

Celebrating 30 years of bushland management

Issue 77

Autumn 2011

Time of Djera and Makuru in the Nyoongar calendar.

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www.dec.wa.gov.au

By Kim Sarti

The community-based Bungendore Park Management Committee in the City of Armadale is celebrating positive achievements in bushland management and biodiversity conservation. June 2011 marks 30 years of active involvement by the local community and City.



Bungendore Park is a 498 ha 'A' class reserve in Bedforddale of mainly jarrah/marri forest on the Darling Plateau, but also encompasses wandoo and granite outcropping on the Darling Scarp face. The park is managed as a conservation reserve for low-impact usage.

Conservation initiatives

The committee, with the assistance of the local community, has been undertaking revegetation of disused gravel pits and degraded areas in the park since 1982 and some 96,205 seedlings have been planted during this period. A further 12,400 have been planted on Department of Environment and Conservation (DEC) managed land south of the park. All tree and understorey seedlings have been grown from seed collected within the park to maintain genetic integrity.

Other habitat restoration activities include upgrading fencing, weed control, a *Phytophthora* survey and control program and, recently, feral European honey bee (*Apis mellifera*) control measures. Feral pig (*Sus scrofa*) control remains a problem.

Research and publications

The management committee has been involved with, or organised, scientific studies of the park. Surveys of the plants, birds and aquatic life have been published as written reports. Following the wildfire in December 1994, a seven-year study was conducted on tree mortality, regrowth (including an orchid study) and other fire effects. The results were published in the *Western Australian Naturalist* in June 2003.



Committee members discuss fire management plan for Bungendore Park. From left: Kim Sarti, Irene Morcombe, Ian Thompson, Guenter Best (Chairman), Don Griffiths, Penny Versteeg and Simon Dawkins. Photo – R Dawkins

Other surveys include insects, fungi and terrestrial fauna (long-term). A bat survey is also underway. In conjunction with the Western Australian Museum, special studies are being undertaken on three threatened species of black cockatoos (*Calyptorhynchus* spp.).

We also aim to raise public awareness of the plants and animals that live in Bungendore Park and the value of remnant bushland. This has been done through a series of five information pamphlets, conducting bush walks, bush breakfasts, a 'Bushland for Cockatoos' seminar and information display shelters. A natural history book *A Walk with Time* (1997) was published to celebrate the centenary of the park's gazettal. There are four named walk tracks with informative signage and a bridle trail follows the northern fire access track.

Award recognition

The committee's environmental achievements and community involvement have been acknowledged through winning the inaugural John Tonkin Community Group Award (1985), the National Banksia Award for a Community Group (1992), and the distinguished John Tonkin Gold Greening Award (1994) for 'outstanding achievements in environmental conservation'.

Celebratory events

Throughout 2011, we will be holding celebratory events. Our first was the 'Dark in the Park' astronomy evening on 12 February, where 165 people were entertained with video presentations and an opportunity to look through five telescopes fixed skyward. See 'What's on' for future events.

Urban Nature UPDATE *By Julia Cullity*

Ecoplan/Urban Nature celebrates 20 years

Not to be outdone by the milestones of Bungendore Park's 30 years and Armadale Wildflower Society's 50, in April 2011 we celebrate 20 years since the launch of Ecoplan. The Ecoplan program of the Environmental Protection Authority was established to involve community groups and schools in urban bushland conservation, particularly those areas recognised as regionally significant through the 1983 *System Six Red Book* report. Ecoplan continued through changes of government and departmental restructures, and evolved into the Urban Nature program of DEC. Urban Nature provides technical advice and on-ground support for land managers across all tenures to protect, manage and restore the rich biodiversity of the bushlands and wetlands in DEC's Swan Region and beyond.

It has also been five years since our last reader survey when we made a number of changes to the content and format of *Bushland News* (formerly *Ecoplan News*). We'd like to hear from you again. Are we meeting the needs of the bushland conservation community and can you suggest ways to improve our newsletter?



Community members use a handheld GPS to gather data at the Urban Nature GPS and Map Making for Bush Regenerators workshop held in February 2011. GPS, computer mapping and database software can be used to record spatial distribution of the values and threats to bushland and assist in making planning decisions for management. Photo – Julia Cullity

Win a prize

Complete the following survey and submit your comments before Tuesday 24 May 2011 to be in the draw to win one of three fabulous prizes:

- A bat box to attract and house up to 150 microbats—our natural insect controllers. RRP \$135.
- *Wildflower Country: Discovering Biodiversity in Australia's Southwest* by Stanley and Kaisa Breeden (2010). A beautiful collection of fine art photography with a travelogue about the diverse flowers of this area. RRP \$75.
- *Brush with Gondwana: The Botanical Artists Group of Western Australia* by Janda Gooding (2010). Seven leading botanical artists share their stories and beautiful illustrations of WA's flora, fauna and fungi. RRP \$60.



Survey questions

1. Are there articles/sections of *Bushland News* you would like to:
 - a. See more of?
 - b. See less of?
 - c. Remove?
 (i.e. cover, Urban Nature update, Bushland weedwatch, Econote, short articles, Learning and Funding opportunities, What's on calendar, Regional reports, Group profile, Resources).
2. Would you like to add new sections?
3. If you or your group contributed to *Bushland News*, did you receive any inquiries after the article or event was published (e.g. new members, request for information, RSVPs, useful networking)?
4. Do you have any other comments?

Please respond to the survey questions either by phone 9423 2925, email urban.nature@dec.wa.gov.au, post PO Box 1167, Bentley DC 6163 or online <http://www.dec.wa.gov.au/content/view/445/2026/> on or before **Tuesday 24 May 2011**. Please remember to include your name and postal address to be included in the prize draw.

Contacts

Urban Nature office

| | |
|--------------------|-----------|
| Julia Cullity | 9423 2925 |
| Kate Brown | 9423 2905 |
| Karen Bettink | 9423 2904 |
| Grazyna Paczkowska | 9423 2914 |

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PO Box 1167, Bentley Delivery Centre
WA 6983
Fax 9423 2901
Email urban.nature@dec.wa.gov.au

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

Winter Bushland News

Winter *Bushland News* contributions should be sent to Urban Nature at urban.nature@dec.wa.gov.au by **Tuesday 24 May 2011**. Compiled and edited by Jo Tregonning.

Black flag (*Ferraria crispa*)

By Kate Brown and Karen Bettink

Naturally restricted to the southern African winter rainfall zone, black flag (*Ferraria crispa*) was first collected in Australia by the botanist Alexander Morrison from 'east of Perth' in 1898. Currently it is naturalised in heathlands and woodlands on sands and sandy loams in south-western Australia, from north of Geraldton around the coast to Albany.

A summer dormant perennial corm, black flag flowers in winter and sets seed towards the end of spring. As summer approaches leaves and flowering stems die back to a below-ground corm that reshoots with the first autumn rains. Almost all our weedy cormous plants in south-west Australia have annually renewed corms; however, black flag is an interesting exception. It forms extensive populations of persistent columns of perennial corms, many of which remain dormant through the growing season, making it a particularly difficult weed to control. Following physical disturbance to a column, previously dormant corms often produce shoots.

The putrid-smelling flowers open for one day only. They are pollinated by flies but are also self-fertile and large amounts of seed are produced each year in late spring.



The putrid-smelling flowers of black flag open for one day only. Photo – Kate Brown

Management and control

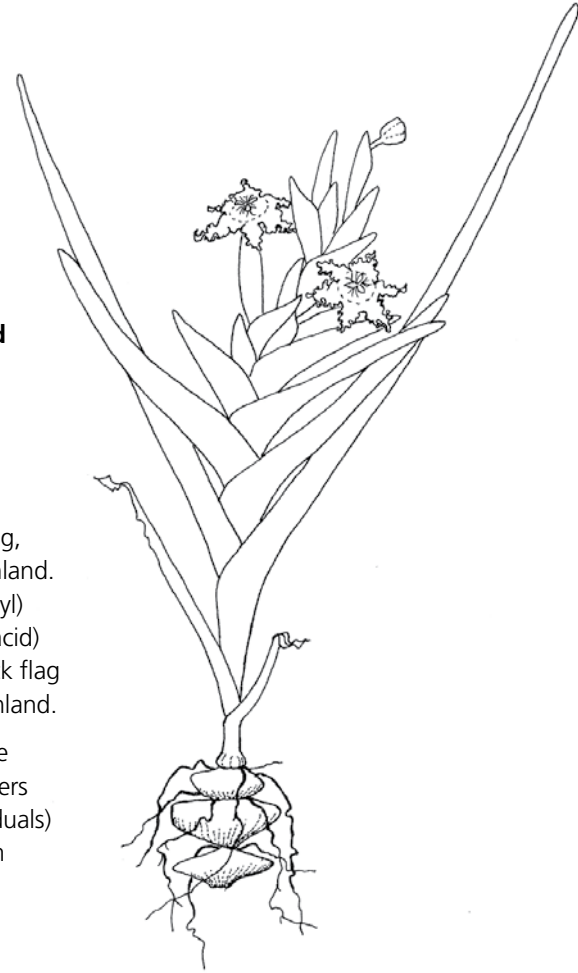
There is limited published information on ways to effectively manage black flag, particularly where it invades intact bushland. Brushhoff® (600 g/kg metsulfuron methyl) and Dalapon® (2,2-Dichloropropionic acid) herbicides were recently trialled on black flag over a four-year period in Shenton Bushland.

Dalapon® at 10 g/L—the most effective treatment trialled—only reduced numbers of juvenile plants (non-flowering individuals) from a mean of more than 800 per 1 m x1 m plot to a mean of 493 per plot. With so many juveniles remaining after three annual applications, Dalapon® cannot be considered a particularly effective treatment. Although no adults (flowering individuals) remained in plots after treatment, numbers before any treatments were very low.

Interestingly, the number of plants in all plots fluctuated over the four-year trial and the general pattern of variation was repeated across the different treatments. This seems to reflect the natural variation in corm dormancy that occurs across populations from year to year.

When the herbicide trials were complete and plants were in the summer dormant stage, all corms were dug up and their dry weight assessed. The results indicated Dalapon® had minimum impact on the corms.

A treatment that effectively targets dormant corms or breaks corm dormancy across populations allowing herbicide translocation to all corms is required. Physical disturbance and fire have both been observed to break corm dormancy in black flag populations and their role in managing populations requires further study. In the interim, complete physical removal, including corms, of small infestations (less than 3–4 m²) is one option.



Black flag (Ferraria crispa) produces a column of persistent perennial corms.
Illustration – Libby Sandiford

Further reading

Brown, KL and Bettink, KA (2009–) *Ferraria crispa*. Swan Weeds: Management Notes, FloraBase — The Western Australian Flora. Department of Environment and Conservation. <http://florabase.dec.wa.gov.au/browse/profile/1515>

Brown, K and Bettink, K (2010) Black Flag (*Ferraria crispa* Burm.) is a difficult to control and persistent invader of Banksia/Eucalypt Woodland in south-west Australia. *Ecological Management and Restoration* 11(3): 228–230.

Cloughton, A (2004) *The ecology and management of the invasive black flag (Ferraria crispa) in Bold Park*. Honours Thesis, Land and Water Management University of Western Australia.

Goldblatt, P, Bernhardt, P & Manning, J C (2009) Adaptive radiation of the putrid perianth: *Ferraria* (Iridaceae: Irideae) and its unusual pollinators. *Journal Plant Systematics and Evolution*, 278(1): 53-65.

Microbialites

By David Mitchell

Many people would not be that impressed by the thrombolites (microbialites) at Lake Richmond, Lake Clifton or other Western Australian locations, as they can look little more than a collection of rounded rocks covered with a scummy algae layer. However the idea of these 'living rocks'—and understanding what they mean for life on Earth—is thrilling!

Microbialites is the group name for our living rocks. Thrombolites are a type of microbialite that have a clotted structure. Stromatolites, such as those still living at Shark Bay, have a layered internal structure that shows growth rings. Tufa, like those that form at the Augusta sea cliffs, are another microbialite.

These living rocks are representative of the earliest recorded life on Earth, having been present for nearly 3.5 billion years. For much of the history of the planet they were the only life on Earth. On the other hand, land creatures, flowering plants, insects, mammals and people have all been around for less than 475 million years.

Western Australia has the greatest range of fossil microbialites, including the oldest known fossil stromatolites; and the greatest number and varied occurrences of living microbialites of anywhere on Earth. Living microbialites occur at Shark Bay, Esperance, Augusta, Yalgorup, Rottnest Island, Cervantes and Rockingham.

Each of these constitutes a distinct and very significant community in terms of microbial species, structure and history. Living thrombolites provide an opportunity to study what life may have been like during that immense period of time when they were the only forms of life on the planet, and fossil microbialites are important for interpreting ancient environments.

We also owe microbialites some gratitude. It is thought that their photosynthetic activity over hundreds of millions of years



The Lake Clifton thrombolites are found in a zone about 15 m wide for 14 km on the eastern side of the lake. DEC has installed a boardwalk to allow people to view the thrombolites and protect them from trampling. The thrombolites at Lake Clifton and at Lake Richmond formed some time after the lakes were isolated from the sea during the past 4,000 years. Photo – Jill Pryde

is responsible for increasing oxygen in the atmosphere from less than one per cent up to the present day level of 21 per cent. Microbialites truly changed the world!

Thrombolite conservation

Although thrombolites look like rocks, they are formed by a complex community of microbes that includes photosynthetic prokaryotes (e.g. cyanobacteria) and microalgae (e.g. diatoms), along with other microbial species. These microbe communities precipitate calcium carbonate (limestone) within the community as a result of their growth and metabolic activity, leading to the formation of the rock-like structures.

Thrombolite communities are unique and special, and while the communities and the microbialite structures they produce have been on earth for nearly 3.5 billion years, they are still vulnerable to a number of threatening processes that put their continued existence at risk. Sunlight and fresh groundwater inflow rich in carbonates are essential to thrombolite growth and survival. They also need low nutrients in the water body. These two

features highlight the major threats to thrombolites; changes in the amount and composition of groundwater inflow and increases in nutrient level.

As well as managing the sites where thrombolites occur to protect from physical damage (such as from walking on them) and managing buffering and surrounding vegetation that protect and support thrombolite reefs, it is also critical to ensure that the whole catchment is managed well to ensure the hydrological system that supports the thrombolites is maintained.

Thrombolite communities at Lake Clifton and Lake Richmond (Rockingham) are listed as threatened ecological communities. Following a nomination by the community, in January 2010 the Lake Clifton thrombolite community was listed as critically endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Recovery teams have been established to oversee implementation of an interim recovery plan to maintain or improve the condition of the thrombolites and reduce the level of threat.

Can citizens track cockatoos using information technology?

Carnaby Tracker was a citizen science project developed by biologists and computer scientists at The University of Western Australia (UWA) to assess movement patterns of Carnaby's black cockatoo (*Calyptorhynchus latirostris*) within the Perth metropolitan area.

Carnaby Tracker required participants to lodge observations of Carnaby's black cockatoos onto a website, which was open to observations from 19 April–12 September 2010. Participants recorded the location of the birds using 'google maps', and also noted flight directions, foraging behaviours and flock sizes. Almost 3,500 observations were submitted by 586 registered participants during this period. The distribution of observations throughout the week and day were inconsistent, with most participants observing cockatoos on weekends, and in

the mornings and evenings. By linking the observations of several participants, one flock was tracked foraging from Nedlands to Dalkeith for a few hours after leaving the Hollywood Hospital roost site.

Using citizen science as a method of tracking birds throughout the entire day was generally unsuccessful with this level of participation; however the approach may work with large-scale recruitment of participants contributing data over a shorter period. Citizen science has the potential to refine the current knowledge of the seasonal movements of black cockatoos, and participants generally enjoyed contributing data in a systematic and collaborative manner. Further spatial analysis of the UWA dataset continues and a similar web site is now operating under the auspices of Birds Australia.



A male and a female Carnaby's black cockatoo (*Calyptorhynchus latirostris*) look over the suburb of Winthrop. Photo – Keith Lightbody

Learning opportunities

Understanding Western Australian native plants

Polytechnic West Midland Campus

Learn to identify local plants of the Perth Hills and surrounds. Understand their uses in and their values to natural areas. Classes: Wednesday 6pm– 8.30pm from 11 May to 15 June. Includes weekend activity. Cost: \$71.54 (concession available). For more information contact Ted Johnson on 0414 896 626 or 9374 6314 or email ted.johnson@polytechnic.wa.edu.au.

Fungimap VI – Community based science in action

**14 Thursday–19 Tuesday
July 2011,
Denmark, Western Australia**

Fungimap VI is an exciting biennial event which consists of a day of talks followed by three days of forays and workshops. It includes a full day at the Valley of the Giants Tree Top Walk, set amid the majestic fungi-rich tingle and karri eucalypt forest. This is a unique opportunity to share and learn about fungi in the field and caters for all levels of interest.



Valley of the Giants Tree Top Walk. Photo – DEC

Day registration includes lunch and snacks. Friday 15 July 'Day of talks' or Monday 18 July 'Valley of the Giants'. Full conference or day registrations. Contact the Fungimap Coordinator on (03) 9252 2374 or fungimap@rbg.vic.gov.au. Visit www.rbg.vic.gov.au/fungimap/.

Cam Clay wins awards

A decade of service to the environment and community earned Cam Clay the Premier's Australia Day Environmental Contribution of the Year Award and the Active Citizenship Award.

As chairperson of the Armadale Gosnells Landcare Group for the past 10 years, Cam has taken part in countless planting and weeding days, workshops, events and meetings and has lobbied government at all levels for investment in local environmental projects. He is also the inaugural treasurer of the South East Regional Centre for Urban Landcare (SERCUL), member of the Wildflower Society of WA, volunteer for the Bedforddale Volunteer Bush Fire Brigade, member of the Roleybushcare environmental group, Honorary River Guardian through the Swan River Trust and Deputy Chair of the City of Armadale Bushcare Environmental Working Group.



Cam Clay won two awards in January for his service to the environmental community during the past 10 years. Photo – Courtesy of the City of Armadale

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

- 9am**
 **Guided walks** with trained guides from the Friends of **Bold Park** Bushland, Floreat. First Saturday, 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.
- Saturdays 9am**
 **Bushcare activities** with the Friends of **Brixton Street** Wetlands are on the third Saturday of each month. Call Regina 9459 2964.
- Saturdays**
 **Bushcare activities** with the **Mt Henry** Conservation Group are on the fourth Saturday of each month. Email Jan.King@aquinas.wa.edu.au.
- Sundays 9am–11am**
 **Bushcare activities** with **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.
- Sundays 9.45am–12 noon**
 **Bushcare activities** with the Friends of **Piesse Brook** are on the third Sunday of each month. Contact Gerry 9293 2517, Bridgett.bhogarth@ozemail.com.au, linda@johnstanley.cc or visit www.friendsofpiessebrook.org.au.
- Sundays 9am–10.30am**
 **Bushcare activities** at Throssell Reserve, **Eastern Hills** in the Jane Brook Catchment are on the second Sunday of each month. Phone Una 9572 1447.
- Sundays 8am–10am**
 **Bushcare activities** every Sunday with the Friends of **Shenton Park** Bushland. Contact Dani 9381 3470 or bojel@it.net.au.
- Sundays 9am–12 noon**
 **Bushcare activities** with the Friends of the **Spectacles** (Kwinana) are on the third Sunday of each month. Contact Lynda on 9439 1928 or outback3@iinet.net.au.

Sundays 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.


Mondays, Wednesdays, Fridays 9am–12 noon

-  **Bushcare activities and wetlands walk trail maintenance** with **Yanchep** National Park Volunteers. Call Julia 9405 0771.

Tuesdays, Thursdays 8am–11am


-  **Koala maintenance** at **Yanchep** National Park. Call Julia 9405 0771.

Thursdays 8am–9am



-  **Bushcare activities** every Thursday with **Byford** Enviro-Link. Call Johanne or Kristy 9526 0199.



-  **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 (ABBBS Coordinator) 0438 910 252 and organise a visit.

April

- 2 Saturday 8.45am–1pm**
 **Rock Groups on Tour** is an exploration of the Boya quarries with CSA Global geotourism expert and geologist. Bus departs Jack Mann Oval, Middle Swan. Contact **BSH**.
- 3 Sunday 8.30am**
 **Guided walk** with the Friends of Mirrabooka. Meet at Thyme Court, Mirrabooka. Contact 9344 2872 or friends.of.mirrabooka.bushland@gmail.com.

7 Thursday

-  **Great Cocky Count** of Carnaby's black cockatoos at roost sites. Volunteer counters needed for the Perth region and beyond (Perth to Albany, east to Esperance and north to Geraldton). Contact Geoff on 9423 2907 or greatcockycount@birdsaustralia.com.au.


9 Saturday 9am–12 noon

-  **Wetland appreciation and management** workshop at Wandi. Contact **GS**.


9 Saturday 9am–12.30pm

-  **Go Batty** bat building workshop with Joe Tonga at Perth Zoo. Cost: \$165 includes a bat box to take home. Bookings 9474 0365 or www.perthzoo.wa.gov.au.

9 Saturday 7pm–9.30pm

-  **Nocturnal tour at Kanyana Wildlife** Cost \$20 per person. Contact **KW**.

12 Tuesday 7.30pm

-  **Georgiana Leake – WA's first botanical artist** with guest speaker Margaret Love. Cost \$2. Contact **WSWA(P)**.


16 Saturday 8am

-  **Guided walk** with the Friends of Lake Gwelup. Contact **FLG**.


16 Saturday

-  Pigface removal **Wandi** Nature Reserve. Contact **WL**.

17 Sunday 1pm–4pm

-  **Boots on Bushcare and Safety** workshop focuses on basic work safety and *Phytophthora* dieback hygiene. Gooseberry Hill Scout Hall. Contact **BSH**.

20 Wednesday 7pm–9pm

-  **Flow For the Love of Water** is an award-winning documentary on the 'world water crisis'. Kalamunda Performing Arts Centre. Bookings 9424 2216 or joanne.woodbridge@emrc.org.au.

27 Wednesday

-  Pigface removal **Wandi** Nature Reserve. Contact **WL**.

May


1 Sunday 9am–3pm

-  **Kanyana Wildlife Open Day** Contact **KW**.


4 Wednesday 5.30pm

-  **Cockatoos and legislation** discussion evening with the Urban Bushland Council. Lotteries House, Delhi St, West Perth. Bookings 9420 7207 or ubc_dsl@iinet.net.au.


7 Saturday 9am–12 noon

-  **Revegetation skills** workshop at Bibra Lake. Seed collecting, species selection and revegetation techniques. Contact **GS**.


10 Tuesday 7.30pm

-  **Yilgarn Ranges** with guest speaker Brian Moyle. Cost \$2. Contact **WSWA(P)**.


11 Wednesday 7pm–9pm

-  **Life After People** is a thought-provoking film that combines movie-quality visual effects and expert investigation to demonstrate how our planet will change in our absence. Kalamunda Performing Arts Centre. Bookings 9424 2216 or joanne.woodbridge@emrc.org.au.

14 Saturday

-  Community planting day **Lake Magenup**. Contact **WL**.

18 Wednesday 4pm–6pm

-  **Zoo Design** Teacher Professional Learning. Find out how Perth Zoo creates ways to exhibit animals to inspire people to take on conservation action. Cost: \$40. Bookings 9474 0365 or www.perthzoo.wa.gov.au.


20 Friday 7.30pm

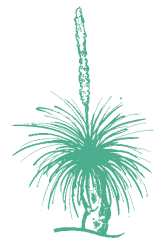
-  **Nocturnal guided walk** with the Friends of Lake Gwelup. Contact **FLG**.

24 Tuesday 7.15pm


-  **Managing trees in public places and quantifying risk** with guest speaker Jeremy Thomas. Wildflower Society WA (Northern Suburbs). Henderson Centre, North Beach. Call David 9448 9192.

27 Friday 7.30pm

-  **Nocturnal guided walk** with the Friends of Star Swamp Bushland, North Beach. Contact David 9448 9192 or starswamp@hotmail.com.



28 Saturday 10am–2pm


-  **Frog Doctor** workshop will teach you about frog biology, creating a frog friendly garden, plants for native bees and butterflies. Lake Leschenaultia. Contact **BSH**.

28 Saturday 9am–12 noon

-  **Land management** workshop at Wandi. Soil types, soil health, weed identification and control, land-use planning. Contact **GS**.

June

25 Saturday 8am

-  **Guided walk** with the Friends of Star Swamp. Contact David 9448 9192 or starswamp@hotmail.com.

Registration/Contact details

BSH Bush Skills for the Hills

Free community workshops. Bookings 9424 2216 or envirotemp@emrc.org.au.

FLG Friends of Lake Gwelup

Meet at the scout hall carpark, Huntriss Rd. Contact Christine 9447 2983 or folg@mail@iinet.net.au.

GS Green Skills

Free workshops. Bookings 9360 6667 or murdoch@greenskills.org.au. Visit www.greenskills.org.au.

KW Kanyana Wildlife

Bookings 9291 3900 or www.kanyanawildlife.org.au.

WL Wandi Landcare

Contact Fred 0428 604 032 or wandilandcare@gmail.com.

WSWA(P)

Wildflower Society of WA (Perth Branch)

Subiaco Community Centre. Email wildflowers.perth@ozemail.com.au.



Highlights

2011 International Year of Forests celebrating forests for people. Visit www.un.org/en/events/iyof2011/index.shtml.

22 Friday April Earth Day 2011: a billion acts of green. Pledge your act today! Visit www.earthday.org/.

Winter Fungi Forays with the Perth Urban Bushland Fungi Project. Event information and bookings will be uploaded to website in April/May. Visit www.fungiperth.org.au/.

13 Friday May 10am–2pm Earth Day for Schools



Children participating in SERCUL's Caring for our Rivers activity. Photo – Melinda Snowball. Primary schools are invited to celebrate International Earth Day at Canning River Eco Education Centre (CREEC). Cost \$4 per student. Call 9461 7160.

5 Sunday June World Environment Day Forests: nature at your service. Visit www.unep.org/wed/index.asp.

14 Thursday–19 Tuesday July Fungimap VI Conference, Denmark WA. Contact the Fungimap Coordinator on (03) 9252 2374 or fungimap@rbg.vic.gov.au. Visit www.rbg.vic.gov.au/fungimap/.

19 Tuesday–23 Saturday July 6th World Environmental Education Conference, Brisbane, Australia. Visit www.weec2011.org.

24 Sunday–30 Saturday July XVIII International Botanical Congress, Melbourne, Australia. Visit www.abc2011.com/.

23 Tuesday–25 Thursday August 2011 State Natural Resource Management Conference, Perth. Visit www.isde7.net/.

Activities key

-  **Hands on** – bushland and wetland management activities.
-  **Walks and tours** – look, listen and enjoy guided walks and excursions.
-  **Skills development activities** – talks, presentations, training courses and workshops.
-  **Meetings and events** – group meetings, expos, festivals and conferences.

Please send us your July, August and September 2011 events by Tuesday 24 May 2011.

Funding opportunities

Biodiversity incentives for SJ landowners

By Vanessa Slater
Serpentine Jarrahdale Shire in partnership with the SJ Landcare Centre has established the biodiversity stewardship program *Healthy Habitats* for landowners. The program assists landowners with managing their bushland and other natural areas. The program provides expert technical advice, site visits, ecological assessments, guidance with management plans and assistance with grant applications.

Local resident Peter Jacobs took advantage of the *Healthy Habitats* program. After working with the shire he has discovered his property includes two threatened ecological communities, and new populations of two species of declared rare flora. He has been able to add value to his property through successfully applying for a grant from the South-West Catchments Council for fencing and the control of weeds and feral animals.

Contact Penny Hollick at the SJ Shire on 9526 1111 or Francis Smit at the SJ Landcare Centre on 9526 0012. Download the Draft Biodiversity Strategy at www.sjshire.wa.gov.au/biodiversity/.

WetlandCare Australia – improving wetland management

WetlandCare Australia invites you to nominate suitable wetland sites for on-ground works. Suitable projects include: stock control, fencing (but not boundary fencing), acid sulfate soil management, improving wetland hydrology (wetting and drying), managing groundwater, improving drought refuge values, re-establishing connections to waterways, revegetation, weed and pest control, sediment and erosion control, reinstating tidal flows (including modifying access tracks, roads, floodgates and levees), vehicle and access control. Visit www.wetlandcare.com.au/Content/templates/pagesNi2_detail.asp?articleid=575&zoneid=87.

Ian Potter Foundation Environment and Conservation Grants

The aim of the environment and conservation grants is to preserve biodiversity and support communities to live sustainably. Applications of up to \$20,000 should be made on the Small Grants Application Form. **Closes Monday 30 May 2011.** Visit <http://foundation.ianpotter.org.au/environment-amp-conservation>.

City of Cockburn Landowner Biodiversity Conservation Grant Program

This program gives financial and NRM training support to Cockburn landowners who wish to conserve and enhance the natural bushland and wetland areas on their property. Grants are for on-ground works that directly relate to the conservation and improvement of privately owned natural bushland and/or wetlands. Grants up to \$3,000. **Closes 31 October** each year. Visit www.cockburn.wa.gov.au/Council_Services/Environment/Landowner_Biodiversity_Conservation_Grant/.

City of Melville Community Partnership Funding

A key funding area open to community organisations or individuals is for innovative projects that contribute to climate change action and environmental sustainability in the City of Melville. For grants less than \$5,000 assessments are conducted monthly. For grants \$5,000–\$10,000 applications will open March 2011 and **close April/May 2011**. Visit www.melvillecity.com.au/community/community-grants/community-partnership-funding.

Norman Wettenhall Foundation Grants

The objectives of the grants are to build community capacity, support research, monitoring and knowledge sharing to effect long-term beneficial change in the natural environment. Grants are usually \$5,000–\$10,000. Pre-approval is required before submitting your grant application. **Closing dates: 30 June, 29 September and 15 December 2011.** Visit www.nwf.org.au/grants/index.html.

Please send us your regional report (150–200 words) and a photo by Tuesday 24 May 2011. Text may be edited in response to volume of submitted reports.

Bennett Brook breathes again *By Melinda McAndrew*

Bennett Brook Reserve is 140 ha and includes the 17 km long Bennett Brook which is classed as a Conservation Category wetland. The reserve is a *Bush Forever* site and provides important habitat for the endangered southern brown bandicoot (*Isodon obesulus obesulus*).

Strategic revegetation of the reserve has been ongoing since 1995 with 16.5 ha of degraded area being improved. The focus of revegetation work has been on the removal of priority weeds such as blackberry and perennial veldt grass (*Ehrharta calycina*) and revegetation with indigenous species.

Fires in January 2010 destroyed 10 ha of vegetation in the reserve including three ha of previously revegetated bushland. A further two ha of formerly untreated blackberry infested land was also burnt during the fire, providing an opportunity to completely eradicate blackberry in this area and reinstate a continuous corridor of native vegetation during restorative works.

Through recent funding from the Swan River Trust and State NRM Office,



The scorched areas of Bennett Brook are the focus of restorative works following a fire in January 2010. Photo – Melinda McAndrew

the Friends of Bennett Brook have undertaken a project for the recovery and enhancement of Bennett Brook. Our initial aim is to restore habitat in the recently burnt area to protect bandicoots, native fish and prevent erosion. The project involves removing priority weeds including two weeds of national significance (blackberry and lantana), as well as preventing a reduction in water quality in both Bennett Brook and the Swan River. The project is scheduled to run during 2010–11.

For more information contact Melinda on melinda.mcandrew@perthregionnrm.com or 9374 3316.

Friends of Brixton Street

By Regina Drummond

The Friends group together with DEC was very active in 2010 with weed control programs and the installation of a new fence along the freight railway line boundary. The fence aimed to protect the wetlands from trail bikes. It worked well initially, but now our visitors come with heavy duty cutters.

As part of *Eco Walks and Talks* in the City of Gosnells, we held an evening for the community with a talk by Robert Powell on trees of the Perth metropolitan area. Amy Kruper talked about using local native plants to protect our waterways. This was followed by numerous questions and a light supper. This evening was very well attended and well worth the effort.

In November, Marc Lane led a flora walk through the wetlands. Otto Muller from the Insect Study Group had a very interesting display for people to look at and ask questions. During morning tea, *Earth Music* by Acushla provided a beautiful backdrop very suitable for our unique bushland. This event was also well attended and we took the opportunity to sell our 2011 Brixton Street calendars.

The Friends group are all very proud of our calendar which was put together to promote our amazing wetlands. It features photos by Dr Subas Dhakal, a valued member of our Friends group. Subas takes photos during our work mornings, which are on the third Saturday of each month. These photos provide a record of our activities and seasonal changes in the wetland. The photos are used as a monthly newsletter and members look forward to seeing what Subas has spotted and what candid shots he has included.

This year, with help from DEC's Urban Nature, we are hoping to have an activities program to provide structure to our work mornings and add more interest for our volunteers. The program will be dependent on seasonal changes to the wetland. A big thank you to our very loyal and much valued volunteers who give up their Saturday mornings, to come and give love to our Brixton Street Wetlands regardless of the weather!

For more information contact Regina on 9459 2964 or tjdrd@bigpond.net.au.



On Sunday 13 February the Friends of Marmion Marine Park and club members from Scuba 11 conducted a touch pool in the park. It was very well attended by the public and helped to raise awareness of the rich diversity of marine life in our ocean. For more information on Friends group activities contact Lynda on larry59@iinet.net.au. Photo – Lynda Arnold

Turtle study at Yellagonga

On 2 October 2010, councillors and staff from the Cities of Joondalup and Wanneroo, together with members of the Friends of Yellagong Regional Park attended the launch of the *2010 Long-Necked Turtle Study* at Picnic Cove in Edgewater. Daniel Garlett from the South West Aboriginal Land and Sea Council and Dennis Simmons, the Indigenous caretaker of Yellagonga Regional Park, attended and spoke of their support for the project.

Concern about fox predation on turtle hatchlings and incubating eggs was the motivation for the initial study in 2009. Two fox trapping programs were carried out in the park during 2010. Funding from both cities has allowed the Friends sponsored study to continue with Dr Jacqueline Giles. Friends group members Kevin, John and Frank have been trained to sample the turtles. It is hoped that sufficient information will be gathered to accurately assess turtle numbers, their general health and level of recruitment.

For more information contact volunteer coordinator Graham Sinclair on friendsofyellagonga@bigpond.com.

Wildlife monitoring at Kwinana By Craig Wilson

The *Bandicoot Refuge Project*, an Alcoa-sponsored activity in association with the Town of Kwinana and DEC, has now installed a wildlife monitoring camera at one of its refuge sites in Beeliar Regional Park at Challenger Beach. The Reconyx camera produces colour photographs during the day from a motion-sensing trigger and black and white photographs at night triggered by an infra-red sensor.

In the four months following camera installation (October 2010), a range of fauna has been captured, from birds and reptiles during the day to cats, rats, foxes and bandicoots at dusk and through the night. The presence of foxes and cats is of concern—therefore a control program will be implemented to reduce the potential for bandicoot predation. It is hoped that that installation of the terracotta pipes will provide refuge for bandicoots. Hair traps do indicate that bandicoots are using the refuges—a positive sign.

Additional planting in the reserve by community Coastcare volunteers will increase habitat areas and provide improved protection from feral predators.



Fox activity has been recorded at Challenger Beach during camera surveillance of the coastal rehabilitation areas. Photo – Craig Wilson

For more information contact Craig on Craig.Wilson@kwinana.wa.gov.au.

Friends of Lake Claremont win Community Action Grant By Heidi Hardisty

For the second consecutive year, the Friends of Lake Claremont have been awarded a \$20,000 Community Action Grant through the Australian Government's *Caring for our Country* program.

Partially surrounding Lake Claremont, the closure of a 21 ha golf course in June 2009 has provided an opportunity to restore the highly degraded wetland buffer. With this year's funds, we will continue our work restoring a portion (2,500m²) of the fringing vegetation of this Conservation Category wetland and *Bush Forever* site.

Volunteers will plant 10,000 native seedlings on the northwest shore of the lake following the removal of invasive weeds and installation of a temporary fence to protect the seedlings from walkers and dogs. Weeding and fence maintenance will be continued by our group members and the Town of Claremont. Restoration of the wetland buffer will provide additional habitat and protection for local fauna and encourage a future wetland buffer and bushland rehabilitation works.

We will be inviting volunteers from local schools and the wider community to help plant in late June–early July. To assist please contact us on FOLC.WA@gmail.com.



Marianthus bicolor in York's Bushland Garden during January. The garden has been progressively developed during the past six years by the Wildflower Society (Avon Branch) with assistance from the York Shire Council. The Society has propagated, planted and maintained the local native garden. Successful funding from Wheatbelt Natural Resource Management will enable labelling of the plants. For more information contact Eric Ayling on 9641 1136 or ayfo@wn.com.au. Photo – Eric Ayling

Urban roo control

By Chris Mayberry

Kangaroos in the Perth region can be found in our remnant bushlands, golf courses and market garden areas, often where irrigation provides them with an abundant food supply. Migration and breeding of the kangaroo populations can result in the carrying capacity of the area being exceeded or human-wildlife conflict. Rather than culling, there may be an opportunity for our suburban kangaroo populations to be managed through pharmaceutical fertility control.

During my recent PhD project on managing the fertility of female western grey kangaroos (*Macropus fuliginosus ocydromus*), I often noticed one or two younger kangaroos watching from close by as I worked with a tranquillised adult female.

Once, as two youngsters stood by, I approached the tranquillised adult. Her joey, which was at that awkward stage when they spend some time out of the pouch but are not quite ready to leave, was on the ground beside his mother. When I picked him up to put him back in the pouch, one of the two youngsters attacked me. Although she would have weighed just 12 kg, compared to my 70 kg – and even on her toes and tail stood only as high as my waist – she was determined to defend that joey. I eventually managed to fend her off for long enough to get the joey back into his mother's pouch and the youngster retreated to a distance of about 5 m.

Public recognition of animal sentience, as displayed by this young kangaroo, is the motivation for more humane management of wild animals and opposition to culling.

It took me at least three months of hand-feeding two or three times a week to be able to closely approach most kangaroos on two Perth golf courses. I was able to demonstrate that by using a system of tranquillising, tagging and treating females, suburban kangaroo populations can be managed through pharmaceutical fertility control.



Chris Mayberry takes notes and feeds the kangaroos at a suburban Perth golf course as part of his studies on kangaroo fertility control. Photo – Sushil Sood

In the future, long-acting drug formulations that can withstand the physical forces of delivery by dart may be developed, but any treated animals also need to be identified to prevent unnecessary re-treatment. Adding a coloured marker increases the weight of the dart and consequent trauma, while only temporarily identifying the treated kangaroo from the side on which it was darted. Automatic delivery systems, such as baiting feed or water, are indiscriminate and can be expected to deliver widely differing doses.

Physical capture and restraint inherently involve strenuous muscular activity and can easily cause 'capture myopathy', resulting in the kangaroo's death immediately or from muscle breakdown up to four weeks later. Habituating kangaroos to regular feeding can make approaching them to inject a tranquilliser easier, but consideration should also be given

to the ethical imposts of habituating kangaroos to regular feeding and close human contact. The kangaroos may become dependent upon supplementary feeding, visitors to the feeding site may be molested by over-familiar kangaroos and the kangaroos become easy victims for malicious attack by humans.

We can't measure the distress caused to the survivors of any culling process but those culled will not suffer if it is done in accordance with the National Code of Practice, and the carcasses are usually harvested for pet food.

In comparison, each dose of the drug I used costs more than \$30 for one or two years of female infertility. The tranquilliser costs another \$5. Adding to this is the cost of habituating kangaroos to close-approach, which makes current fertility control relatively expensive and time consuming.

group profile

Armadales Wildflower Society turns 50

By Kim Sarti



The Armadale Branch of the Wildflower Society of WA formed in March 1961 as a result of a public meeting called by the then Armadale-Kelmscott Road Board to “assist the propagation and preservation of wildflowers”. Half a century later, the group is still involved in such activities.

The group is now officially a branch of the Wildflower Society of WA Inc. Early records show the branch was active in trying to preserve plants that were being bulldozed for development and prevent the illegal removal of timber and gravel, and was holding local wildflower displays before such displays were held at Kings Park.

In June 1965, following much lobbying and letter-writing by the branch, local reserve A4561 was vested in the then Shire of Armadale-Kelmscott. By September 1973, the reserve was called Bungendore Park, the name suggested by the branch.

Members have been actively involved in the management of Bungendore Park since 1981, as well as the nearby Armadale Settlers' Common. We are now active in on-ground activities with numerous Friends groups in the region.

Over the years many wildflower exhibitions have been staged, from mini-displays in local libraries and shopping centres to large three-day shows in the Armadale Hall. All exhibitions are aimed at informing the public on the wealth of our local flora and their place in our home gardens. Regular monthly meetings are held with a guest speaker combined with local excursions and weekend excursions afar.

Seed collecting in Bungendore Park for revegetation has been a key activity since 1981. In June 1990 we worked with Men of the Trees (MOTT) to help revegetate a three km stretch of road eight km west of York. The 10,000 seedlings were grown by the branch and in 1992 the branch and MOTT won the John Tonkin Greening Award – Community Group section.

There were 22 people at the first meeting and over the years membership has remained fairly static. Of interest, one person at the very first meeting was (younger) Michael Morcombe who showed some wildflower slides after the main business had concluded. Michael and his wife, Irene, still attend our meetings and are currently patrons of the branch.



Seed collecting in Bungendore Park during February 2011 for our long-term revegetation program. From left: Faye Clay, Kim Sarti, Helen Wildsmith, Kim Fletcher, Irene Morcombe and Cam Clay. Photo – D Griffiths



Society members at a management meeting in August. Photo – Peter Murphy (National Trust)

Reverend Ewan Watts instigated the public meeting held in 1961 where it is recorded he was elected president and “appreciated [Armadale-Kelmscott Road] Board assistance [and] had no doubt all present supported the proposal [and] considered the wildflower heritage must be preserved and passed on. The object of [the] proposed Society is to preserve and cultivate wildflowers and bring to homes, parks”. We are sure that the late

Reverend Watts would be pleased to know that 50 years after he addressed the public meeting a group he helped to form is still doing its best to preserve and pass on our wildflower heritage to future generations.

The Armadale Branch meets on the second Thursday of the month at 7.30pm at the Field Study Centre, Armadale Settlers' Common (Triton Crescent, off Albany Highway). For more information contact Kim on 9470 2297 or kim.sarti@gmail.com.

Resources

Website watch

PerthCare website developed by Perth Region NRM provides land managers with best practice management information and a web-based tool to prepare a horse management action plan and monitor its implementation. Visit www.eksa.com.au/perthcare.

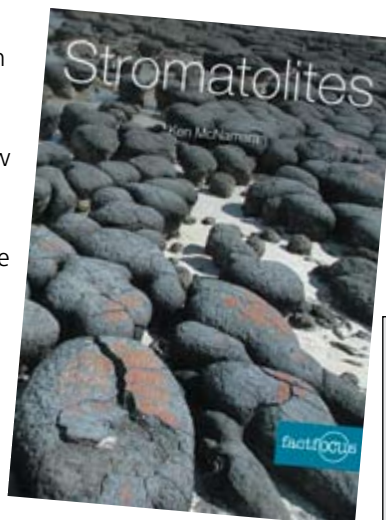
Citizen Science Toolbox is a free resource of 60 community involvement tools, principles and strategies to enhance meaningful stakeholder involvement in decision making. Visit <https://app.secure.griffith.edu.au/03/toolbox/index.php>.

Environmental Planning Tool was updated in December 2010. Includes vegetation complexes by 2009 vegetation extent and their regional retention and protection levels, cadastral boundaries, threatened and priority ecological communities, protected and listed flora and fauna, DEC estate and the ability to generate site-specific reports. Areas include the Perth NRM Region and South West Biodiversity Project area. Contact Renata Zelinova on 9213 2047 or rzelinova@walga.asn.au.

Artificial hollows for Carnaby's cockatoo project has developed a report and three information sheets. Visit www.dec.wa.gov.au/content/view/full/6333/2361/.

New publications

Stromatolites (2009) MacNamara, K. Western Australian Museum. 88 pages. RRP \$18.95. This book shows readers how these formations are a window to the past. An illustrated account of the structure and formation of these ancient constructions which have been on Earth for nearly 3.5 billion years.



Recent research

McLeod LJ, Saunders GR, McLeod SR, Dawson M and van de Ven R (2010) 'The potential for participatory landscape management to reduce the impact of the red fox (*Vulpes vulpes*) on lamb production'. *Wildlife Research* 37 (8): 695–701.

Fitzsimons J, Legge S, Traill B and Woinarski J (2010) *Into Oblivion? The disappearing native mammals of northern Australia*. Report for the Nature Conservancy. Available at <http://wildaustralia.org/science/oblivion-disappearing-mammals-northern-australia>.

Shedley E, Coates D and Burrows N (2010) 'Fire responses of threatened flora in Western Australia'. *Australasian Plant Conservation* 19 (3): 36–37.

Keighery G and Keighery B (2010) 'Hidden treasures: documenting localised variants of the flora of the Swan Coastal Plain'. *Australasian Plant Conservation* 19 (3): 19–20.

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Be in the draw

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