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Species and Communities Branch newsletter for Threatened Species and Ecological Communities conservation
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Rare skink gets communities talking

by Renée Hartley

Staff from the Department of Environment and Conservation (DEC) and WWF-Australia have been working together to find the threatened western spiny-tailed skink (*Egernia stokesii badia*).

The species is currently ranked as vulnerable and has previously been recorded in only a few locations from Mullewa south to Kellerberrin. Initial surveys of the northern Wheatbelt this year indicated that the western spiny-tailed skink had further declined in distribution, with just one population occurring in a nature reserve within the search area.

However, an increasing number of skinks are being located on private property. The skinks inhabit fallen hollow logs in woodland areas, but due to the widespread destruction of such areas, sheets of tin or wood piles on farmland are increasingly being used as a substitute.

The number of reports from landholders who have seen the charismatic skinks has been very positive. Education and publicity efforts have resulted in great interest in the species from the northern Wheatbelt community. Many people say that western spiny-tailed skink families have been persisting in the structures and scrap piles on their properties for decades.

Earlier this year, nine individuals were removed from a residential property in an 'emergency' translocation. Their habitat among discarded piles of timber and other materials was marked for removal, rendering the skinks homeless. The yard was systematically searched by *Back from the Brink* staff and the skinks were collected. Surrounding areas of remnant vegetation were surveyed to locate suitable woodland habitat to move them to. A nearby nature reserve that was already home to a number of western spiny-tailed skinks was chosen and materials were moved from the residential property to provide familiar shelter. This species is one of very few skinks that demonstrate communal living, so individuals were transported and released in the groups in which they were found to minimise disturbance. This is the first translocation of its kind for the species, and staff from DEC will continue to monitor the progress of the translocated skinks.

Left A juvenile western spiny-tailed skink (*Egernia stokesii badia*) ready for release in the emergency translocation.
Photo – Sonja Creese

Above *Back from the Brink* Technical Officer Michelle Swann surveying suitable habitat for the western spiny-tailed skink.
Photo – Renée Hartley

The western spiny-tailed skink is reddish-brown in colour and, as its name suggests, has a distinctive spiny tail. It is omnivorous and juveniles tend to feed on insects, while adults consume more plant material.

Threats to the survival of the western spiny-tailed skink include habitat destruction due to broad-scale clearing, extensive grazing of woodland habitat by domestic livestock and predation by foxes, dogs and cats.

This work is being conducted under the *Back from the Brink* and *Back from the Edge* projects, implemented by DEC and WWF, funded by the Federal and State governments and administered by the Northern Agricultural Catchments Council and Avon Catchment Council.

Surveys for the western spiny-tailed skink continue.

For more information contact Renée Hartley at DEC in Jurien Bay on (08) 9652 1911 or Tam Lee-Steere at DEC in Narrogin (08) 9881 9231.

Inside this issue

Survey and monitoring of the Billeranga System

by Monica Hunter

The Billeranga System is a very distinctive and localised vegetation system that is restricted to the ridgeline landscape west of Morawa, an agricultural district about 370 kilometres north of Perth. Due to the unique nature of this vegetation complex and the threats to it, the Billeranga System is listed as a vulnerable ecological community. The threatened ecological community (TEC) covers the outcropping of the Billeranga group of Proterozoic rocks, and is defined by the following description:

> 'Melaleuca filifolia – Allocasuarina campestris *thicket on clay sands over laterite on slopes and ridges; open mallee over mixed scrub on yellow sand over gravel on western slopes;* Eucalyptus loxophleba *woodland over sandy clay loam or rocky clay on lower slopes and creeklines; and mixed scrub or scrub.*'

Threats listed for this TEC include clearing, weed invasion, high intensity and too frequent fires, and impacts of stock such as grazing and trampling. This TEC occurs predominately on private property with less than five per cent occurring on conservation lands.

The Billeranga System TEC was selected for additional baseline survey and monitoring as part of the Significant Species and Ecological Communities component of the State-wide Resource Condition Monitoring (RCM) project. Members of the RCM team and staff from the DEC Geraldton office established 15 floristic quadrats in areas of best condition and 10 monitoring transects in a mixture of fenced and unfenced areas during spring 2008. It is planned that the transects will be re-monitored in spring in five years' time.

The Billeranga System is a good example of a vegetation-based TEC that is subject to grazing, and monitoring data that are indicative of the perceived impacts of stock and weed invasion on community structure and plant diversity will be extremely useful. Grazing is thought to have caused alterations to the species composition of much of the TEC through selective foraging of edible species, the introduction of weeds and nutrients, trampling and general disturbance.

Above Floristic quadrat.
Photo – Carolyn Harding

Below from left TEC surrounded by agricultural land; monitoring transect in fenced private property; monitoring transect in unfenced private property.

Photos – Carolyn Harding

The opportunity to monitor the effectiveness of on-ground conservation works, to survey both within and outside conservation reserves, and to compare the impacts of different management regimes and threats indicate that the Billeranga System would be a good reference site. A monitoring protocol has therefore been drafted for the area. As part of the RCM project, reference sites with monitoring protocols such as this one will be posted on an internet 'resource centre' to assist groups such as DEC and natural resource management groups who undertake monitoring of species and ecological communities.

For more information about the RCM project contact the coordinator, Sophie Moller, on (08) 9334 0390 or email sophie.moller@dec.wa.gov.au.

Norseman pea (*Daviesia microcarpa*) – recruitment trial

by Ben Lullfitz

The Norseman pea (*Daviesia microcarpa*) is a critically endangered shrub known from two disjunct populations in Norseman and Southern Cross. In November 2007 a wildfire destroyed all of the plants in the Norseman populations with no reports of any recruitment following the fire. In May 2008 the Southern Cross population consisted of just seven live plants and 17 dead plants.

In 2007 staff from DEC's Yilgarn District prepared a proposal to conduct an induced recruitment trial to test the effects of fire, physical disturbance and smoke water on the germination of Norseman pea seed. The trial was implemented in May 2008 and consisted of two burn plots, two physical disturbance plots, two smoke water plots and two control plots. The whole trial site was then fenced off using rabbit-proof netting to protect any seedlings from grazing herbivores.

Monitoring of the trial site in August and September 2008 located at least 90 seedlings, all of which had germinated within both of the fire plots. So far the results of this trial suggest that fire is the most effective method of the three variables tested to stimulate the germination of Norseman pea seed. However, a major limitation to the validity of this trial is the unknown number of seed stored in the soil within each plot prior to the disturbance.

Another limitation to this trial is the validity of the physical disturbance tests. At the Norseman roadside populations Norseman pea seedlings have germinated following road works as a result of grading and ripping. Grading and ripping of soil would apply sufficient force to breach the hard seed coat of Norseman pea. It is unclear whether using hand-tools (such as in this trial) would apply enough force to breach the seed coat in order to stimulate germination. More trials on physical disturbance in areas where there is known soil-stored seed would be worthwhile in the future.

Above Norseman Pea (*Daviesia microcarpa*) seedling. Photo – Hayden Cannon

Fire intensity is also an interesting factor. The fire intensity within burn plot No. 1 was relatively mild while in burn plot No. 2 it was more intense. Some 72 seedlings germinated in the intense fire plot while 18 germinated in the mild fire plot. The results indicate that both mild and relatively intense fire stimulates germination of Norseman pea seed. However, the fact that more seedlings germinated in the intense fire plot as compared to the mild fire plot does not indicate that an intense fire is more effective than a mild fire as there was an unknown number of soil-stored seed prior to conducting the trial. Any future trials should test the result of using various fire intensities using a known number of soil-stored seed.

This trial has resulted in increased scientific knowledge about the species and its response to disturbance, which will aid future management of the species.

For more information contact Ben Lullfitz on (08) 9041 0488 or email ben.lullfitz@dec.wa.gov.au.

Left Yilgarn District Operations Officer, Bok Ho, watches on as fire plot No. 2 is burnt. Photo – Ankur Konnur

Field day for managers of clay-based wetlands compiled

by Urban Nature

In August 2008 DEC's Urban Nature Program hosted a field trip to the clay-based wetlands of the Swan Coastal Plain. The seasonal clay-based wetlands are some of the most threatened communities in south-west Australia and over the years many people have been involved in their conservation and management.

The trip began at Ellen Brook Nature Reserve in the north and travelled south to Meelon Nature Reserve, east of Pinjarra. The Brixton Street Wetlands and Duckpond Road Nature Reserve were also visited on the way.

DEC is the primary land manager of Ellen Brook Nature Reserve. Swan Coastal District staff discussed with participants the challenge of managing weeds and fire, which are major threats to the wetlands, while working to protect the habitat of the critically endangered western swamp tortoise (*Pseudemydura umbrina*). Ellen Brook is the only remaining natural population of the tortoise. A vermin-proof fence around habitat in Ellen Brook and Twin Swamps aims to protect an estimated 40 to 50 breeding pairs from foxes, cats and dogs. The City of Swan, Perth Zoo and Friends of the Western Swamp Tortoise are some of the partners working to conserve and manage the flora and fauna in these two reserves.

The next stop was Brixton Street Wetlands, Kenwick, a particularly significant clay-based wetland where the plant communities are largely intact and in excellent condition. DEC manages the reserve in partnership with the Friends of Brixton Street Wetlands with support from the City of Gosnells.

Much of the work at Brixton Street has focused on developing techniques for managing weeds among incredibly diverse plant communities and in an area that is inundated through winter-spring. In recent years the friends group and DEC have been working on the restoration of the degraded edges of the herb-rich shrublands. This project has been funded by EnviroFund and WWF-Australia's Threatened Species Network Community Grant Program. A major remaining threat to these wetlands is changing hydrology due to changing land use around the reserve.

Above Field day participants at Duckpond Reserve. Photo – Grazyna Paczkowska

Left Regina Drummond from Friends of Brixton Street Wetlands discusses the challenges of managing this clay-based wetland with field day participants. Photo – Jill Pryde

Located 100 kilometres south of Perth, Meelon Nature Reserve contains a tiny remnant clay-based wetland with a wandoo overstorey. For a number of years development of a private block in the middle has been a major threat to the integrity of the wetland. Fortunately DEC has recently purchased the block and brought it into the nature reserve (see story in this issue 'Important land acquisitions'). With weed invasion also a serious threat, Meelon has been the focus of a three-year study investigating possible management techniques for watsonia (*Watsonia meriana* var *bulbillifera*), including restoration of invaded plant communities. The outcomes are promising for management of watsonia invasions and restoration of these threatened plant communities across the region.

The last stop for the day was Duckpond Nature Reserve, a 3.5-hectare area that forms part of the Mundijong Road reserve. The low-lying areas of the reserve support dense shrublands on claypans that are inundated for long periods. The site has benefited from a long-term involvement in its management by community member, Ted Love. The reserve was fenced in 2007 to prevent rubbish dumping and access by off-road vehicles. Future recovery actions planned for the site include weed control, seed collection and restoration of the degraded edges through supplementary planting.

For more information contact Urban Nature on (08) 9423 2900.

Databases under development for monitoring significant species and communities

by Amrit Kendrick

Enhancing the way data are shared, stored and collected for significant native species and ecological communities is the goal of the Significant Species and Ecological Communities Resource Condition Monitoring (RCM) project. Two database specialists are working with various people in and outside of the department to improve the way monitoring information is entered into the corporate databases and the ways that these records can be queried.

One of the databases under modification is the Declared Endangered Flora Database (DEFL), which will be renamed the Threatened and Priority Flora Database (TPFL) as it also holds priority flora records. This database comprises records submitted on Rare Flora Report Forms (and from other sources) for both threatened and priority flora. Various people, including consultants, botanists, and regional DEC nature conservation officers, submit these forms to provide records on populations of the State's rarest plant species.

Improvements to the database will enable report forms to be submitted electronically from regional offices. These data will be checked by a central DEC officer against existing records and then accepted into the database. This will increase efficiency, and the currency of records in the database.

In the process of modifying the databases, RCM project team members have also been revising the Rare Flora Report Form, the Fauna Report Form and the Threatened and Priority Ecological Community Occurrence Report Form. It is intended that these will be available both in paper and electronic format before the project is completed in June 2009.

For more information about the RCM project contact the coordinator, Sophie Moller, on (08) 9334 0390 or email sophie.moller@dec.wa.gov.au.

Threatened pest birds

by Tamra Chapman

Did you know that some of Western Australia's threatened fauna species are also categorised as pests of agriculture? For example, Baudin's cockatoo (*Calyptorhynchus baudinii*) (also known as the long-billed white-tailed black cockatoo) and Muir's corella (*Cacatua pastinator pastinator*) are both listed as endangered species, but they are also listed as declared pests of agriculture under the provisions of the *Agriculture and Related Resources Protection Act 1976*. Baudin's cockatoos damage apples in the Perth Hills and south-west and Muir's corellas damage newly sown grain crops, horticultural crops, seedling trees in plantations, home gardens, television aerials and power lines around Manjimup. One of the reasons these species have become threatened is due to killing (shooting and poisoning) to protect commercial crops since the early 1900s. However, killing is no longer permitted, and anyone caught killing these birds may face heavy fines and confiscation of firearms.

The recovery teams for these species have put a lot of effort into researching non-lethal crop protection methods for those land managers whose crops are damaged by threatened birds. Studies have shown that scaring techniques can be cost-effective, depending on the value and type of crop. They are likely to be a highly effective non-lethal alternative to shooting, provided they are employed as part of a well planned, executed and evaluated damage control program. A range of advisory materials on how land managers can protect crops using non-lethal damage control methods are available for download on DEC's website.

Above Fruit damage. Photo – Rick Dawson

Left Muir's corella (*Cacatua pastinator pastinator*) oat damage.
Photo – Mark Barley

For information on black cockatoos in orchards, visit www.dec.wa.gov.au/animals/living-with-wildlife/bird-control-in-orchids.html and for information about how to help conserve Muir's corella and reduce the damage it causes on farms, visit www.dec.wa.gov.au/animals/living-with-wildlife/living-with-muir-s-corella.html.

Monitoring broad-scale change in threatened ecological communities

by Val English

A series of projects including 'Bush Forever' and a major report produced in 1994 entitled *A floristic survey of the southern Swan Coastal Plain* has resulted in the installation of more than 1,500 vegetation quadrats across the southern Swan Coastal Plain. These quadrats were mainly established between 13 and 18 years ago, and provide a record of all plant species present, vegetation condition, and the structure of vegetation at a particular site, at a particular point in time.

Members of the Species and Communities Branch who specialise in threatened ecological communities (TECs) are working with other groups such as DEC's Science Division to re-survey a series of these quadrats located in TECs. Provided the steel pegs that mark the corners of the quadrats can be relocated, the changes in plant species and major changes in the condition and structure of vegetation can be detected in the TECs at these sites.

One of the vegetation changes that has been noted is a complete change in structure of the vegetation in quadrats in a vulnerable TEC called '*Callitris preissii* – (or *Melaleuca lanceolata*) forests and woodlands' from a woodland with dense herb understorey, to a forest with very sparse cover of herbs. In this particular case, the changes are likely to be associated with years since the last hot fire. Hot fire causes death of adult trees and germination of seed of these tree species, and enables increased light penetration and proliferation of a dense herb understorey.

This sort of broad-scale monitoring can be used to help define land management practices that are required to maintain particular types of vegetation. In the example of the *Callitris preissii* community, the quadrat data will provide information to help determine an appropriate frequency and intensity of fire that will maintain populations of trees that are fire-sensitive and that can only reproduce from seed.

It is planned that the re-survey program will be continued for TECs that are subject to particular management regimes or threats. The resultant data will be used to help ensure that a suite of TECs can be managed in a manner that ensures their long-term future.

For more information contact Val English on (08) 9334 0409 or email val.english@dec.wa.gov.au.

Below from left Woodland Rottnest Island pine (*Callitris preissii*) community quadrat re-survey on Garden Island; Garden Island Rottnest Island pine community quadrat re-score. Photos – Val English; quadrat re-survey at Bambun reserve.
Photo – Jill Pryde

Wheatbelt threatened flora recovery – *Back from the Edge* project update

by Joel Collins

During the past three years, threatened flora conservation in DEC's Avon-Mortlock District has been funded through the Avon Catchment Council project '*Back from the Edge*: Saving Native Species and Communities Most at Risk'. In conjunction with WWF-Australia, the project aims to develop a strategic approach to threatened species and community management and to carry out urgent recovery actions.

During the last year, significant on-ground activities and community engagement has resulted in positive outcomes for species recovery in the district. These activities include:

- Newly located populations of rare flora. The list includes approximately 180 plants of Wongan melaleuca (*Melaleuca sciotostyla*) (endangered) over three populations in Dowerin and Tammin. Two populations of spike poison (*Gastrolobium glaucum*) (critically endangered) have been located east of Wongan Hills with approximately 1,000 individuals in total. Another 56 plants of *Stylidium coroniforme* subsp. *coroniforme* (endangered) have been located on private property north-west of Wongan Hills. Two populations of *Acacia vassalii* (critically endangered) have been surveyed east of Wongan Hills.
- Surveys and monitoring of the priority 1 species *Stylidium coroniforme* subsp. *amblyphyllum* in Quairading on private property.
- Fencing agreements and materials supplied for three private properties in Goomalling and Dowerin to fence off three remnants containing rare and priority flora. The remnants also contain the priority ecological community 'acorn banksia (*Banksia prionotes*) and sandplain woody pear (*Xylomelum angustifolium*) community on transported yellow sand'.
- The bi-annual meeting for the Avon-Mortlock District Threatened Flora and Communities Recovery Team, attended by 22 participants representing DEC, WWF, Water Corporation, WestNet Rail, local community groups, volunteers and local landholders.
- New translocation plantings for *Grevillea dryandroides* subsp. *dryandroides* and *Acacia subflexuosa* subsp. *capillata* and a re-stocking of Wongan cactus (*Daviesia euphorbioides*) translocation site. All three species are listed as critically endangered. These sites have been fenced and will be reticulated during the dry months.
- Flora collections for the regional herbariums in Wongan Hills (in conjunction with the Wongan-Ballidu Bushcare Group) and the Avon-Mortlock District herbarium. To date 572 collections are housed at the DEC's Northam District office and 156 collections at Wongan Hills.

This activity is fully or partially funded through the Avon Catchment Council – supported by the Australian Government and the Government of Western Australia.

For more information contact Joel Collins on (08) 9622 8940 or email joel.collins@dec.wa.gov.au.

Above Spike poison (*Gastrolobium glaucum*) flowering in Wongan Hills.

Below Wongan melaleuca (*Melaleuca sciotostyla*) (foreground) flowering at base of laterite breakaway in Dowerin.

Photos – Joel Collins

Commonwealth TSSC meets in Perth

by Melanie Harding

The Commonwealth Threatened Species Scientific Committee (TSSC) held its most recent meeting in Perth in the first week of September 2008. The Commonwealth TSSC is responsible for recommending amendments and updates to lists for threatened species and threatened ecological communities under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). It is also involved in listing key threatening processes and making or adopting recovery plans and threat-abatement plans.

During the meeting, the Commonwealth TSSC considered nine nominations for Western Australian species (four flora and five fauna). The nominations were submitted as part of the species alignment project that DEC is conducting with funding assistance from the Commonwealth Government to align the State and Federal threatened species lists (see *WATSNU* January 2007, 'Aligning the Western Australian and national species lists').

While in Perth, the committee and Commonwealth support staff went on a field trip to see some of the threatened species and communities in the area that are listed under the EPBC Act. The trip was organised by the Species and Communities Branch with help from Swan Coastal District staff.

The first site visited was Ellen Brook Nature Reserve, which provides habitat for the critically endangered western swamp tortoise (*Pseudemydura umbrina*). District staff showed the group how Federal Government funding had gone towards implementing recovery actions such as vermin-proof fencing, revegetation of degraded areas and translocation of tortoises from Perth Zoo's captive breeding program.

Above Visiting the mound springs TEC at Neaves Road.

Left Swan Coastal District officer Jacqui Maguire explaining management of Ellen Brook Nature Reserve to Commonwealth TSSC visitors.

Below Tour of Crystal Cave at Yanchep National Park.

Photos – Melanie Harding

The group headed north to Muchea Nature Reserve to see populations of declared rare flora, including *Darwinia foetida* which was one of four that was assessed at the meeting for addition to the EPBC Act list of threatened flora. After Muchea, the next stop was an occurrence of the 'organic mound springs of the Swan Coastal Plain' threatened ecological community (TEC). District staff informed the group about how DEC is managing this area and the importance of recovery plans in identifying and prioritising actions for the conservation of the TEC.

The trip continued to Yanchep National Park where the group undertook a tour of Crystal Cave to see another TEC, the 'aquatic root mat community of caves of the Swan Coastal Plain (Yanchep)'. The persistence of this invertebrate community, which grows in association with the subterranean roots of tuart trees (*Eucalyptus gomphocephala*), is dependant on the presence of permanent water in the caves. Recovery actions undertaken to date include the installation of a bore and filtration unit to re-inject water into the caves. Yanchep National Park was also chosen due to its large areas of black-cockatoo habitat that the committee was keen to see. Although no black-cockatoos were actually seen at Yanchep, some were viewed earlier in the day along the way to one of the sites.

The trip was very successful in informing the committee of the many challenges DEC faces in regards to threatened species and ecological community conservation, and the importance of aligning the State and Federal lists to ensure protection and recognition at a national level.

For more information contact Melanie Harding on (08) 9334 0472 or email melanie.harding@dec.wa.gov.au.

Lake Bryde recovery catchment threatened ecological community monitoring and research project

by Natalie Nicholson

Lake Bryde and East Lake Bryde are two fresh water lakes located in the Western Australian Wheatbelt. The two lakes are highly ecologically significant at an international level, as they represent the only known occurrences of this lakebed community dominated by shrubs. All other known examples of the community are now extinct due to hydrological changes, including salinisation and waterlogging.

The major components of the threatened ecological community (TEC) are *Muehlenbeckia horrida* subsp. *abdita* listed as declared rare flora (DRF) and *Tecticornia verrucosa*. The taxon *Muehlenbeckia horrida* subsp. *abdita* is known only from this ecological community. The Lake Bryde Recovery Catchment team has been monitoring the population dynamics and distribution since 2002. The community has continued to decline in vigour and distribution since the start of monitoring, with salinity levels in the lake reaching critical levels. There are concerns that, without further work, this community and similar wetland TECs may be lost in the near future.

Several groups are involved in implementing the recovery actions identified in the flora interim recovery plan. These groups include the Lake Bryde Recovery Catchment, Botanic Gardens and Parks Authority, the Threatened Flora Seed Centre, Avon Catchment Council's *Back from the Edge,* the Resource Condition Monitoring project and DEC's Species and Communities Branch.

Left East Lake Bryde *Muehlenbeckia horrida* subsp. *abdita*. Photo – Mick Davis

Muehlenbeckia cuttings were collected from the lake community in September to be grown at the Kings Park nursery and plants germinated from seed have been stored with the Threatened Flora Seed Centre.

The ecologist with the Avon Catchment Council's *Back from the Edge* project is investigating areas as potential translocations sites for the future. The ecologist will also be involved in writing the new recovery plan for the TEC. The Resource Condition Monitoring project has developed a protocol to improve the long-term monitoring of the TEC on Lake Bryde and East Lake Bryde. On-ground works to set up monitoring bores and quadrats began in October 2008, and the initial survey of new monitoring sites began in November 2008.

With assistance from a project officer from the Species and Communities Branch and a DEC hydrogeologist, a proposal has been developed and submitted to universities for a research student to investigate biological and ecological information about the key major components of the community. Research will focus on biological investigations, ecological water requirements and genetic diversity.

It is hoped with the involvement of monitoring and research teams the recovery actions implemented will improve the quality or security of the habitat of *Muehlenbeckia horrida* subsp. *abdita* populations and will also improve the status of the TEC in which the populations are located.

There are concerns that without further investigation into the biology and ecology of this TEC, loss of this community and similar proposed wetland TECs may occur in the near future.

For more information contact Natalie Nicholson; Lake Bryde Natural Diversity Recovery Catchment, 0427 086 660 or Wendy Chow, Species and Communities Branch (08) 9423 2372.

From right clockwise Lake Bryde after January 2006 flood event, October 2006; waterbirds on Lake Bryde; Lake Bryde birds in flight; Wendy Chow and Monica Batista among the Lake Bryde threatened ecological community. Photos – Natalie Nicholson; Lake Bryde *Muehlenbeckia horrida* subsp. *abdita* cutting collection; Photo – Mick Davis

Philotheca falcata – re-discovered after three quarters of a century!

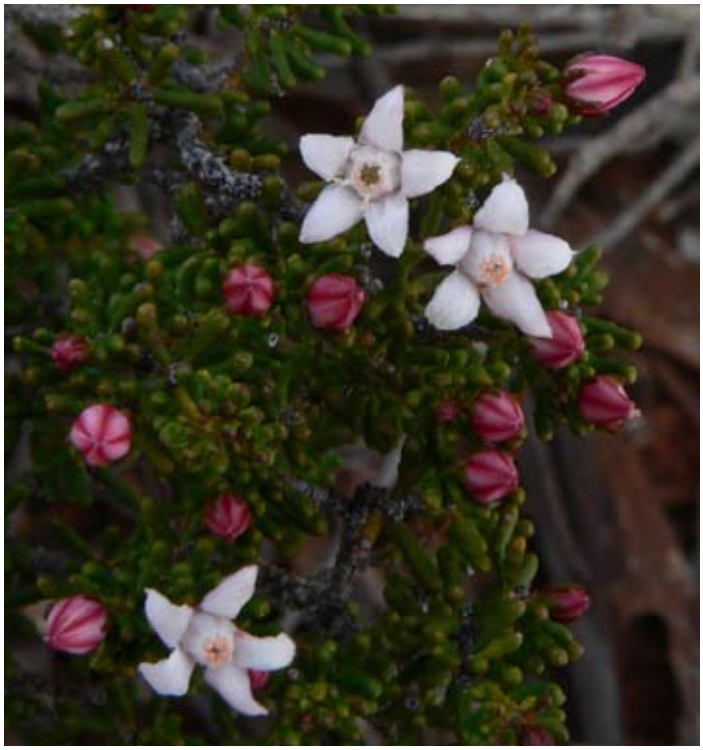
by Bridgitte Long

The first specimen of this small shrub was collected by W.E. Blackall in 1931 in an area thought to be near Yellowdine, in the central Wheatbelt region. This population has never been re-located, as the collection details were vague. It is also thought that the population may have been destroyed by land clearing for agriculture and mining. No other collections of the species were known, and it was declared 'presumed extinct' in 1981. Much survey effort was spent seeking to re-locate the species over the years, however it was not until November 2007 that consultant botanists from Ecologia Environment located two new populations of *Philotheca falcata* in Holleton, 90 kilometres from where the original collection was apparently made near Yellowdine. The new populations were encountered during surveys for proposed exploration drilling in the area. Botanists did not immediately recognise the species but were aware that this could be a potentially significant species. The specimen was verified by Paul Wilson, who formally described the species, and in August 2008 the species was moved to Schedule 1 as extant declared rare flora under the *Wildlife Conservation Act 1950*. The species is currently ranked as endangered.

P. falcata grows up to 25 centimetres tall and has many branches. The branchlets are covered with glandular warty projections and small hairs. In October, solitary white flowers form at the ends of the branches on small stalks. Each of the five petals is approximately seven millimetres long, and the five triangular, fleshy sepals are three millimetres long. The species is found in mixed open eucalypt woodland over moderately dense myrtaceous shrubland.

While the 2007 survey located a total of 95 plants at the two locations, it was believed that more populations of this species existed in the immediate area. In September 2008, Yilgarn District flora conservation officers re-surveyed these locations and extended the populations to an estimated 1,500 plants. Now that there is more information about the plant and its habitat, it is hoped that more surveys in the surrounding area and other similar habitat will result in many more populations being located.

For more information contact Bridgitte Long on (08) 9334 0123 or email bridgitte.long@dec.wa.gov.au.



Above and left *Philotheca falcata* flowers and buds.

Below *Philotheca falcata* plant from above.

Photos – Ben Lullfitz

Important land acquisitions

by Val English

Two new areas with significant conservation values have been set aside for conservation.

Main Roads Western Australia land on Armadale Road in Forrestdale that contains a nine-hectare parcel of wetlands is to become a conservation area. The site is part of a group of offsets for land used in the extension of Tonkin Highway. The Forrestdale site occurs in a highly cleared part of the Swan Coastal Plain and contains conservation category wetlands. Flora surveys indicate that the wetlands include a clay pan threatened ecological community. The addition of this land to the conservation estate will be another major step towards improving the future of these highly threatened claypans.

A small but highly significant area of private land surrounded by Meelon Nature Reserve near Dwellingup has just been purchased for addition to the nature reserve. The land unit on which the site occurs is the Guildford clays of the Pinjarra Plain. This is a highly cleared unit, and any remnants located on it therefore have high conservation value. The whole nature reserve and private land it surrounds is mapped as the vulnerable threatened ecological community 'Herb rich shrublands in clay pans', although some areas have been degraded through watsonia invasion. Sites such as this claypan with overstorey of wandoo on the Swan Coastal Plain are extremely rare.

There are two declared rare flora *Diuris micrantha* and *Centrolepis caespitosa*, and another three priority flora recorded for Meelon Nature Reserve. The populations may extend into the private land as highly successful watsonia control trials are continued by DEC's Urban Nature Program (see story in this issue 'Field day for managers of clay-based wetlands').

For more information contact Val English on (08) 9334 0409 or email val.english@dec.wa.gov.au.

Below Vegetation survey at Forrestdale wetlands land acquisition area.
Photo – Jill Pryde

Above Meeting regarding recovery actions.
Photo – Val English

Setting priorities for recovery work

by Val English

On 3 September 2008, staff from the Recovery Planning and Implementation Section of the Commonwealth Department of the Environment, Water, Heritage and the Arts met with a number of Western Australian groups involved in recovery of threatened species and communities. Representatives at the meeting included staff from DEC, 'Caring for Our Country' facilitators, regional biodiversity coordinators from catchment councils, and WWF-Australia.

The group discussed the highest priority recovery actions that met a series of additional criteria. These criteria included whether the project is included as a high priority action in a recovery plan and/or a regional management plan, whether the action is likely to be funded through other sources, and if the proposal is good value for money.

A list of issues that represent some of the greatest threats to threatened species and communities was used in the prioritisation process. It was noted that hydrological changes (e.g. salinisation, groundwater drawdown and pollution of groundwater), grazing by feral or introduced animals, and inappropriate fire regimes represent some of the greatest threats to threatened flora and ecological communities.

The general list of high priority projects that the group discussed included the development of a recovery actions database, development of a pilot integrated management plan for all threatened species and communities in a specified region, mapping of habitat critical to survival for high priority threatened species and communities, investigations of hydrological requirements, priority translocations, experimental weed control, and evaluation of the effectiveness of past recovery actions. The analysis of data on fire regimes to help design appropriate inter-fire intervals for a series of threatened species and communities was also discussed.

It is hoped that a series of projects identified during the meeting will greatly assist in the recovery of threatened species, and communities will be considered for funding in the near future.

For more information contact Val English on (08) 9334 0409 or email val.english@dec.wa.gov.au.

Recovery plans approved

One fauna recovery plan, 33 flora interim recovery plans, and one interim recovery plan for a threatened ecological community have recently been endorsed by DEC's Director of Nature Conservation.

All plans have been written with funding assistance from the Commonwealth Department of the Environment, Water, Heritage and the Arts' Natural Heritage Trust Program. All plans will be sent to the Commonwealth Government for consideration of adoption under the *Environment Protection Biodiversity Conservation Act 1999*.

Some plans have been updated to include new information.

No/Series No.	Title	Prepared by	DEC Region involved
WMP 41	Dunsborough burrowing crayfish (*Engaewa reducta*), Margaret River burrowing crayfish (*Engaewa pseudoreducta*) and Walpole burrowing crayfish (*Engaewa walpolea*) Recovery Plan 2007–2016	Kellie Mantle for the Burrowing Crayfish Recovery Team	South West, Warren
245	Orange-flowered wattle (*Acacia auratiflora*)	Craig Douglas, Bethea Loudon, Kym Pryor	Wheatbelt
246	Spiral fruited wattle (*Acacia cochlocarpa* subsp. *cochlocarpa*)	Kathy Himbeck	Midwest
247	Wundowlin wattle (*Acacia sciophanes*)	Craig Douglas, Joel Collins, David Jolliffe, Wendy Johnson, Andrew Brown	Wheatbelt
248	Short-petalled beyeria (*Beyeria lepidopetala*)	Alanna Chant, Andrew Brown	Midwest
249	Dwarf spider orchid (*Caladenia bryceana* subsp. *bryceana*)	Renee Hartley, Sarah Barrett	South Coast, South West
250	Majestic spider orchid (*Caladenia winfieldii*)	Ian Wilson, Andrew Brown, Kym Pryor	Warren
251	Wavy-leaved smokebush (*Conospermum undulatum*)	Craig Douglas, Nicole Willers, Vanessa Clarke, David Mitchell	Swan
252	Rare grevillea (*Grevillea rara*)	Rachel Meissner, Tom Kenneally, Val English, Kym Pryor	South West
253	Silky frankenia (*Frankenia conferta*)	Robyn Luu, Andrew Brown	Wheatbelt, Midwest
254	Milky emu bush (*Eremophila lactea*)	Emma Adams, Andrew Brown	South Coast
255	Swamp honeypot (*Dryandra nivea* subsp. *uliginosa*)	Robyn Luu, Andrew Brown	South West
256	Glossy-leafed hammer orchid (*Drakaea elastica*)	Gillian Stack, Andrew Brown	Midwest, South West, Swan
257	Scarp darwinia (*Darwinia apiculata*)	Simon Cherriman, Vanessa Clarke, Nicole Willers, David Mitchell	Swan
258	Hairy mat conostylis (*Conostylis seorsiflora* subsp. *trichophylla*)	Craig Douglas, Bethea Loudon, Marie Strelein, Kym Pryor	Wheatbelt
259	Kulin conostylis (*Conostylis rogeri*)	Craig Douglas, Bethea Loudon, Kym Pryor	Wheatbelt
260	Keighery's macarthuria (*Macarthuria keigheyi*)	Simon Cherriman, Nicole Willers, David Mitchell	Swan, Midwest
261	Chinocup wattle (*Acacia leptalea*)	Craig Douglas, Bethea Loudon	Wheatbelt
262	Broad-fruited haloragis (*Haloragis platycarpa*)	Craig Douglas, Wendy Johnson, David Joliffe	Midwest
263	Net-veined gyrostemon (*Gyrostemon reticulatus*)	Alanna Chant, Val English, Gillian Stack	Midwest
264	Lake Varley grevillea (*Grevillea involucrata*)	Craig Douglas, Bethea Loudon, Marie Strelein	Wheatbelt
265	Spike poison (*Gastrolobium glaucum*)	Craig Douglas, Wendy Johnson, David Joliffe	Wheatbelt
266	Resinous eremophila (*Eremophila resinosa*)	Craig Douglas, Wendy Johnson, David Joliffe	Wheatbelt
267	Cunderdin daviesia (*Daviesia cunderdin*)	Craig Douglas, Wendy Johnson, David Joliffe	Midwest
268	Mogumber and Narrogin bell (*Darwinia carnea*)	Amanda Fairs, Craig Douglas, Marie Strelein, Benson Todd, Rebecca Hayes	Wheatbelt, Swan
269	Western cyphanthera (*Cyphanthera odgersii* subsp. *occidentalis*)	Craig Douglas, Wendy Johnson, David Joliffe	Wheatbelt
270	Prostrate flame flower (*Chorizema humile*)	Kathy Himbeck	Midwest
271	Spiny bentleya (*Bentleya spinescens*)	Craig Douglas, Bethea Loudon	Wheatbelt
272	Grand spider orchid (*Caladenia huegelii*)	Gillian Stack, Andrew Brown, Nigel Swarts, David Mitchell	Swan, South West
273	Sargents snakebush (*Hemiandra rutilans*)	Mia Morley, Andrew Brown, Diana Papenfus and Felicity Bunny	Wheatbelt
274	Matchstick banksia (*Banksia cuneata*)	Craig Douglas, Marie Strelein, Greg Durell, Kym Pryor	Wheatbelt
275	Thin-margined leucopogon (*Leucopogon marginatus*)	Alanna Chant, Gillian Stack	Midwest
282	Mason's darwinia (*Darwinia masonii*)	Martine Scheltema, Cassyanna Gray (Coffey Environments)	Midwest
283	*Lepidosperma gibsonii*	Martine Scheltema, Cassyanna Gray (Coffey Environments)	Midwest
281	Aquatic root mat communities numbers 1–4 of caves of the Leeuwin-Naturaliste Ridge 2008–2013	John Blyth and Val English	South West

Recovery plans adopted under the EPBC Act

The following recovery plans for Western Australian threatened flora and fauna have recently been adopted under the Commonwealth Government's *Environment Protection Biodiversity Conservation Act 1999*.

Flora

Wittwer's mountain bell (*Darwinia wittwerorum*)
Manypeaks rush (*Chordifex abortivus*)
Yellow mountain bell (*Darwinia collina*)
Kundip wattle (*Acacia rhamphophylla*)
Long-sepalled daviesia (*Daviesia megacalyx*)
Feather-leaved banksia (*Banksia brownii*)
Grass conostylis (*Conostylis misera*)
Dunsborough spider orchid (*Caladenia viridescens*)
Naturaliste Nancy (*Wurmbea calcicola*)
Slender andersonia (*Andersonia gracilis*)
Sprawling spiky adenanthos (*Adenanthos pungens* subsp. *effusus*)
Small two-coloured kangaroo paw (*Anigozanthos bicolor* subsp. *minor*)
Wagin banksia (*Banksia oligantha*)
Green flowered emubush (*Eremophila virens*)
Badgingarra box (*Eucalyptus absita*)
Hairy phalanx grevillea (*Grevillea dryandroides* subsp. *hirsuta*)
Corrigin grevillea (*Grevillea scapigera*)
Bussell's spider-orchid (*Caladenia busselliana*)
Scott River darwinia (*Darwinia* sp. Scott River)
Stirling Range dryandra (*Dryandra montana*)
Fairall's lambertia (*Lambertia fairallii*)
Tufted plumed featherflower (*Verticordia plumosa* var. *ananeotes*)

Fauna

Muir's corella (*Cacatua pastinator pastinator*)

Above Muir's corella. Photo – Tony Kirby

Left Lake Bryde threatened ecological community dominant species *Muehlenbeckia horrida* subsp. *abdita* flowering in spring.

Photo – Natalie Nicholson

From far left Norseman pea (*Daviesia microcarpa*) seedling. Photo – Hayden Cannon; monitoring transect in fenced private property. Photo – Carolyn Harding; a mature western spiny-tailed skink (*Egernia stokesii badia*) released in the emergency translocation. Photo – Sonja Creese; *Philotheca falcata* flowers and buds. Photo – Ben Lullfitz

Department of
Environment and Conservation
Our environment, our future

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