 or vale@alm.wa.gov.au



coolibah
Eucalyptus victrix

SOCIAL RESEARCH ASPECTS OF CONSERVING THREATENED ECOLOGICAL COMMUNITIES IN THE WHEATBELT - Robyn Shaw and Sue Moore

The School of Environmental Science at Murdoch University is working with WATSCU to help conserve Threatened Ecological Communities (TECs) in the Wheatbelt. Landowners and other managers of remnant vegetation are being surveyed as part of this Natural Heritage Trust project. Murdoch University is identifying assistance, particularly information, needed by landholders to manage TECs and other remnant vegetation. Once identified, this information will be used in the development and implementation of recovery plans and strategies for selected TECs. Murdoch University's other role is evaluating the project's effectiveness, and specifically changes in knowledge and actions undertaken by landholders over the project life. This evaluation component is regarded as essential by the funding bodies.

Work to-date has included two surveys. The first was via a questionnaire targeting visitors to the project's display at the Dowerin GWN Field Days in August. A total of 29 questionnaires were completed by landholders with remnant vegetation. The purposes of this survey were to pilot test the questionnaire and get preliminary information for the project. Questions focused on details about the farm and characteristics of its remnant vegetation, current use and management of remnants, and information and other forms of assistance needed.

A number of the findings are of interest for threatened species management and also more generally to remnant vegetation management. The 'specialness' of remnant vegetation to landholders could be categorised as one or more of the following - the remnant was special because of its ecology/habitat/plants (55% of respondents), 'specialness' was due to aesthetic or intrinsic values of the bush (44%), and the remnant was special because it was integral to the farming enterprise (38%). These results indicate that the ecological importance of remnants was well-understood by over half of the respondents. They also indicate that for over a third of respondents remnant vegetation contributes to farming. Over two thirds had fenced their remnant.

In terms of information needs, the preferred way of gaining information was through talking, with talking to other farmers being the most important source (79% of respondents). Information that was needed, but not currently available, included more information on local species and their selection, identification and propagation, especially information on understorey species.

The second survey involved

landholders in the central Wheatbelt. Two groups of landholders were selected; firstly those with a TEC (23 landholders) and secondly landholders with other remnant vegetation in the same areas as the TEC landholders (10 landholders). The non-TEC landholders provided a control group for evaluating the project's effectiveness. Both groups contained private and public landholders, although the majority were private landholders involved in dryland agriculture.

Potential survey participants were identified with help from Sheila Hamilton-Brown, Community Landcare Coordinators, local naturalists and government staff. After agreeing to participate, landholders received an explanatory letter and questionnaire. The questionnaire covered similar topics to the Dowerin survey. Participating landholders were visited and interviewed several weeks after receiving the questionnaire. The interview questions were directed towards two research interests - determining the ecological knowledge of landholders and obtaining descriptions and explanations of how landholders learn and use information in managing remnant vegetation. Interviews were taped and ran for approximately 90 minutes.

This project provides an exciting blend of research and practice, combining social science and ecology. The challenge ahead is making sure that our social research findings are useful and used. The broader challenge is assisting landholders in protecting TECs and remnant vegetation generally.

Results from the questionnaire are included in Murdoch University's 1998 Project Report. Analysis of responses to the interview questions is underway. A further 40 interviews with TEC and matching non-TEC landholders in the northern and southern Wheatbelt are planned for 1999.

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Update on some new findings...

The new population of *Eremophila pinnatifida* that was found north of Dalwallinu is now in full flower and I have arranged for CALM staff to undertake further surveys in the area. *(see additional information on this species on page 8 of this issue).*

On seeing *Eremophila adenotricha* it seems that the two are close relatives and that both are disturbance opportunists.

On another survey carried out recently, I found numerous new populations of the DRF taxon *Eremophila denticulata* subsp. *trisulcata*. This disturbance opportunist was previously known from just three populations along Parmango Road south west of Balladonia. With recent roadworks taking place in this area, I found the subspecies occurring in scattered populations over a 20 km range along Parmango Road and a 200 km range on the Eyre Highway between Balladonia and Norseman.

E. verticillata is also in full flower and arrangements have been made to carry out further surveys in the Lake Magenta area.

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