

Biodiversity and the Gngangara groundwater system

Issue 80

Summer 2011–2012

*Time of Birak and Bunuru
in the Nyoongar calendar.*

Urban Nature update

Page 2

Weedwatch:

coastal tea tree Page 3

Econote:

Megamouth bee Page 4

2011 Sun-moth

results Page 5

What's on

Page 6

Learning opportunities

Page 7

Funding opportunities

Page 7

Regional reports

Page 8

BPB Regional

Framework Page 9

Woodland Reserve

Page 10

Perth–Peel strategic

assessment Page 10

Group profile:

Wireless Hill Page 11

Resources

Page 12

www.dec.wa.gov.au

By Barbara Wilson and Kristen Bleby

The Gngangara groundwater system supplies more than 60 per cent of Perth's water requirements but is under threat from declining rainfall. The *Gngangara Sustainability Strategy (GSS)* was developed to look at ways to achieve sustainable water use and protection of the environment. The strategy reveals a wealth of biological research on banksia woodlands and future land, environment and water management options.

The Gngangara groundwater system consists of several aquifers and covers an area of 2,200 km² on the Swan Coastal Plain. It underlies urban areas as well as extensive areas of native banksia woodlands, threatened species and ecological communities, as well as groundwater-dependent species and ecosystems.

Decline in groundwater levels at a local level are occurring from factors such as increased groundwater abstraction, and interruption of rainfall and groundwater use by pine plantations. Predicted rainfall decline, together with population and economic growth, will further increase demands on the groundwater system.

The state government established an intergovernmental taskforce in 2007 to develop the GSS. Published in 2009, major recommendations of the draft GSS include reducing public and private abstraction by 20 per cent, development of desalination plants and increasing recharge via treated wastewater and storm water.



Loch McNess at Yanchep National Park is historically a permanent lake, but recent declining water levels has resulted in disconnection from the Gngangara aquifer (March 2011). Photo – Barbara Wilson

GSS biodiversity research

Historically, the Gngangara groundwater system has had high vertebrate species richness. The Department of Environment and Conservation (DEC) conducted surveys in 2007–2008 to investigate the current distribution of fauna species across the Gngangara groundwater system, and to assess the potential impacts of predicted rainfall and groundwater declines on fauna. These surveys concluded that the number of fauna species found in the area is declining. In addition, there are several groundwater- and rainfall-dependent species that are predicted to be susceptible to changes in rainfall and groundwater levels. Dependent fauna include most frog species, rakali (or water rat, *Hydromys chrysogaster*), western swamp tortoise (*Pseudemydura umbrina*), quenda or southern brown bandicoot (*Isodon obesulus fusciventer*) and honey possum (*Tarsipes rostratus*).

There is recent evidence that some lakes have undergone a sudden

transition since 2006 and are now disconnected from the aquifer. This has resulted in the lowest recorded peak water levels and the drying out of 80 per cent of lakes in summer. This would most certainly have a negative effect on the health of wetland vegetation and its related fauna species. Research is being conducted by Edith Cowan University into reasons why lakes such as Loch McNess have changed so drastically in recent years.

Key recommendations for improving the resilience of biodiversity include supplementation of wetlands and lakes, establishing strategic ecological linkages and refugia, development of ecologically appropriate fire regimes and control of predators. An adaptive management approach has been recommended.

Field study reports and reviews conducted for the GSS between 2007 and 2010 are available on the GSS website at www.water.wa.gov.au/sites/gss/reports.html.

Urban Nature UPDATE By Julia Cullity

What a pleasant surprise to have winter rains which have led to a strong spring flowering season and recovery of some bushland areas suffering from last year's drought. The Urban Nature team has spent most of spring in the field working towards the restoration of significant bushland sites.

We would like to thank Ellen O'Brien for her internship with Urban Nature. Ellen worked on updating our conservation group database and developing an interactive map for the Urban Nature webpage. Thanks to all those groups who've got in touch with us; however, we are still hoping to contact many groups. Please phone 9423 2925 or email julia.cullity@dec.wa.gov.au if you have recently changed your contact details. We will continue to work on this over summer. Best wishes for the New Year.

Adaptive management in Paganoni Swamp By Kate Brown



Recording the flora in a kangaroo exclusion plot in an unburnt site at Paganoni Swamp.
Photo – Kate Brown

The Friends of Paganoni successfully applied for an Environmental Community Grant to support a project on management of ecological burning in the remnant tuart woodland of Paganoni Swamp. During the past six months the Urban Nature team has worked in collaboration with Murdoch University, The University of Western Australia, DEC Regional Parks Branch and DEC Fire Management Services on developing an adaptive management approach to ecological burning. We finally completed our spring sampling in burnt and unburnt areas with the help of the Wildflower Society of WA and the Friends of Paganoni Swamp in early November.

The data will provide baseline information to help guide management in post burn areas.

Some early observations:

- seedlings of weedy pigface (*Carpobrotus edulis*) occurred in 70 per cent of the burnt plots. No seedlings were recorded in unburnt plots
- ink weed (*Phytolacca octandra*) seedlings were only recorded in burnt plots and were observed across the burnt site
- fencing appears to lead to higher cover of annual grass weeds, particularly in burnt disturbed sites
- fencing appears to lead to higher cover of native grasses, particularly in relatively undisturbed burnt sites.

Quenda survey update

Thank you for your response to our request for quenda (southern brown bandicoot, *Isoodon obesulus fusciventer*) sightings. We have received more than 30 records. While the Swan Region quenda survey starts in spring 2012, we are also interested in receiving sightings now. We are currently looking at where quenda occurred in the past. We will compare past records with the new sightings to identify 'unoccupied habitat' from which quenda have disappeared.

If you know the whereabouts of a quenda, please send the date and location of the sighting (GPS coordinates or map reference) and, if possible, a photo to DEC Regional Ecologist Geoff Barrett at geoff.barrett@dec.wa.gov.au or phone 9423 2907. Alternatively, you may wish to complete one of the DEC fauna report forms available at www.dec.wa.gov.au/content/view/5388/2240/.

Contacts

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Current and archived issues of *Bushland News* are available at www.dec.wa.gov.au/programs/urban-nature/index.html.

Autumn Bushland News

Autumn *Bushland News* contributions should be sent to Urban Nature at urban.nature@dec.wa.gov.au by **Wednesday 22 February 2012**. *Bushland News* seeks original contributions. If your submission has been or may be published elsewhere please let us know. Compiled and edited by Jo Tregonning.



Coastal tea tree By Craig Wilson, Perth Region NRM



Coastal tea tree flowers (from left) and fruits. Photos – Craig Wilson

Coastal tea tree (*Leptospermum*— from Greek *leptos* meaning 'thin' and *spermum* meaning 'seed'— *laevigatum* from Latin meaning 'smooth') is from the Myrtaceae family. It is commonly called 'tea tree' as some species were used by early settlers as a tea substitute. In South Africa it has become an invasive pest and biological control using gall midges have been trialed to control its spread.

In WA coastal tea tree is a significant coastal weed. It grows in abundance on sandy dunes and in swales forming dense thickets that shade out native species and reduce biodiversity values. It has been recorded that coastal tea tree roots produce allelopathic chemicals that reduce the growth of companion plants. This may explain why at some locations very little undergrowth of any plant species is apparent.

Description

Coastal tea tree grows as a shrub to 5 m in height and up to 3 m in width. It is generally rounded in shape and has abundant white flowers during April to October (15–20 mm across with 5 petals). Leaves are grey-green in colour, leathery, smooth and up to 30 mm long and 8 mm wide, egg-shaped (obovate) and flat with the narrow end attached to the stalk. If you hold the leaves up to the light, visible oil dots can be seen. Crushing the leaf will

produce the typical peppermint smell of the Myrtaceae family. The fruit is a cup-shaped capsule with 8–10 cells. Seeds are small and numerous, distributed by wind, held in capsules and released following fire or chemical control. Seeds may require fire for release from dormancy as extensive seedling growth has been noted after fire. Coastal tea tree is found in coastal dunes as it's resistant to salt spray and generally prefers sandy soils. It is very hardy and can withstand long dry periods.

Management and control

A range of typical woody weed control methods can be used on coastal tea tree. Hand pulling of seedlings can be effective in localised locations. Cutting the trunk close to or at ground level can be an effective control; however, re-sprouting has been noted at some locations. The painting of cut stumps with neat glyphosate or picloram (Vigilant Gel®) has proved effective. Basal bark spray with triclopyr + picloram (Access®) has been suggested. It is uncertain if foliar application of herbicide is effective.

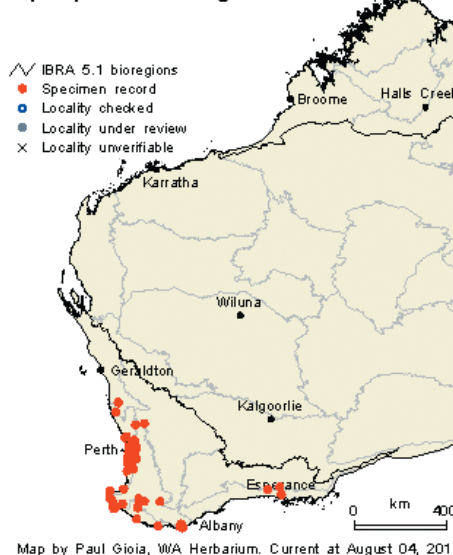
Consideration to the release of seed after control must be made as subsequent seedling growth may be a concern, especially in a fire prone area. There is a high potential for spreading where pruned material from home gardens is dumped in coastal reserves, so vigilance by local authorities and Coastcare volunteers on illegal dumping is recommended.

More information

Coastal tea tree – description and control. www.herbiguide.com.au/Descriptions/hg_Coast_Teatree.htm

Brown KL and Bettink KA (2009-) *Leptospermum laevigatum* Swan Weeds: Management Notes, Florabase – The Western Australian Flora. DEC. <http://florabase.dec.wa.gov.au/browse/profile/5850>

Leptospermum laevigatum



Coastal tea tree has been recorded in coastal locations in south-west WA. Image – Florabase

Megamouth bee

The Perth region has a large native bee fauna with at least 50 species being known. Remarkably, a new species of solitary native bee was discovered a year ago in bushland only 20 km from Perth.

The 'megamouth bee' (*Leioproctus* sp.) was found by WA Museum volunteer Otto Mueller in Jandakot Regional Park (Forrestdale) in December 2010 while searching for another bee with WA Museum Curator of Insects Dr Terry Houston.

Description

About the size of a honeybee, the 'megamouth bee' can be distinguished by its black colouring and partial covering of white hair, with the tip of its abdomen a bright orange-red. It has a larger head than is usual in native bees, more so in the males which possess remarkably large jaws, suggesting they are well adapted for fighting.

Reproduction

Male bees are not usually known to have a role in building nests or rearing young, however megamouth males act as gatekeepers. The male stations itself just below the burrow entrance while the female constructs brood cells. The female is permitted to come and go but other rival males are repelled. This burrow-guarding behaviour is something quite new for a solitary bee species.

Males of solitary bees usually spend all their active hours flying around the preferred forage flowers, or over the nesting areas, and can potentially mate with many females. Large-headed males are known from a few other kinds of bees but, in these cases, the bees nest communally, and securing access to multiple females is the 'name of the game'. 'Megamouth' males each have access to only one female. Perhaps each male mates with its nest companion repeatedly thus ensuring that it is its sperm that fertilises each and every egg the female lays in the nest. Also, the male may deter parasitic insects from entering the burrow, thus ensuring a greater survival rate for its progeny.

Escaping detection

How could such a striking species have escaped detection for so long?



Male (left) and female (top) of the as-yet-undescribed 'megamouth bee' *Leioproctus* sp. Above: Male 'megamouth bee' showing the large head and jaws, and the partial covering of white hair. Photos – Terry Houston, Western Australian Museum

Four factors may have contributed:

1. Pollen samples taken from females and brood cells matched the pollens of nearby tall paperbark tea trees (*Melaleuca* sp.) and spearwood (*Kunzea glabrescens*). The flowers of these plants are borne high on the crowns of the trees, so females foraging on them would remain mostly out of the reach and gaze of entomologists.
2. These plant species tend to occur in isolated pockets of damp land.
3. The plant species only flower for a limited period in late spring and early summer.
4. The burrow entrances of these bees are extremely inconspicuous. Those of other solitary bees are usually surmounted by a conspicuous 'tumulus' – a volcano-shaped mound of excavated soil.

Most native bees depend on native flora and some are very specialised, gathering pollen and nectar from just one to a few closely

related kinds of plants. This specialisation makes them very vulnerable to impacts such as land clearing. Although the 'megamouth bee' was found in Jandakot Regional Park, it is not yet known if the new bee survives elsewhere or if the Forrestdale bushland is its last refuge.

References

Extracts for this article were reprinted with the permission of Terry Houston from: Terry F Houston (2011) *Discovery of the 'megamouth bee'* *Leioproctus* sp. Western Australian Museum Information Sheet. 18 January 2011.

www.museum.wa.gov.au/about/latest-news/new-bee-species-discovered-forrestdale

Graceful sun-moth results 2011

By Matt Williams

Many surveys for the endangered graceful sun-moth (GSM, *Synemon gratiosa*) have been conducted during recent years by volunteers, DEC staff and environmental consultants. A total of 189 sites have been searched, with the GSM found at 63. The majority of GSM sites are in coastal heathland habitat from Binningup to Kalbarri, where the GSM breeds on *Lomandra maritima*. Only 14 sites have been found in banksia woodland habitat – all in the Perth metropolitan region. Special thanks to all those who undertook surveys but did not see any GSM – these surveys are particularly valuable in determining the GSM's habitat requirements.

Genetic analysis has confirmed that all of the populations comprise a single species. The sun-moths found by Jean and Fred Hort in the eastern jarrah forest result from hybridisation between the GSM and its inland relative, *Synemon jcaria*. Five larvae collected from Shark Bay turned out to be something completely different – probably moths, but from an unknown family. Four small populations found near Kalbarri are GSM, but genetically distinct from the southern populations.



Fred (left) and Andy sampling for the graceful sun-moth at Wandoo National Park. Photo – Jean Hort

The results of the surveys have enabled a re-assessment of the conservation status of the GSM. Detailed results of the surveys, genetic analysis and conservation assessment will be released on DEC's website at www.dec.wa.gov.au/content/view/5695/1808/ as soon as these are finalised.

DEC is planning to conduct more surveys for the GSM in February and March 2012, with the main focus being the large conservation reserves between Wilbinga and Jurien Bay. For more information email matthew.williams@dec.wa.gov.au.

Weed survey

The Social Sciences section of the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) has been commissioned by the Rural Industries Research and Development Corporation to undertake research into how Australia's weed management system is operating. This research is being undertaken in collaboration with Plant Health Australia.

ABARES is interested in your group or organisation's experience with obtaining or providing resources (financial and in-kind) and information for weed management Volunteering WA-related activities. The information you provide will be important to improving our understanding of how effective current resourcing and information systems are for weed management. The website link to the survey is www.surveymonkey.com/S/CommunityWeedManagementSurvey.

Have you seen a turtle? By Caitlin Bartholomaeus



The oblong or long-necked turtle (*Chelodina oblonga*) is a common resident in wetlands throughout the Perth metropolitan region. The turtles predominantly live in water and could live in your local wetland even though you may have never seen one. They will come onto land to lay their eggs and perhaps to move to a new wetland.

Residential areas have built up around many of the wetlands that sustain oblong turtle populations. Correspondingly, there is a decrease in native vegetation surrounding these wetlands. Many people who live around wetlands have reported turtles nesting in their gardens or walking around their local area.

There is currently very limited information about the oblong turtle and how it is reacting to urbanisation. We are exploring the influence of habitat on turtle populations and turtle movements. We need your help!



If you see an oblong turtle take note of the location, time, date, shell length (compared to a soft drink can) and behaviour. Take a photo if you can. Data can be entered on the ClimateWatch website at www.climatewatch.org.au.

Keep a look out for oblong turtles (*Chelodina oblonga*) in nearby wetland areas and report any sightings.
Photo – Caitlin Bartholomaeus


If you see a nesting turtle phone your closest Turtle Watch hotline at:
Cockburn Wetlands Education Centre: 9417 8460
Canning River Eco Education Centre: 9461 7160
South East Regional Centre for Urban Landcare: 9458 5664
Herdsmen Lake Wildlife Centre: 9387 6079.

what's on

**Opportunities for you to take part!
Visitors always welcome but please
confirm activities with the contact
person. Most activities are FREE!**


Recurrent activities


 **Saturday, Thursday, Sunday 9am Guided walks** with trained guides from the Friends of **Bold Park** Bushland, Floreat. First Saturday and second Thursday and third Sunday of each month. For details 9480 3996, or www.bgpa.wa.gov.au/bold-park/walks or friendsbp@bgpa.wa.gov.au.

 **Saturday 9am Bushcare activities** with the Friends of **Brixton Street** Wetlands are on the third Saturday of each month. Call Regina 9459 2964.


 **Saturday Bushcare activities** with the **Mt Henry** Conservation Group are on the fourth Saturday of each month. Email Jan.King@acquinas.wa.edu.au.

 **Sunday 9am–11am Bushcare activities** with the **Cottesloe** Coastcare are on the first Sunday of each month. Visit www.cottesloecoastcare.org for details or contact Robyn on 9384 7668 or info@cottesloecoastcare.org.

 **Sunday 9am–10.30am Bushcare activities** at Throssell Reserve, **Eastern Hills** in the Jane Brook Catchment are on the second Sunday of each month. Call Una Bell 9572 1447.

 **Sunday 9.45am–12 noon Bushcare activities** with the Friends of **Piesse Brook** are on the third Sunday of each month. Contact Gerry Brown 9293 2517, Bridgett Hogarth bhogarth@ozemail.com.au, linda@johnstanley.cc or visit www.friendsofpiessebrook.org.au.


 **Sunday 8am–10am Bushcare activities** every Sunday with the Friends of **Shenton Park** Bushland. Contact Dani 9381 3470 or bojel@it.net.au.


 **Sunday 9am–12 noon Bushcare activities** with the Friends of the **Spectacles** (Kwinana) are on the third Sunday of each month. Contact Lynda Smith on 9439 1928 or outback3@inet.net.au.


 **Sunday 8.30am Bushcare activities** with the Friends of **Wireless Hill** are on the second and fourth Sunday of each month. Meet at main carpark. Contact Margaret 0402 105 649 or s3mmatthews@hotmail.com.

Please send us your April, May and June 2012 events by Wednesday 22 February 2012.

 **Monday, Wednesday, Friday 9am–12 noon Bushcare activities and wetlands walk trail maintenance** with **Yanchep** National Park volunteers. Call Julia 9405 0771.

 **Tuesday, Thursday 8am–11am Koala maintenance** at **Yanchep** National Park. Call Julia 9405 0771.

 **Thursday 8am–9am Bushcare activities** every Thursday with **Byford** Enviro-Link. Call Johanne Garvey or Kristy Gregory 9526 0199.

 **Thursday 9am–2pm Bushcare activities** every Thursday in **Margaret River** with the Capes Volunteer Team. Call 9757 2202.

 **Conservation Volunteers Australia activity schedule.** Overnight country trips or one-day activities. Call Andrew 9227 5711 or visit www.conservationvolunteers.com.au.

 **Research into bird populations** with the **Herdsmen Lake** Bird Banding Group. People are welcome to call Bill Rutherford (ABBBS Coordinator) 0438 910 252 and organise a visit.

Highlights

2011–2012 International Year of the Bat Visit www.yearofthebat.org/.

January 2012

DEC's Nearer to Nature program offers animal encounters, canoeing, caving, guided walks and Aboriginal cultural experiences for children and adults. Various venues: Canning River Eco Education Centre, Chidlow Marsupial Hospital, John Forrest National Park, Perth Hills Centre and Yanchep National Park. Various prices. Bookings essential 9295 2244 or n2n@dec.wa.gov.au. Visit www.dec.wa.gov.au/n2n.

10 Tuesday–24 Saturday January School Holiday Fun at Piney Lakes Environmental Education Centre. \$6 per child per program. Child to be accompanied by an adult. Visit www.melvillecity.com.au/pineylakes. Bookings essential. Call Penny 9364 0790.

2 Thursday February 9am–4pm 8th annual WA Wetland Management Conference, Bibra Lake. Cost: \$60 (\$20 concession) which includes food and proceedings. For program and registrations contact Denise 9417 8460 or denise@cockburnwetlands.org.au.


2 Thursday February World Wetlands Day 'Wetlands and Tourism'. Visit www.ramsar.org.

7 Tuesday February Island Arks Symposium II, Canberra. Visit www.islandarks.com.au/islandarks/Symposium.html.

4 Sunday March Clean up Australia Day. Visit www.cleanupaustaliaday.org.au/.

22 Sunday April Earth Day 'Mobilise the Earth'. Visit www.earthday.org/earth-day-2012.

Activities key

 **Hands on** – bushland and wetland management activities.

 **Walks and tours** – look, listen and enjoy guided walks and excursions.

Funding opportunities

City of Gosnells Community Sponsorship Program

Conservation groups and community organisations can apply through the City of Gosnells Community Sponsorship Program for sponsorship up to \$5,500 to develop and enhance the environment. Projects must be coordinated in the City of Gosnells and may include projects such as weed control in environmental areas, educational information displays, minor equipment and volunteer training and development.

Opens: February 2012. **Closes: 2 March 2012.** For information phone 9397 3111 or email barmstrong@gosnells.wa.gov.au. Visit www.gosnells.wa.gov.au/scripts/viewoverview_contact.asp?NID=12657 for guidelines and application forms.

Environmental Community Grants

2012 is the fourth year of the state government's \$6 million Environmental Community Grants program administered by DEC. The funding round is likely to **open in late February 2012**. Visit www.dec.wa.gov.au/ecg.

SJ Shire and Byford and Districts Community Bank® Branch of Bendigo Bank's Community Funding Program

Community groups in the Shire of Serpentine Jarrahdale can apply for up to \$1,500 to develop projects such as school vegetable gardens, purchase equipment, seed funding for new community groups, environmental restoration or facility upgrades. Opens: January. **Closes: 30 March 2012.**

Locality Funding Program grants are also available for projects such as a local entry

statement, shade structures, street furniture, art in public places, picnic and barbeque facilities, memorials, playground equipment or re-vegetation. Opens: January. **Closes: 30 June 2012.**

All proposals for both funding programs should be discussed with the Community Development Officer on 9526 1137 prior to submitting applications. Visit www.sjshire.wa.gov.au/grant-funding/.

Caring for our Country Community Action Grants

The Australian Government provides funding to help community groups take action to sustainably manage and protect our environment and natural resources. It is anticipated that the 2012–13 Community Action Grants will commence in **early 2012**. Visit www.nrm.gov.au/funding/cag/index.html.

Hocking – our future?

By Rob Greenwood©

Hocking is a suburb in the City of Wanneroo which was formerly pristine bushland then market gardens. Rapid urban development has transformed Hocking, which will expand to approximately 10,000 people by 2016. These changes inspired the following poem by Rob Greenwood.

It was a shock to pass the Berlingeri's...
sole remaining market garden, on the hill
where only a few short years ago bushland
had, then market gardens, once stood.....
swept away in a tsunami of suburbia
fuelled by oil; first destruction, then erection
now roof to roof with not a tree in sight
blacks and browns and greys of rendered walls

We're there for a kids' Easter Sunday egg hunt
the tired couch (grass) struggled in the barren sand
no sound of bird.... George the schitzo dog...
Charlie and Isabelle learned about (grass) roots...
Jacob,...and a lost ladybird blown on the wind
as William rocked in his electric cradle
mimic ancestors in the ancient forest
now a forgotten memory of what once was
is this the best place to raise our kids
marooned in a (now) biodiversity desert?
trapped in a mortgage belt and SUVs
energy drinks and aircon, just to survive
what happens when the (Aus) oil runs out (in 2020)?
willing servants (unwitting slaves?) to the multi
nationals
***** & *****, ***** & ***. *Hocking; our future?

First published in the Urban Bush Telegraph (Winter 2011, Urban Bushland Council).

Swan River Trust and Alcoa Landcare Program

Funding is available for community groups involved in on-ground revegetation and rehabilitation projects in the Swan–Canning catchment. Application packages for the 2013 funding round will be released **late February** and will be found on the Perth Region NRM website www.perthregionnrm.com/community-engagement-programs/swan-river-trust-alcoa-landcare-program.aspx.

Busselton Community Bids

Shire of Busselton Community Bids grant financial assistance to organisations that provide services or activities that align with the shire's strategic plan and deliver sustainable social, environmental and/or economic benefit to the Shire of Busselton community. Applications for major funding in 2012–13 (\$5,001–50,000) are likely to **open in March 2012**. Visit www.busselton.wa.gov.au/community/community%20bids%20and%20sponsorship.

Learning opportunities



Volunteering WA By Martha Barnard-Rae

Volunteering WA's (VWA) office in West Perth was in overdrive last year to celebrate the United Nation's International Year of Volunteers +10. Celebrations began with a successful Volunteering Symposium featuring presenters from Australia and overseas. In October, we coordinated 500 volunteers for the Commonwealth Heads of Government Meeting in Perth, and 30 managers of volunteers trained in the National Standards on Volunteering. VWA hosted our third annual Homeless Connect day in November and rounded out the year with a Government House Garden Party for 800 to celebrate International Volunteer Day on 4 December.

VWA provides training and development to support volunteers and managers of volunteers in organisations. Our 450-strong membership has access to support and advice as well as regular sessions in volunteer management. Our bi-monthly volunteer management sessions focus on organisations creating a targeted volunteer management plan. We provide templates and suggestions for the recruitment, orientation, and retention of happy and productive volunteers. With a bit of planning, organisations can engage highly skilled volunteers with the talents to make a huge difference to the group. There are thousands of volunteers in WA looking for meaningful work—if you can dream it, there's a volunteer that can do it!

Volunteer Management: the Key Issues workshop

15 Thursday March or 9 Wednesday May 9.30am–11.30am at City West Lotteries House, 2 Delhi Street, West Perth. Cost: \$25 per person for non-VWA members. Visit www.volunteeringwa.org.au or phone 9482 4333 for information on this and other courses in 2012.

Catchments, Corridors and Coasts

18 Wednesday January – 20 Friday January

Are you looking for a fantastic introduction to environmental education initiatives across Perth? Catchments, Corridors and Coasts is a three-day professional development course for environmental educators, teachers, local and state government officers, university and TAFE students, community groups and more! Presented by the Australian Association for Environmental Education, the course explores environmental issues associated with natural resource management, water resources, our wildlife and marine life. Participants are also provided with a rich resource of materials on environmental education for sustainability.

Contact Cath Baudains on 0409 374 231 for a registration form. Visit www.aaeewa.org.au. Cost (includes GST): non-member \$308; AAEE member \$242; concession \$165; employer funded \$363. Scholarships are available on request.

Education at Piney Lakes Environmental Education Centre

Free after-school Teacher PD and community workshops in 2012 will include:

- Noongar Boodja Waakiny – Talking About Noongar Country (PD)
- Self-guided activities in Piney Lakes Reserve for Environment and Culture (PD)
- Excursion Opportunities at Piney Lakes Environmental Education Centre for Environment and Sustainability (PD)
- Worm-farming at Home
- Beyond Gardens Great Food Gardens Seminar.

Details will be listed on our website in 2012. Visit www.melvillecity.com.au/pineylakes.

Please send us your regional report (150–200 words) and a photo by Thursday 25 August 2011. Text may be edited in response to volume of submitted reports.

A busy year for Landcare SJ By Francis Smit

Landcare SJ, based in Serpentine Jarrahdale and the north Murray shires, provide the means for the community to care for the land today, in a way that will leave it better for tomorrow.

Funded through Peel–Harvey Catchment Council and South West Catchments Council we have completed on ground revegetation and significant weed removal projects. We completed a community training program, with funding from Caring for our Country, and are finalising the revision and reprinting of four publications funded by Lotterywest. These publications stretch beyond our traditional boundaries, and include *Weed it Out* (weed identification and control including in the wheatbelt), *Keeping it Local* (a native species booklet for landcare projects in the mid Swan Coastal Plain) and *Landcare Landscapes* (advice and guide to landcare in the Peel Harvey Catchment).

In addition, our 'cockatube' artificial nestbox program for WA's endangered black cockatoo species has seen rapid growth and demand over the past year. Since its inception six years ago, more than 450 cockatubes have been installed in the south-west corner of WA across



Landcare SJ volunteers and staff have created a shed full of cockatubes out of recycled plastic for installation in south-west WA. Photo – Francis Smit

the traditional range of the three black cockatoo species. Staff are looking forward to another big year in 2012!

For more information contact Francis on 9526 0012 or francis@landcaresj.com.au.

A special patch of bushland needs care By Leonie Stubbs

Two members of the Friends of Paganoni Swamp, together with Kate Brown and Grazyna Paczkowska of Urban Nature, assessed the vegetation condition of an area west of Southern Metro Railway. This area is planned for incorporation into Paganoni Swamp Reserve. The heathlands and shrublands of these limestone ridges were considered to be in good to very good condition. Unfortunately, Geraldton carnation weed and dune onion weed were found throughout the area, with further weed invasion from cottonbush and lupins from the adjoining block to the south, and Victorian tea tree and tambookie grass from its western boundary adjacent to Mandurah Road. Dominant native species included *Acacia cochlearis*, *A. cyclops*, *A. rostellifera*,

sheoak (*Allocasuarina humilis*), coastal daisy (*Olearia axillaris*) and Hakea species. *Lomandra maritima* was prevalent, suggesting it would be worth surveying for the graceful sun moth.

The area is desperately in need of some attention and it is hoped that as urban development moves ever closer to its boundaries another Friends group will form who will be inspired by this unique patch of bush to take on the task of restoration and weed control.

For details on the activities of the Friends of Paganoni Swamp call Leonie on 9536 8195.

Coastal bushland restoration and conservation By Kingsley Dixon

With 85 per cent of Australians living within 100 km of the coastline, conservation and management of our coastal resources are paramount to the Australian lifestyle. Perth metropolitan coastlines have been some of the most affected and degraded coastline ecosystems in Australia as a result of urban development, coastal recreation and human impacts such as weeds and soil erosion. Coastcare, with more than 400 groups nationwide, has become the frontline organisation for the delivery of effective coastal management in conjunction with the community.

Cambridge Coastcare Inc was created in 2000 to address severe beach and dune erosion, loss of native plant cover and weeds along 4.5 km of coastline in the Town of Cambridge near the Perth CBD. This coastline has been a favourite seaside destination for Perth residents for more than a century. Widescale use of non-native species to stabilise the dunes has resulted in the spread of a number of pernicious weeds that are a major headache for Cambridge Coastcare.

Since its inception, Cambridge Coastcare has focused on developing a new ethos of best practice in coastal weed management, restoration techniques, stabilisation methods and biodiversity conservation. As a result of these activities, Cambridge Coastcare has developed a number of benchmark restoration projects involving botanists, ecologists and restoration professionals.

A key outcome of the group was the publication of *Coastal Plants* (2011) (see Resources page 12). In 2012 we are focused on increasing the biodiversity in the annual planting and are propagating more than 20 coastal species. The aim is to be able to return a full suite of both common and rare local species across degraded dunes.

For more information visit www.cambridgecoastcare.com.au or email cambridgecoastcare@gmail.com.

Ken Hurst Park re-vegetation project *By Russell Hall*

Ken Hurst Park (Bush Forever site 245) is an area of banksia woodland in good condition in Leeming, adjacent to Roe Highway and Jandakot Airport. Some 250 species of native plant are known to occur within the park including the threatened grand spider orchid (*Caladenia huegelii*). It is also a feeding site for the threatened Carnaby's cockatoo (*Calyptorhynchus latirostris*).

Since 2005, the area of remnant bushland in the area has been significantly diminished by the construction of Roe Highway Stage 7. However, since the Friends of Ken Hurst Park became active in 2000, the City of Melville has fenced the park, rubbish has been removed, and old vehicle access tracks have been closed to the public. Although some planting of native tubestock has been completed by volunteers over the past five or more years, re-vegetation of degraded areas has been very slow.

On behalf of the Friends of Ken Hurst Park, and in association with the City of Melville, Dr Eddy Wajon has been successful in gaining a grant of \$14,410 from the DEC Environmental Community Grants. Funding will revegetate degraded areas, primarily tracks and edges, within the park. DEC is assisting by trying to organise topsoil and mulch from areas being cleared at Jandakot Airport. Planting of tubestock will be done by a combination of volunteers and contractors from April to June 2012, with watering by tanker proposed to occur over the first summer. We hope more plants will survive and the area can recover from several years of drought and human disturbance.

For more information contact Eddy Wajon on 9310 2936 or 0428 345 231 or email wajonpub@bigpond.com.

Site preparation using a post-hole digger *By Penny Hussey*

For the past few years, the Helena River Catchment Group has prepared degraded bushland sites for community planting days by using a mechanised post hole auger. We begin with two years of herbicide weed control (and fire if the site permits), then 'habitat island' planting into spaces formerly dominated by weeds.

Conventional wisdom suggests ripping then planting on the rip lines, but this inevitably destroys the surface feeder roots of existing trees and shrubs, giving them a severe knock-back as well as making them prone to wind-throw. The auger is a less disruptive alternative.

Each hole is dug to approximately 50 cm depth to give the roots of newly planted seedlings a good start in reaching ground water. Although inevitably some existing roots will be impacted by this process, it is much more localised than rip lines. The machine is very manoeuvrable and can get into small spaces with little disruption. The rubberised caterpillar tracks do cause some damage to understorey but we have found that plants recover, and since the tracks are not continuous they do not channel water erosion.



*Post-hole digger in action at Helena River in June 2011. Note the 'habitat island' open space (formerly dominated by watsonia) and the severe marri decline after an exceptionally dry summer.
Photo – Penny Hussey*

By having sites prepared like this, community volunteers are able to put a lot of plants in the ground very quickly and effectively. We have found the seedling survival rate to be very high at around 95 per cent, even after the drought of 2010. We recommend other groups working in similar situations in alluvial and loamy soils consider this method of site preparation. Wetland clay soils dry out quickly so planting must follow immediately after the hole digging. We have never used the auger technique in sand.

For more information email Penny at penny.hussey@dec.wa.gov.au.

Regional framework for biodiversity conservation in Perth and Peel released

By Renata Zelinova

In September 2011, the Perth Biodiversity Project (PBP), with support from the Department of Planning and Western Australian Local Government Association, released the *Regional Framework for Local Biodiversity Conservation Priorities for Perth and Peel*. It was developed by the PBP to provide a reference framework on indicative biodiversity conservation values for 'Local Natural Areas'.

Local government planners and environmental officers in Perth and Peel can now access the new online spatial tool designed to inform land-use planning, giving consideration to regional and local biodiversity conservation needs, legislative and policy requirements and local biodiversity conservation objectives. Additional funding through the State NRM Program will enable us to provide community access to the online spatial model in early 2012.

An updated status of vegetation complex retention and protection levels was made available through the PBP website. Tables showing the 2010 remnant vegetation extent by vegetation complexes and land-use categories are available at regional and local government scale. Visit www.walga.asn.au/about/policy/pbp/publications to download the available datasets.

For more information contact the PBP Project Manager, Renata Zelinova, on 9213 2047 or email rzelinova@walga.asn.au.



Strategic assessment of the Perth and Peel regions *By David Mitchell*

The state and federal governments have commenced a strategic assessment of development in the metropolitan Perth and Peel regions under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The Perth–Peel region is rapidly growing. Even with significant effort to decrease our environmental ‘footprint’, such as increasing housing density, more than 26,000 hectares of land will be developed over the next 40 to 50 years. The region lies within the unique southwest bioregion and contains significant environmental, cultural and heritage values. Many of these values are recognised under the EPBC Act.

The strategic assessment provides an opportunity to assess the impacts of future development and to ensure these unique values are protected and maintained, while enabling further growth of the area. Instead of a project-by-project approach, the strategic assessment will allow a regional, whole-of-landscape approach to managing environmental impacts. This will provide long-term certainty for both development and biodiversity outcomes.

The state government will develop a plan for the protection of matters of national environmental significance in the Perth and Peel regions which will then be assessed

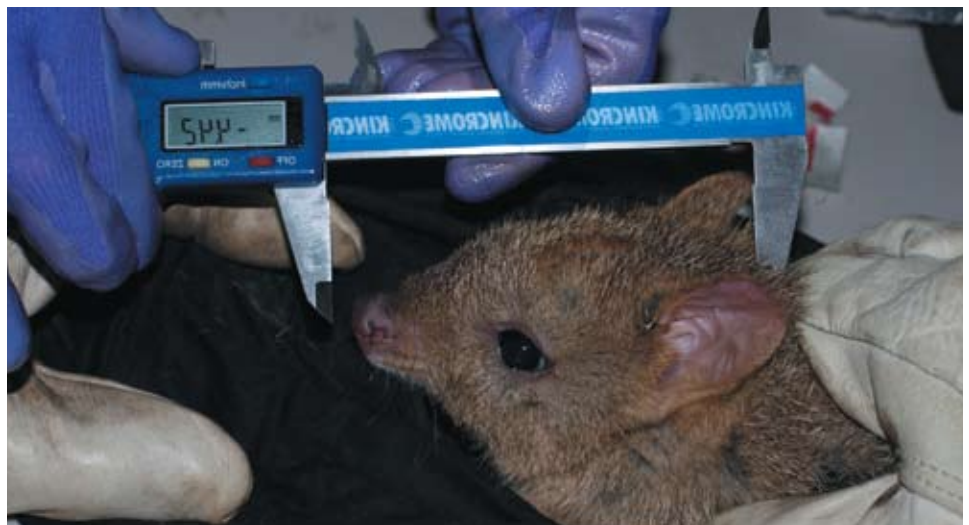
by the Commonwealth Minister for Environment. If this plan is endorsed it is then possible for the Minister to approve actions, or classes of actions, carried out in the manner described in the plan without the need for individual assessments.

The state government will consult with peak bodies, local governments, and the wider community, and the draft plan and assessment report will be released for public comment. Visit www.dpc.wa.gov.au/Consultation/StrategicAssessment/Pages/Default.aspx. For general information on strategic assessments and the EPBC Act visit www.environment.gov.au/epbc/assessments/strategic.html.

Experience the wonders of Woodland Reserve *By Chris Rafferty*

Encompassing more than 50 ha, Woodland Reserve is a specially designed, electrified predator-proof facility within Whiteman Park. The project aims to support local biodiversity via the creation of a world-class breeding facility for rare and endangered fauna of WA, including the critically endangered woylie (*Bettongia penicillata*). The vision of the reserve is to create a ‘Coastal Plain landscape containing the natural complement of biodiversity, to be sustained in perpetuity’.

The introduction of woylies to the reserve in March 2010 was the beginning of this high-calibre conservation program. Numbers of this critically endangered species have more than doubled in the 18 months since their initial release. A second translocation of an additional 11 animals in autumn 2011 was a great success, increasing the genetic diversity of the group. Further reintroductions of animal species which are presently extinct or in decline are planned for the facility.



Monthly condition reports are obtained for fauna of Whiteman Park’s Woodland Reserve to ensure they are settling in well to their new abode. Animals such as this young woylie are weighed, measured, ear tagged and microchipped. Blood samples are also taken to provide a comprehensive profile of all individuals. Photo – Sarah Stevenson

Guided tours of the reserve started in summer 2010, taking visitors along a scenic walk trail and showcasing the unique flora and fauna of the area. Participants gain an important insight into

the ecology and behaviour of the fauna of the reserve. ‘Feeding time’ within the ‘soft’ enclosure provides an excellent opportunity for animals to be viewed carrying out their nightly foraging. Further information on Woodland Reserve and tours of the facility can be found at www.whitemanpark.com.au/conservationreserve/woodlandreserve.aspx, or phone park administration on 9209 6000.



Congratulations to the award winners and finalists

Friends of Wireless Hill By Kate Creed



The radio station at Wireless Hill played an important communications role during both world wars. Gazetted as public open space in 1968, Wireless Hill now boasts some of the best flora displays in metropolitan Perth.

The area that would become known as Wireless Hill was selected as a communications site in the early 1900s due to its elevation and proximity to Fremantle. In 1912, 11 axemen cleared trees to allow erection of aerials, and a radio station was completed in September 1912. Early in World War I messages were intercepted from Germany. Perth Radio Station was taken over by the navy and became a vital link in Australia's communication with troop and war ships in both World War I and II.

In 1946, the station came under the authority of the Overseas Telecommunications Commission and in the 1960s was used for communication with space programs by NASA. When the equipment became obsolete, the area was made available to the state government and in December 1968 it was vested in Melville Council as public open space. The concrete bases of the aerials can still be seen and there is a radio museum in the original buildings.

Natural bush originally covered the whole hill but later the ring road was laid and the central part was grassed. Although many trees were cut down, the roots remained and subsequently regrew into large trees. The old service road is still present with the original bitumen brought from the West Indies. Other paths have been laid through the bushland so that the natural plants and animals can be observed. The elevation allows good views of Alfred Cove and the Swan River.

Biodiversity

In 2010 more than 150 species of native wildflower were identified at Wireless Hill – mostly during the months of August to October. This survey excluded trees and plants that did not flower but included more than 18 species of orchid, and magnificent displays of kangaroo and cats paws (*Anigozanthos* spp.).



Pixie mops (Petrophile linearis) in bloom at Wireless Hill. Photos – Margaret Matthews

A wildflower walk is maintained by the Friends of Wireless Hill. The Friends remove invasive weeds and have planted seedlings in degraded areas and where loss of native vegetation cover has occurred after fire.

Few native mammals have been seen (probably because of cats, foxes and rabbits) but birds appreciate the variety of tall eucalypts and smaller shrubs such as banksia and sheoak. A survey in 2002–03 identified 35 species of bird, but there are more than 60 species if birds flying over are included. Rare bird species such as tawny-crowned (*Phylidonyris melanops*) and black (*Certhionix niger*) honeyeaters have been recorded. Little wattlebird (*Anthochaera chrysoptera*) and rainbow bee-eater (*Merops ornatus*) regularly nest in the reserve. The most frequently encountered reptile is the bobtail skink (*Tiliqua rugosa*).

Conservation challenges

As with all urban bushland areas, problems arise in maintaining the health of the flora and fauna. Tackling weed invasion is ongoing. Geraldton wax (*Chamaelucium uncinatum*) and perennial veldt grass (*Ehrharta calycina*) were purposely introduced when the radio station was built and are now being eradicated by the Friends group. The proximity of houses has resulted in the dumping of rubbish, including garden

refuse with seeds. Over the years many deliberately lit fires have occurred. It is remarkable how resilient the bushland is, but each fire causes the loss of some species. Finally, *Phytophthora* dieback has killed some of the trees and regular treatment with phosphite has been carried out in recent years.

Friends group

The Friends of Wireless Hill was formed in 1987 and works with the City of Melville and Wildflower Society of WA to maintain and enhance the bushland for visitors. There are currently about 10 active members who attend monthly meetings (second Monday of each month at 7pm) and do bushcare activities (second and fourth Sundays of each month). Other paid volunteers (grant money) or work experience students work in the bushland. Members of the public take part in planting, dieback injection and guided wildflower walks in spring. In 2012 the centenary of the opening of the radio station will be celebrated.

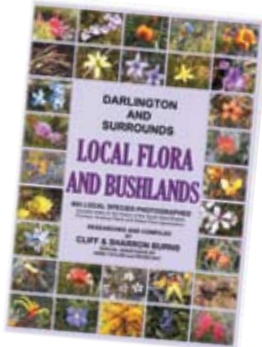
For more information contact Kate on kate.creed@optusnet.com.au or 9316 8109. Visit www.friendsofwirelesshill.org/.

Resources

New publications

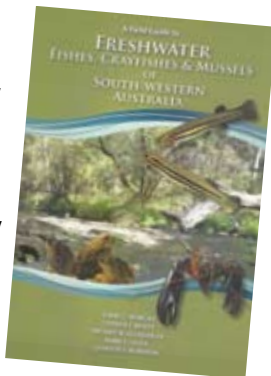
Darlington and Surrounds Local Flora and Bushlands (2011)

Cliff and Sharon Burns. This is a free publication to provide local residents with an opportunity to learn about and appreciate the Australian bush and its flora. Some 404 species local to the Darlington area are photographed and notes on the history of the South-West Botanical Province, invasive plants and native flora are included. Pick up free from the Shire of Mundaring, or the Greenmount or Mundaring libraries. Visit www.mundaring.wa.gov.au/Lists/Mundaring%20News/DispForm.aspx?ID=243.



A Field Guide to Freshwater Fishes, Crayfishes & Mussels of south-western Australia (2011)

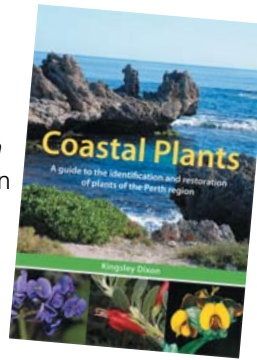
Morgan D L, Beatty SJ, Klunzinger M W, Allen M G, Burnham Q F. Published



by SERCUL and Murdoch University's Freshwater Fish Group and Fish Health Unit. The field guide includes identification, distribution, behaviour, biology and threats the animals face. Beautifully photographed. Cost \$10 from SERCUL www.sercul.org.au/ffp.html.

Coastal Plants – A Guide to the Identification and Restoration of Plants of the Perth Region (2011)

Dixon K. CSIRO Publishing. A definitive guide to the 100 most common plants of the Perth coastal region and the key species used in coastal restoration. Cost \$39.95.



Website watch

Caring for our Country Review – The Story So Far. Includes a review, research papers, reports and surveys. Visit www.caringforourcountryreview.com.au/document/index/1.

Perth Region NRM website has been redesigned and now includes an events calendar, maps showcasing the geographic regions of Perth, as well as updated program information and community web area. Visit www.perthregionnrm.com/.

Encyclopaedia of Life aims to gather and share scientific knowledge about all living things in a single online resource, giving us a breathtaking view of our amazing world. It includes descriptions, photos, bibliographic links and distribution maps. Visit www.eol.org/.

Recent research

Smith P & Smith J (2010) Urban edge effects in the Blue Mountains, New South Wales: implications for design of buffers to protect significant habitats. *Pacific Conservation Biology* **16**: 92–100.

Parsons BC and Gosper CR (2011) Contemporary fire regimes in a fragmented and an unfragmented landscape: implications for vegetation structure and persistence of the fire-sensitive malleefowl. *International Journal of Wildland Fire* **20**: 184–94.

Godefroid S, Piazza C, Rossi G, Buord S, Stevens A-D, Aguraiuja R, Cowell C, Weekley CW, Vogg G, Irondo JM, Johnson I, Dixon B, Gordon D, Magnanon S, Valentin B, Bjureke K, Koopman R, Vicnes M, Virevaire M & Vanderborght T (2011) How successful are plant species reintroductions? *Biological Conservation* **144**: 672–82.

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