

New biodiversity legislation for Western Australia

By Sophie Moller

After many years of development, Western Australia is now one step closer to having new conservation legislation, with the introduction of the *Biodiversity Conservation Bill 2015* to Parliament on 25 November last year.

The Bill will replace two pieces of out-dated legislation – the *Wildlife Conservation Act 1950* and the *Sandalwood Act 1929*. It introduces a new approach that encourages conservation and supports people doing the right thing, with higher penalties to act as a deterrent to those contemplating actions that have serious impacts on wildlife conservation. It brings a modern approach to the listing of species with listing in threat categories which are internationally recognised and used by the International Union for the Conservation of Nature (IUCN). Additionally, the Bill provides for the recognition and listing of threatened ecological communities to help ensure their conservation.

The Bill introduces significant new penalties, with offences for harming critically endangered species and ecological communities attracting a maximum penalty for an individual of \$500,000. This is a significant improvement on the \$10,000 penalty in the *Wildlife Act* and the lack of recognition of threatened ecological communities in that Act.

Other features of the Bill include new opportunities for landholders and managers to enter into biodiversity conservation agreements and covenants. These are designed primarily to recognise, encourage and facilitate private biodiversity conservation efforts.

The Bill also introduces a new concept of Critical Habitat, which is a subset of the habitat of a threatened species or threatened ecological community that is determined to be the most vital and essential for that species or community to survive. Recognising such habitats provides a new mechanism for cooperative conservation management and raises awareness of the most special habitat areas.

Significantly, the Bill will repeal the *Sandalwood Act*, and provides new measures for the control and management of this naturally occurring wild resource. In recent years unauthorised harvests of wild sandalwood have had major impacts on the conservation status of the species. With wild sandalwood valued at up to more than \$10,000 per



The new Biodiversity Conservation Bill will update laws to protect WA's biodiversity. Many of our species and communities, such as WA's floral emblem the red and green kangaroo paw (Anigozanthos manglesii), are native only to WA. Photo – Kate Brown.

tonne, the new maximum penalty of \$200,000 for an individual and \$1 million for a corporation (compared to the maximum *Sandalwood Act* penalty of \$200) will help reduce unlawful harvesting. The new provisions in the Bill also include the means to regulate transport, storage and sale of wild sandalwood to provide an effective means of ensuring only legitimately obtained sandalwood is traded.

The Bill also recognises other State approval mechanisms, such as approvals under the *Environment Protection Act 1986*, to avoid duplication. It has been drafted to provide for the possibility of exemptions from approvals under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* for matters that are adequately dealt with under a State Biodiversity Conservation Act, which will considerably streamline decision making processes.

It is anticipated that the Bill will be passed by Parliament during this year. A copy of the Bill and its explanatory memorandum, which explains provisions clause by clause, is available from State Parliament's [website](#).

Contact: Sophie Moller, Parks and Wildlife, 9219 9942.

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Banksia restoration Workshop

By Julia Cullity

A workshop was held in February to share the bushland management experiences and discoveries of community groups funded under the Perth Banksia Woodland Community Restoration Grants. Representatives from 17 projects spoke about their experiences and presented monitoring outcomes in a program of five minute talks. Projects ranged from restoring banksia woodland habitats through revegetation to weed and feral animal management and the mapping and treatment of *Phytophthora* dieback. We also had a presentation from Department of Parks and Wildlife's Mark Brundrett on the Banksia Woodland Restoration Project and the techniques the department uses for vegetation establishment using topsoil transfer, direct seeding and tubestock planting, as well as monitoring results from revegetation, weed management and regeneration after bushfire.



A great turn-out at the Banksia Woodland Community Restoration workshop gave groups the opportunity to learn from each other's experiences. Photo – Mark Brundrett.

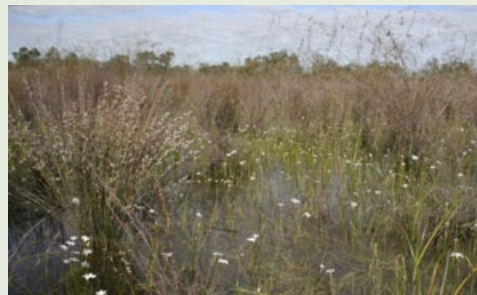
The workshop gave us the opportunity to hear from groups working in a similar ecosystem on a range of restoration projects. Initial results were quite striking particularly the differences groups were experiencing in survival rates for revegetation. This led to a short discussion on different techniques, group capacity and what it means trying to re-establish vegetation in a drying climate. We ran out of time for more questions but networking continued during lunch. It will be great to hear back from the groups when the projects are completed at the end of this year.

From marri woodlands to seasonal wetlands; restoring resilience across the Pinjarra Plain

By Kate Brown

Late last year the Urban Nature team worked closely with Armadale Gosnells Landcare Group to secure a Perth NRM Living Landscape Grant to carry out restoration works in the Greater Brixton Street Wetlands. The site protects the largest and most significant areas of remnant vegetation on the Pinjarra Plain and supports Federally listed flora, fauna and ecological communities. The Greater Brixton Street Wetlands is a significant site for species richness in the metropolitan area with 20 per cent of the known flora of the Perth Region in less than 0.005 per cent of the area.

The project area within this Bush Forever site includes Parks and Wildlife class A nature reserves, Alison Baird Reserve owned by UWA, and a series of blocks currently jointly managed by the Western Australian Planning Commission and Parks and Wildlife, which will soon become a part of the conservation estate.



Seasonal wetlands, late winter, Greater Brixton Street Wetlands. Photo – Kate brown

The project has brought together all stakeholders from across community, and local and State Government to work on restoring connectivity and ecological function across the wetlands. On-ground works will address management of key threatening processes including weed invasion, inappropriate access and altered surface water flows. The funding is a great opportunity to work towards improving connectivity, condition and resilience across the Greater Brixton Wetlands and across the fragmented peri-urban landscape of the Pinjarra Plain.

Environment grants – Changing Landscapes

Local landcare groups and farmers will receive more than \$141,000 in grant funding from the Peel-Harvey Catchment Council for projects funded until the end of 2017 as part of the National Landcare Program.

Peel Harvey Catchment Council will work with farmers, the Murray Districts Aboriginal Association, Landcare SJ and the Harvey River Restoration Taskforce to improve habitat values and ecological linkages in the Harvey River, revitalise Binjareb Park in the Shire of Murray, enhance reserves in Byford and Mundijong, and improve resilience in threatened communities in Serpentine and North Dandalup.

Contact: Jane O'Malley, Peel-Harvey Catchment Council, 6369 8800 or [email](mailto:jane.o'malley@phcc.org.au).

Contacts

Urban Nature office

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Current and archived issues of *Bushland News* are available at www.dpaw.wa.gov.au/bushlandnews

Winter Bushland News

Winter *Bushland News* contributions should be sent to [Urban Nature](mailto:urban.nature@dpaw.wa.gov.au) by **Friday 3 June 2016**. *Bushland News* seeks original contributions. If your submission has been or may be published elsewhere please let us know. Compiled and edited by Julia Cullity.

This publication is available in alternative formats on request.

Typha orientalis in Western Australia

By Greg Keighery

***Typha* a genus of 30 species and seven named hybrids is mainly from the northern hemisphere. Australia has three species: *T. orientalis* (currently native to all states apart from WA, Russia, China, Myanmar, Philippines, Indonesia and New Zealand); *T. domingensis* (native throughout Australia and at least another 115 countries) and in eastern Australia an introduced European species *T. latifolia*. *Typha* is known in Australia from fossil seeds from the Miocene (over 5 million years ago) in Victoria and both species were collected very early in Australia (1801).**

Keighery and McCabe in 2015 concluded that *Typha orientalis* is also native to WA, because of its early collection in 1839, lack of historical listings as a weed and use by Noongars as a major food source.

The altered hydrology of many wetlands to permanently wet, increased nutrient inflows and the many permanent artificial wetlands have advantaged *Typha* since European settlement. Other native sedges prefer low nutrient status, summer dry wetlands. The widespread drainage schemes of the 1930s on the coastal plain, development of permanently opened estuaries, expansion of metropolitan Perth, reduced Noongar usage and increased agricultural runoff have increased the invasion of *Typha* into many wetlands. Widespread concerns about *Typha* as an invasive species commenced in the 1950-60s and may have contributed to the first listing of *Typha orientalis* as an introduced weed in 1981.

Separating the two species is difficult as population samples of inflorescences and leaves are required. However about 90 per cent of plants can be allocated to species by the leaves, which in *T. domingensis* are narrow and grass green, aging yellow to light brown at senescence, while *T. orientalis* has broad bluish-green leaves that age dull grey and the sheathing base of the leaves is at a straight slope in *T. domingensis* but with a distinct bump in *T. orientalis*. However since both are native and invasive, managing populations not the species is the requirement.

More than 336,000 seeds are produced per inflorescence for *T. orientalis* and 682,000 for *T. domingensis*. Plants have 10-50 flowering shoots per square metre, producing up to 17 million seeds, of which 95 per cent is viable. *Typha* species are colonisers of newly emergent mud (the seeds need sunlight to germinate and establish) via their abundant wind dispersed seeds. One seed can produce a plant covering an area of 3m in diameter in one season!

Bulrushes are aggressive native invaders that can transform natural ecosystems unless actively managed. They displace native sedges by their tall dense canopies and dense rhizomes, shrubs by increasing hot autumn fires and the dense mats of dead material stop recruitment causing a loss of biodiversity from wetlands. Both species are moderately salt tolerant and invade estuarine margins such as the Swan River.

Maintaining a natural hydrology and low nutrient status of wetlands limits the ability of *Typha* to invade and dominate. Its competitive advantage can be limited by burning and mowing to remove stalks (something the Noongars did by harvesting the



Typha orientalis invaded the entire lake bed of Lake Mealup after declining rainfall, changes in surrounding land use and drainage resulted in the ephemeral lake becoming dry for substantially longer periods each year (top). Three years of slashing and spraying treating more than 54ha of *Typha* followed by altering drainage to reconnect the lake to its catchment and reinstate deeper and longer periods of inundation has restored the lake. This has led to regeneration of other fringing native sedges and the return of waterbirds (above). Photos – Heidi Bucktin.

rhizomes as food) followed by prolonged flooding. Control measures of *Typha* are given in [Florabase](#).

Typha orientalis as a native species should not require a licence to take on crown lands (although you can be legally required to do so under Section 23, B2 of the Wildlife Conservation Act) because the excuse in law is that managing *Typha* is part of the land manager's duty and obligation under operational activities and/or an approved plan. Parks and Wildlife applies this to managers of road verges, forests and local governments for their day to day activities in managing *Typha* and the other 49 native species that act as environmental weeds in WA.

Further reading:

Finlayson M, Forrester RI, Mitchell DS and Chick AJ (1985) Identification of native *Typha* in Australia [Australian Journal of Botany](#) 33(1), 101–107.

Keighery G (2013) Weedy native plants in Western Australia: an annotated checklist [Conservation Science Western Australia](#) 8(3), 259–273.

Keighery G and Keighery B (2015) Banksia behaving badly [Western Australian Naturalist](#) 29(4), 270–277.

Keighery G and McCabe S (2015) Status of *Typha orientalis* in Western Australia [Western Australian Naturalist](#) 30 (1), 30–35.

Contact: Greg Keighery, Department of Parks and Wildlife by [email](#).

Kings Park research into the ecology and management of fire in Perth's urban bushlands *By Ben Miller*

The Botanic Gardens and Parks Authority (BGPA) manages 500ha of banksia woodlands and associated communities in Kings Park and Bold Park under the BGPA Act, which requires conservation of biological diversity. BGPA also has an obligation to manage fire risk to its neighbours, visitors and infrastructure. Our neighbours include residential suburbs, hospitals, schools, university residential colleges and WA's Parliament. Kings Park receives around six million visitors a year and incorporates assets such as the State Botanic Gardens. While the nexus between management for fire risk and conservation in urban areas is not unique, Kings Park is uniquely placed to address this problem being both a research organisation and manager of urban bushland.

Swan Coastal Plain banksia woodlands are a species rich ecosystem that is naturally fire-prone. However the risk of fire ignition and spread is increasing with climate change and Perth's population growth and urban expansion. Grassy weeds add to this problem. A suite of invasive species, led by perennial veld grass (*Ehrharta calycina*), is spreading through urban and peri-urban woodlands. This spread is often enhanced by disturbance and the presence increases the risk of fire spread. Weed grasses also increase fire hazard because they establish biomass rapidly in the seasons after fire to create a continuous, well-connected and rapidly curing fuel layer. The increased availability and connectivity of fine fuels enables bushlands to burn more intensely at younger ages and in milder conditions and seasons. And of course, these weeds also have direct negative impacts on biodiversity.



Approaches to measuring pre-and post-fire vegetation parameters include assessment of vegetation openness and canopy structure from hemispheric (fish-eye) photographs: correct use of a timer allows survey staff to exit the scene. Photo – Ryan Tangney.



Part of the experimental burn in Kings Park. Photo – Ben Miller.

There are many ways that fire interval, season or intensity interact. Short fire return intervals might result in low post-fire seed germination for species that require longer periods to establish effective seedbanks. Spring fires may interfere with seed production of annual plants and high intensity fires might reduce the ability of re-sprouting plants to regenerate after fire. While we understand these issues conceptually, the actual impact of varying fire regime on the persistence of banksia woodland biota is not well known.

Kings Park scientists are developing research that aims to provide data needed to help better manage native species, weeds and fire risk in urban banksia woodland. Part of this program involves honours and PhD students from UWA, Curtin and Murdoch universities who are investigating mechanisms of interactions between banksia woodland plants and fire regime. One example is the work of PhD student Ryan Tangney who is testing the temperatures that seeds of banksia woodland plants can survive. Another is the work of Russell Miller who examined evidence for population decline among fire-killed plant species that have no soil-seed bank (e.g. *Banksia prionotes*) in long-unburnt vegetation.

A second part of this program examines the impacts of different management approaches. This long-term study tests the effects of six different management treatments: two with fire excluded, two with managed fire implemented at the shortest feasible rotation (likely about 6–7 years) and two with a longer rotation (12–14 years). Each of these pairs includes one block with no weed management and one with the land manager's standard weed management treatment. To date, three experimental sites have been initiated with extensive pre and post fire survey of fuel loads and diversity, cover and abundance of native and weed species. Burns were implemented in Kings Park and Jandakot Regional Park in autumn and spring of 2015 and another 6ha burn is planned for Bold Park in April–May 2016. A joint collaboration with Parks and Wildlife, the Department of Fire and Emergency Services and the City of Canning, the study hopes to expand with new sites.

Contact: Ben Millar. Botanic Gardens and Parks Authority by [email](mailto:ben.millar@dpaw.wa.gov.au).

The Rakali Community Survey sheds light over the elusive species *By Sabrina Trocini*

Between December 2014 and March 2015 WWF-Australia and Parks and Wildlife coordinated a community survey of sighting reports of rakali (*Hydromys chrysogaster*) in WA, in particular from the south west of the State. Funded by Lotterywest, the survey aimed to obtain rakali distribution data and to identify potential threats, while increasing awareness and education about this cryptic and understudied native aquatic rodent.

More than 200 sightings were reported over four months, with 49 transect surveys carried out with the help of community volunteers looking for

characteristic rakali foot prints and feeding middens. The [study](#) found the rakali's range has contracted towards coastal areas with localised areas of decline in Perth. Major threats to the species are drying climate in association with water extraction and habitat degradation. The main reported cause of rakali mortality was attributed to drowning in box or opera-house style traps used to catch marron. WWF-Australia, Parks and Wildlife and the Department of Fisheries are working to educate the community about the dangers of opera-house traps.

Contact: Sabrina Trocini, WWF by [email](#).

Glyphosate 'probably carcinogenic to humans'. What does this mean? *By Kellie Passeretto*

In March 2015, the International Agency for Research on Cancer (IARC) announced that the herbicide glyphosate (e.g. Roundup) had been classified as probably carcinogenic to humans (Group 2A). This classification prompted a review of potential risks associated with the use of glyphosate by numerous authorities both nationally and internationally, and caused concern among all of us who use glyphosate to manage weeds.

In Australia the Australian Pesticides and Veterinary Medicines Authority (APVMA), in conjunction with the Department of Health are further [examining](#) the IARC report to establish whether any regulatory action or formal review of glyphosate is required.

So, what does this mean? This new IARC classification means that there is limited evidence of carcinogenicity in humans and sufficient evidence in animals. Like all probable carcinogens the risk of developing cancer from glyphosate depends on how much of it you are exposed to. For most people, exposure is limited and the probability of them developing cancer from glyphosate is low.

The highest risk group are agricultural users.

The APVMA has undertaken robust chemical risk assessments for all glyphosate products currently registered for use in Australia. In addition to a hazard assessment it also considers an assessment of likely human or environmental exposure, taking into account the way the product is used. Based on these assessments the current label instructions on all glyphosate products, when followed, provide adequate protection for users.

The IARC classification is a reminder to not be complacent when using herbicides. Always read and follow all advice on the label and safety data sheet. Continue to wear the specified personal protective equipment to limit potential exposure; always use signage to ensure others are aware of areas that have been sprayed; and where possible consider alternative options for weed control. Updated advice will be provided once the review is complete.

Contact: Kellie Passeretto, Parks and Wildlife, 9219 9386 or [email](#).

Ringtail tally

The western ringtail possum (*Pseudocheirus occidentalis*) is a delightful urban visitor that only occurs in the southern regions of WA. Listed as threatened and vulnerable to extinction under State and Commonwealth legislation, ringtail possums prefer peppermint trees (*Agonis flexuosa*), much of which have been cleared for urban development. If ringtails are forced to cross open ground due to tree loss, they are more vulnerable to foxes, domestic cats and dogs and car strike.

In partnership with Parks and Wildlife, the Geographe Catchment Council (GeoCatch) is looking for people to count ringtail possums over the course of an evening in their back yards. The survey will run through April/May with funding from the National Landcare Program. If you can help please contact:

Breanne Brown, GeoCatch, 9781 0111 or [email](#) for Busselton/Dunsborough area or Geoff Barrett by [email](#) for Mandurah/southern Perth metro.



Ring tail possum. Photo – Lesley Jackes courtesy of the City of Busselton.

Green Growth Plan

The [public comment](#) period for the draft [Perth and Peel Green Growth Plan for 3.5 million](#) has been extended to Friday 13 May 2016. An [on-line mapping tool](#) is now available to see where development is proposed and natural areas are proposed for retention and protection.

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

Saturdays 15 minutes before sunrise

Research into bird populations with the **Herdsmen Lake** Bird Banding Group. Contact Bill Rutherford (ABBBS Coordinator) 0438 910 252 or [email](#).

Saturdays 8am–10am
Bushcare and rivercare activities with **Bicton** Environmental Action Group. Second and fourth Saturday of each month. Contact Peter 0439 467 855 or [email](#).

Saturdays 8am–9am
Guided walks with Friends of **Koondoola**. Second Saturday of each month. Meet Gate 2, corner Koondoola and Burbridge Ave.

Saturdays 8am–9am
Guided walks and meeting with Friends of **Landsdale**. First Saturday of each month. Meet at third gate Landsdale Rd, east of Landsdale Farm School, Darch.

Saturday 8.30am–10.30am
Bushcare activities with the Friends of **Booragoon** and **Blue Gum Lakes**. First Saturday of each month. Meet at the boardwalk into Booragoon Lake on Aldridge Rd Booragoon. Contact Mary-Ann 9316 9716 or [email](#).

Saturdays 8.30am–10.30am
Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve. Fourth Saturday of each month. Contact Cathie 9339 2439 or [email](#).

Saturdays 9am
Bushcare activities with Friends of **Brixton Street** Wetlands. Third Saturday of each month. Meet Alton St, Kenwick. Contact Regina 9459 2964 or [email](#).

Saturdays, Sundays 9am–12 noon
Koala maintenance at **Yanchep** National Park. Call Ciara 9303 7771.

Sundays
Wilson Wetlands Action Group. Regular work mornings. Contact 9258 7301 or [email](#).

Sundays 8am–9am
Guided walks with Friends of **Marangaroo**. Fourth Sunday of each month. Meet at Gate 3, Decourcy Way.

Sundays 8am–10am
Bushcare activities with Friends of **Shenton** Bushland. Contact Dani 9381 3470 or [email](#).

Sundays 8.30am
Bushcare activities with Friends of **Wireless Hill**. Second and fourth Sunday of each month. Meet at main carpark. Contact Margaret 0402 105 649 or [email](#).

Sundays 8.30am–9.30am
Guided walks and meeting with Friends of **Mirrabooka**. First Sunday of each month. Call Jan 9344 2872.

Sundays 9am–11am
Friends of **Lake Claremont** busy bee and morning tea, second Sunday of each month. Meet at the south end of Strickland St, Swanbourne. Gloves and tools provided. Contact 0416 614 696 or [web](#).

Sundays 9am–11am
Bushcare activities with **Cottesloe** Coastcare. First Sunday of each month. Contact Robyn 9384 7668, [web](#) or [email](#).

Sundays 9am–12 noon
Bushcare activities with the Friends of the **Spectacles** (Kwinana). Third Sunday of each month. Contact Lynda 0419 983 956 or [email](#).

Sundays 9.45am–12 noon
Bushcare activities with the Friends of **Piesse Brook**. Third Sunday of each month. Contact Gerry 9293 2517 or [email](#).

Mondays 7am–8am
Norma's Monday Morning Weeding Group. Friends of **Lake Claremont**. Meet at south end of Strickland St. Phone 0413 282 515.

Mondays 9am–11am
Litter collection with Swan Estuary Reserves Action Group at **Milyu** Nature Reserve, **South Perth**. Second Monday of each month. Contact Cathie 9339 2439 or [email](#).

Mondays 8.30am–11am and Fridays 9.30am–12 noon
Bushcare activities with Friends of **Mary Carroll Wetland**. Call Unice 0434 831 230.

Mondays, Wednesdays, Fridays 9am–12 noon
Bushcare activities and **wetlands walk trail maintenance** with **Yanchep** National Park Volunteers. Call Ciara 9303 7771.

Tuesdays 7am–9am
Bushcare activities with Swan Estuary Reserves Action Group at **Alfred Cove** Nature Reserve. Contact Cathie 93392439 or [email](#).

Tuesdays and Thursdays 8am–10am
Coastcare activities with **Stirling** Natural Environment CoastCare. Contact Sheldon 0488 190 651, Rae 0419 191 710 or [web](#).

Wednesdays 3pm–5pm during school term
Wildlife Wednesdays. Join 'Eco-Warriors' at **Herdsmen Lake** Wildlife Centre. Contact 93876079 or [email](#).

Thursdays 8am–9am
Bushcare activities with **Byford** Enviro-Link. Call Kristy 9526 0199.

Thursdays 9am–1pm
Bushcare activities in **Margaret River** with the Capes Volunteer Team. Call 9757 2202.

Thursdays 9am–11am
Bushcare activities, fourth Thursday of each month at **Baldvis** Children's Forest. Contact [website](#) or [email](#).

Thursdays 7.30am–9.30am
Coastcare activities with Friends of **Sorrento Beach** and **Marmion Foreshore** followed by morning tea. Call Mike 0438 710 527.

Thursdays and Sundays 10am–12 noon
Kanyana Wildlife Centre, Discovery Centre Tours. Close encounters with native animals and interactive Discovery Centre. \$20 or less, bookings essential [web](#), [email](#) or 9291 3900.

Thursdays or Fridays 9am–4pm
Wetland, bushcare and nursery activities with **Cockburn Wetlands** Centre. Contact Denise 0412 081 540 or [email](#).

Fridays and Saturdays 7pm–9pm
First Friday and second Saturday each month, **Kanyana Wildlife Centre**, Nocturnal Tours. Meet nocturnal native wildlife and hear about endangered species breeding programs. \$20 or less, bookings essential [web](#), [email](#) or 9291 3900.

Fridays 8am
Bushcare activities at **Piney Lakes**. Volunteers need a site induction email [Jacklyn](#).

April

3 Sunday sunset, 5.30–6.30pm
Great Cocky Count. Become a citizen scientist and join this annual [survey](#) that counts black cockatoos across WA as they come into roost at sunset.

5 Tuesday 9am
Coastcare. Meet Westview parking station. [Mullaloo](#).

7 Thursday 8am
Birdwalk Tomato Lake Kewdale, meet near the small tearooms off Oats St, Kewdale. [Birdlife WA](#).

10 Sunday 8am
Birdwalk Ray Marshall Park Vivesh, meet in the carpark at the end of First Ave, Woodbridge off Great Eastern Hwy, just east of Governor Stirling Senior High School. [Birdlife WA](#).

10 Sunday 11am–4pm
Envirofest at Whiteman Park discover ways to become more sustainable at home. Visit their [website](#).

11 Monday 5pm–6.30pm
Twilight walks for kids and families with Friends of **Bold Park** Volunteer Guides. Meet WA Ecology Centre, Perry Lakes Dr. Wear appropriate clothes and bring a torch. Call 9480 3996, [email](#) or [web](#).

12 Tuesday 8pm
Talk Hazel Dempster **Bringing WA Flora into Streetscapes and Parklands: a case study**. [WSWA\(P\)](#).

13 Wednesday 9am–12 noon
Feathers, Nests and Nuts birds and birdwatching workshop for 8-12 year olds, **Poison Gully** on Tree Fern Green, Maida Vale **BS4Y**.

18 Monday 5pm–6.30pm
Twilight walks for kids and families with Friends of **Bold Park** Volunteer Guides. Meet WA Ecology Centre, Perry Lakes Dr. Wear appropriate clothes and bring a torch. Call 9480 3996, [email](#) or [web](#).

20 Wednesday 9.30am–12.30pm

All about Eagles activities for 12–16 year olds with Simon Cherriman. **John Forrest National Park** picnic area, Hovea **BS4Y**.

20 Wednesday 4.30pm–7.30pm
Bats Fantastic games, activities and fun at **Piney Lakes**. [CoM](#).

20 Wednesday 7.30pm
Talk Judy Fisher **A New Approach to Biodiversity**. [WA Nats \(NS\)](#).

26 Tuesday 9am
Coastcare. Meet Tom Simpson northern car park. [Mullaloo](#).

27 Wednesday 10am
Beachcombers walk Sorrento to Waterman's Bay. [GOLLY](#).

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.

Registration/contact details

BirdLife WA All walks are free, bookings not essential. Call 9383 7749 Monday–Friday 9.30am–12.30pm or [email](#).

BSFH Bush Skills for the Hills registrations open two months in advance of workshop. Call 9424 2216 or [website](#).

BS4Y Bush Skills 4 Youth. Call 9424 2216 or [website](#).

GOLLY GO Locally walks with the Northern Suburbs Naturalists. Call Don 0419 460 301.

CoM City of Melville. [Bookings](#) essential.


Kwinana City of Kwinana. Contact Angela 9439 0418 or [email](#).

Mullaloo Mullaloo Beach Community Group. Planting, weeding and collecting rubbish. Equipment and refreshments provided. [Email](#).

WA Nats (NS) Northern Suburbs Branch WA Naturalists Henderson Environmental Centre, Groat St, North Beach.

WSWA(P) Perth Branch Wildflower Society of WA. Subiaco Community Centre, Bagot Rd, Subiaco. Call Brian 9330 1754.

30 Saturday 7am–1pm

 NARC Dive Club annual land and underwater **cleanup. Fishing Boat Harbour**, 1 Mews Rd, Fremantle. Register with Diving Frontiers 9240 6662.


May**1 Sunday 7.45am–2.45pm**

 **Wellington Discovery Centre** day walk in the jarrah forest with the Bunbury Bushwalking Club. Meet Plaza Shopping Centre, South Bunbury. \$5, register by [email](#).

1 Sunday 9am–11am

 **Planting.** Meet Tom Simpson northern car park. **Mullaloo**.


1 Sunday 10am–4pm

 **Discover Kanyana Day.** All ages. Visit our wildlife hospital, learn about native animals, peruse stalls and enjoy kid's activities, \$5. 120 Gilchrist Rd Lesmurdie.


3 Tuesday 8.30am–4.30pm

 **Fertilise Wise Fertiliser Training** Turf managers will develop fertiliser management plans for their areas. Canning River Eco Education Centre. \$100, [bookings](#).

3 Tuesday 6pm–8pm

 **Yarning about Noongar Boodja** at Piney Lakes \$5. **CoM**.


7 Saturday 8am

 **Birdwalk Bull Creek Wetlands** Brentwood, meet at Spinaway Cres. **Birdlife WA**.


7 Saturday 9.30am–11.30am

 **Healthy Wildlife and Healthy lives** – one Health in Action – fauna disease transfer. Hazelmere Hall, Bruce Elliott Reserve, Hazelmere. **BSFH**.


7 Saturday 10am–11.30am

 **Recycle Right:** what happens to my waste tour of the Regional Resource Recovery Centre, Canning Vale. [Bookings](#).


10 Tuesday 8pm

 **Talk John Viska History of the Use of Native Plants in Perth.** **WSWA(P)**.


12 Thursday 8am

 **Birdwalk Beenyup Swamp** Woodvale, meet in the carpark on the south side of Ocean Reef Rd near the old buildings.. **Birdlife WA**.


14 Saturday 9.30am–1.30pm

 **Volunteers Guide to Wetland Weeds.** Identifying common wetland weeds, effective removal and building partnerships with land managers for unified weed management. Canning River Eco Education Centre, Kent St, Cannington. \$30. Bookings essential [email](#) or 9374 3333.

21 Saturday 9am–11.30am

 **Exploring the Hunter Gather Life.** Discover the many uses of plants and animals and try your hand at making some traditional hunting tools. Perth Hills Discovery Centre, Mundaring. **BSFH**.

21 Saturday 8.30am–11am

 **Marmion Coastal Reserve dune onion weed bust** with the Friends of Sorrento Beach and Marmion Foreshore. Tools and morning tea provided. Park on southern side of Troy Ave, Marmion.


25 Wednesday 10am

 **Walk Riverside gardens** and **Eric Singleton Bird Sanctuary.** **GOLLY**.


29 Sunday 9am–12 noon

 **Community planting May Henley Reserve,** Wellard, off Gilmore Ave, refreshments provided. **Kwinana**.

31 Tuesday 9am

 **Coastcare.** Meet Westview parking station. **Mullaloo**.


June**4 Saturday 10am–12 noon**

 **Bidi Katitjiny Aboriginal Women's Trail** guided tour and tucker. **Piney Lakes**, \$5. **CoM**.


5 Sunday 9am–12 noon

 **Community planting Chalk Hill** Beacham Cres, Medina, refreshments provided. **Kwinana**.

5 Sunday 9am

 **Coastcare.** Meet Westview parking station. **Mullaloo**.

9 Thursday 8.30am

 **Birdwalk The Spectacles** Kwinana, meet in the carpark McLaughlan Rd. **Birdlife WA**.

12 Sunday 8am

 **Birdwalk Tom Bateman Reserve** Thornlie, meet at playground/sporting complex corner of Nicholson and Wilfred Rds (carpark off Wilfred Rd). **Birdlife WA**.

12 Sunday 9am–12 noon

 **Community planting Wellard Park** corner Wellard Rd and Betram Rd, Wellard, refreshments provided. **Kwinana**.

15 Wednesday 7.30pm

 **Talk Eddy Wajon Gondwanalink and Chingarup.** **WA Nats (NS)**.


18 Saturday –19 Sunday 9am–4pm

 **Basic course in wildlife rehabilitation** introductory course for those interested in the rehabilitation of native wildlife and a prerequisite to become a Parks and Wildlife registered wildlife rehabilitator. Two on-line components must be completed prior to sessions. Parks and Wildlife, Kensington. \$250 corporate, \$210 general. [Registrations](#).

22 Wednesday 10am

 **Walk Lightning Swamp.** **GOLLY**.

24 Friday–25 Saturday 8am–5pm

 **Treat Weeds** accredited training on how to identify and manage weeds for community members involved in bushland management, Central Institute of Technology. Call 6211 2138 or [email](#).


25 Saturday 9am–12 noon

 **Frogs/Spiders/Snails.** Morning walk at **Lesmurdie Falls.** **BSFH**.

26 Sunday 9am–12 noon

 **Community planting Lake Magenup** off De Haer Rd, Wandii, refreshments provided. **Kwinana**.

28 Tuesday 9am

 **Coastcare.** Meet Key West parking station. **Mullaloo**.

Highlights

WA Naturalists hold regular talks and excursions each month. [View](#) their calendar.

Autumn's aura 2016 school holiday activities with **Nearer to Nature**. Activities for all ages including caving. Noongar knowledge, canoeing, beachcombing and animal encounters. [View](#) the program, bookings essential call 9295 2244

16 April – 18 May

National Trust Heritage Festival 2016 Discovery and Rediscoveries invites you to dig up the past and re-explore your region. [Register](#) your events.

Month of May

During **Eco May** Conservation Council WA (CCWA) is assisting communities and groups to celebrate our natural places and connection to nature with community events. CCWA will cross-promote on the web, to their supporter database, on social media and with the media. [Register](#) your activity or special event by 4 April to be listed in the program booklet.

Eureka prize for Innovation in Citizen Science

is a new award sponsored by the Department of Industry, Innovation and Science. The \$10,000 prize will be awarded for demonstrated excellence in citizen science through innovative research or community engagement. [Nominations](#) close Friday 6 May 2016.

11–13 May 9am–5pm

Atlas of Living Australia Science Symposium highlighting research and practical outcomes enabled by the Atlas. Keiran McNamara Conservation Science Centre, Parks and Wildlife, Kensington. Free [registration](#).

20 Friday May 9am–5pm

WA Landcare Network's annual **Community Landcare Forum** – Strengthening Landcare in Western Australia – a Brighter Future Fairbridge Village, Pinjarra. Contact Aruni 0467 232 121 or [email](#) and [web](#).

27 June – 11 July

WA Naturalists exhibition, retrospective of **Wildlife Show**, Perth Town Hall.

11–15 September 2016

20th Australasian Weeds Conference, Perth Exhibition and Convention Centre. More [information](#).

Funding opportunities

Swan Alcoa Landcare Program. Funding is available for 2017 for revegetation and rehabilitation activities within Perth. [Applications](#) close **13 May** 2016.

State NRM Community Action Grants (\$55,000) support community-based projects that protect and restore the local environment. Anticipated to open in **May** 2016. Visit the [website](#) and subscribe for updates.

Aurizon Community Giving Fund (\$1000 - \$20,000) for environmental projects in Geraldton, Perth, Kalgoorlie, Esperance. [Grants](#) open **11 April** 2016.

State NRM Community Capability Grants supports volunteers to improve their capability, governance and management performance. [Grants](#) are awarded until funds are allocated or the round closes **30 May** 2016.

Coastwest grants up to \$50,000 to fund on-ground action, identification and monitoring, site or local area planning and capacity building for coastal groups and managers. [Grants](#) close **8 April** 2016.

Australian Bird Environment Foundation provides grants up to \$5000 to support practical on-ground conservation activities for Australian birds. [Applications](#) close **31 May** 2016.

Local Government community grants

These local governments provide small grants to their communities which can fund environmental groups' bushland management and restoration projects. Eligibility varies, click on the link to get more information. **Albany** will close **29 April**, **Armadale** will close **8 April**, **Cottesloe** will close **22 April**, **Melville** will close 16 May, **Rockingham** will close **6 May**, **Serpentine-Jarrahdale** will close **15 May**, **Subiaco** will close **27 May**.

Please send us your regional report (200 words) and a photo by Friday 3 June 2016. Text may be edited in response to volume of submitted reports.

Bicton Environmental Action Group Point Walter project

By Peter Neesham

The Bicton Environmental Action Group (BEAG) has been working to rehabilitate the Point Walter Bush Forever site 331 since 2009. It began with a grant from the former Department of Environment and Conservation (DEC) for fencing to keep cars out of the reserve, coir matting for hill stabilisation and plants. This initial project was very successful in re-establishing vegetation in particular the sedges (*Lepidosperma gladiatum*).

Subsequently the Melville City Council (MCC) committed about \$1.5 million for remediation of erosion in the public use areas at Point Walter. BEAG proposed to MCC to extend this work from Honour Ave downstream along the foreshore into the Point Walter Bush Forever site.

BEAG received funding from ALCOA and then DEC and MCC to place tea tree logs on the foreshore to control boat wash erosion and attempt to re-establish the reeds and sedges on the foreshore. Using these grants BEAG has now covered about 250m of the foreshore with the tea tree logs to reduce erosion. This has been quite a learning experience. The logs stabilised the foreshore and stopped the loss of sheoaks. However not enough sand was trapped to allow for the successful planting of reeds (*Juncus*) behind them.

Boat wash is the main cause of erosion. In October 2013 the eight knot speed limit in Blackwall Reach was extended into previously unrestricted waters and now includes the area from Chidley Point to the end of the sand bar and around Keanes Point into Freshwater Bay. It would appear that reduced speed has been very beneficial to reducing erosion as the reeds planted in 2015 have remained intact and are thriving. In addition there has been natural recruitment of other fringing vegetation



The river foreshore has been stabilised at Blackwall Reach after remediation works by BEAG and significantly a reduction in the boat speed limit. The foreshore in 2011 (top) shows the brushing and matting that was staked into place to help counter erosion from boat wash and storm events. Five years later (above), February 2016, sedges have re-established on the foreshore. Photos – BEAG and Kay Howard.

such as *Juncus kraussii*, *Cyperus gymnocaulus*, *Samolus repens* and samphire.

Overall when taken together the grants have produced quite a good outcome with good success with plant survival, although removal of some non-indigenous trees would benefit the project. Finally I would like to acknowledge the support BEAG has received from Parks and Wildlife (formerly DEC), ALCOA, MCC, Chevron, Bunnings and Conservation Volunteers of Australia throughout the years for their support of the work at Point Walter.

Contact: Peter Neesham, Bicton Environmental Action Group, 0439 467 855 or [email](#).

Putting a name to a place

By Leonie Stubbs

What might have just been a polite comment from a State NRM Officer who mentioned never having visited Paganoni Swamp turned into an opportunity for all those involved in a grant application to get together and see firsthand why we believe Paganoni Swamp Reserve is so precious.

The friends group was successful in receiving a Living Landscape grant for weed control, the restoration of two degraded areas and the construction of a limestone "bridge" to help prevent the spread of *Phytophthora cinnamomi* dieback on the eastern boundary.

Organisations involved include Perth NRM who manages the grants, South East Regional Centre for Urban Landcare which sponsors our friends group (as we don't have an ABN), our principal partner Parks and Wildlife, the land manager, and Nuts about Natives the business growing the seedlings from seeds we collected at the reserve.

We were probably too ambitious with all the sites we wanted to visit but the 13 representatives plus members of our friends group did get to visit the most important sites. These included sites where the restoration work would be carried out, the area affected by dieback and the floristic plots which provided so many opportunities for research following a prescribed burn in 2011.

Morning tea was held at the ochre site on the eastern boundary – a special place because of its history and its dramatic contrast in colour to the surrounding landscape. It was an opportunity to consider the outcome of the South West Native Title Settlement and the prospect of collaborating with local Aboriginal people in the work we do.

It was a very successful morning and we are looking forward to repeating the exercise in about 18 months' time to evaluate the progress we have made in fulfilling our commitments under the grant.

Contact: Leonie, Friends of Paganoni Swamp, 0439 921 298 or [email](#).

Yangebup Lake nutrient stripping basin trial

By Linda Metz

The City of Cockburn is undertaking an innovative project to improve water quality within Yangebup Lake. The lake is a hypertrophic wetland, a stormwater receiving point and over the past several years a source of nuisance midge.

The City wanted to look at not only treating the water entering into the lake but also treating the water already in the lake. After discussions with a hydrological engineer the City opted to trial a nutrient stripping basin. The technology of using vegetation to fix nutrients has shown to be successful in improving water quality.

A solar powered pump was installed to take water from the wetland and then allow the water to meander through approximately 280m of vegetated swale before re-entering the wetland.

The site prior to works was completely degraded with an almost 100 per cent cover of kikuyu grass. Earthworks and weed control began in June 2015 with the pump operational by September 2015.

The structure of the swales includes deeper runnels, riffles and a shallow shelf to maximise the volume of water treated while keeping flow rates slow enough to allow nutrient uptake to occur.

Nutrient enriched groundwater is also being treated by the basin. More than 19,000 native plants have been installed including mid and over-storey species. APACE, local schools and community members were involved in planting activities.

Baseline reports for macroinvertebrate and water quality have been completed and regular



Major earthworks created the nutrient stripping basin in June 2015 (top). Seven months later, in January 2016 (above), winter plantings have established well increasing the cover of native plants and attracting fauna to the area.

monitoring will continue.

Some immediate results have been an increased cover of native vegetation which has been utilised by birds, long-necked turtles and a range of insects.

Vegetation has established very quickly with species such as *Juncus pallidus*, *Baumea articulata* and a naturally occurring *Bolboschoenus caldwellii* largely out competing weed species.

This project has been part funded by the State NRM Office and the City of Cockburn.

Contact: Linda Metz, City of Cockburn by [email](#).

Environmental volunteering with the Friends of Brixton Street Wetlands

By Subas Dhakal

Brixton Street Wetlands in Kenwick is home to more than 320 species of native flora, making it one of the most ecologically significant areas within Perth. The Friends of Brixton Street Wetlands have been engaged in the protection and management of the wetlands for more than 25 years and this is an opportunity to reflect on the group's activities last year.

The group met every third Saturday morning of the month for a wide range of activities ranging from weeding to wildlife photography. The 22 regular volunteers contributed at least 750 hours in 2015, which according to Volunteering WA website is valued at \$57,425.

Six "Wednesday Bush-Walks" led by local naturalists were organised and attracted a total of nearly 100 locals. Two Saturday events, the popular annual 'Flora Walk' with Greg and Bronwyn Keighery and the 'Life in Puddles' talk with Joan Powling and Mary Gray, attracted more than 150 community members.

In August, volunteers from Chevron IT department helped clean-up the area by picking up more than a tonne of rubbish.

The contributions of these volunteers is greatly appreciated and celebrated!

Contact: Regina, Friends of Brixton Street Wetlands, 9459 2964 or [email](#).

Many hands make weeds go By Stephen Johnston

The concerted efforts of volunteers from the Canning River Residents' Environment Protection Association (CRREPA), the Lions Club of Booragoon and Conservation Volunteers Australia, complemented by the City of Canning Bushcrew, last year enabled the removal of hundreds of bags of weeds over the winter and spring months along the Canning River foreshore.

CRREPA's Foreshore Groups Coordinator Grecian Sandwell said that while the target

areas and the weeds varied, the objective remained the same.

"To remove weeds that will compete with our native plants for nutrients, light, space and water and to bag the weeds and remove them before their seeds ripen and disperse is important. If we don't continue to do that every year the weeds' seed bank will continue to grow. It takes five years before a newly planted area matures to the point of being able to look after itself."

While the ideal solution is total removal of weed species with their sustained absence from an area, the more practical objective is simply minimising their spread and impact. Grecian recalls that weeds like dock were rife when she moved to Shelley in 1991 but after much work by volunteers it was rarely seen until a recent comeback.

Contact: Stephen Johnston, CREPA by [email](#).

Bait interference – a tale of two farms

By Trish Fleming and Shannon Dundas

A major limitation of baiting to control foxes on farmland is interference by non-target species, including native wildlife (e.g. ravens and eagles) and production animals (e.g. sheep, piglets). Supported by Royalties for Regions funding, Murdoch University has been examining how foxes interact with baits on farmlands.

We compared bait-take for non-toxic dried kangaroo meat baits. These were presented in one of four ways: suspended, wrapped in kangaroo hide, buried and laid on the soil surface. We have repeated this study at two locations, on an outdoor pig farm and a number of commercial sheep farms. At both sites, there were large numbers of foxes present.

Cameras showed ravens and feral cats regularly visiting bait stations, in addition to the odd fox. Most baits were taken without triggering the camera. Ravens were the only species identified taking surface-laid and kangaroo hide-wrapped baits soon after they were distributed.

On the sheep farm we studied, around half the monitored baits were taken within a few days of deployment, but we noted that there were many baits that were first approached around one week after deployment. They can take their time in approaching baits, especially when they are monitored by an infrared camera trap!

Foxes were the only species we recorded taking buried baits. Foxes were observed digging up buried baits more than a month after they were placed out.

Western Australian wildlife has a high resistance to 1080, allowing the aerial deployment of large numbers of baits. However, in the eastern states, because the wildlife there does not have the same resistance to 1080, they have to bury the baits to protect wildlife. Burying baits around targeted sites may still be an important strategy to reduce bait take by non-target species on WA farmlands.

For more information on fox baiting, including developing an integrated fox management plan, visit [PestSmart](#).

Contact: Trish Fleming, Murdoch University by [email](#)



Bait interference: Raven taking surface-laid bait (left) and a feral cat inspecting suspended bait (right). Remote camera photos – Murdoch University.



Kangaroo hide-wrapped and dried meat baits (that were either suspended, buried or left on the surface) used in this trial. Photos – Murdoch University.

Table 1. Numbers of bait takes for four presentations. Data for two unpublished studies is shown.

		Suspended	Kangaroo hide-wrapped	Buried	Surface-laid
Outdoor piggery, Albany	Fox			1	
	Raven		2		2
Total baits deployed		8	8	8	8
Sheep/wheat regions, Mt Barker & Darkan	Fox		5		4
	Raven				1
	Magpie				1
Total baits deployed		10	9	8	7

Rabbit biocontrol release

Groups of landholders impacted by rabbits are invited to nominate sites for the proposed release of a new strain of rabbit haemorrhagic disease virus (RHDV), commonly known as calicivirus. Previous strains released in Australia performed poorly in moist climates because rabbits were protected by a benign virus.

The new strain, RHDV K5, originates in Korea and can overcome this protection. Landholders will assist with pre and post-release rabbit monitoring. Release is likely to take place in early spring 2016 or autumn 2017. [Expressions of interest](#) close 31 May 2016.

Friends of Sorrento Beach and Marmion Foreshore



Partners meet at the border! Mike Norman (Friends of Sorrento Beach and Marmion Foreshore) with Rae Kolb (Stirling Natural Environment Coastcare), Murray Woods (City of Stirling) and Keith Armstrong (City of Joondalup). Photo – City of Stirling.

By Mike Norman

Friends of Sorrento Beach and Marmion Foreshore is a metropolitan coast care group and is one of three very active coastal friends groups affiliated with the Joondalup Community Coast Care Forum Inc. (the other two are working in Mullaloo and Ocean Reef/ Iluka).

The group started off as Friends of Sorrento Beach in June 2000 restoring a very degraded, but high profile, 1km section of coastline in the suburb of Sorrento. Some 25 weed species were intensively removed prior to seed shed (“zero tolerance” weeding) and about 17,500 seedlings planted with an average survival rate of 85 per cent. Most of the area is now revegetated, but some infill with additional coastal species is still needed to improve biodiversity.

The friends group uses a “volunteer + contractor” model to get the work done in a timely manner, which is critical. Contractors do the more technical tasks or parts of the site that are less suitable for volunteers. The contractor labour is covered by grants applied for by the coordinator, mainly Coastwest grants. Most of the part-time contractors are also volunteers and are selected for their knowledge and enthusiasm/ hand weeding efficiency. As most grants require public liability cover, a single insurance policy is taken out to cover all our part-time contractors, for the period July to December (that is only for the period we actually need them). The on-ground work is performed in partnership with the City of Joondalup who assist by providing infrastructure (such as fencing), scheduled

on-ground work and some direct funding.

In December 2015 the City of Joondalup adopted the [Sorrento Foreshore Management Plan](#), which showed that the condition of the vegetation of the entire reserve had changed from poor to very poor in 2002 to mostly very good (with some excellent) in 2015, reflective of low weed density and good cover of native plant species.

In 2013, with the help of Coastwest funding, the project area was extended south into the steep rocky banks of the Marmion Coastal Foreshore Reserve. An extensive weeding program commenced, litter removed, and so far 3,000 seedlings have been planted with a survival rate in excess of 95 per cent.

With the adoption by council of the [Marmion Coastal Foreshore Reserve Management Plan](#) in February 2015, and the announcement of another round of Coastwest funding by the Western Australian Planning Commission for 2016, the friends group was renamed to Friends of Sorrento Beach and Marmion Foreshore. Work commenced to restore the whole of the Marmion Foreshore Reserve, which will see it totally restored over the next few years.



Volunteer and part-time contractor, Anne Templeton, working on a steep section of Marmion foreshore initially planted in 2013. Photo – Mike Norman.



A few of the regular friends with our updated sign which describes the extent of the project and its principal supporters. Photo – Mike Norman.

Our total project area of 8.1ha now covers more than 2.5km of coastline through the suburbs of Sorrento and Marmion.

At Beach Rd in Marmion, our project now adjoins one already being worked on by the community coast care group Stirling Natural Environment Coastcare and the City of Stirling. They have received funding to restore some 4.5km of the City of Stirling’s 6.7km coastline and are achieving impressive results.

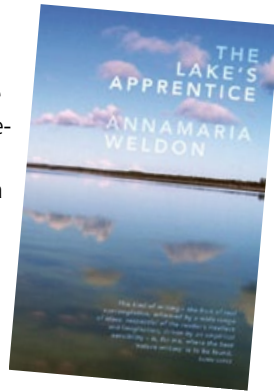
The significance of having both extensive multi-year coast care projects joining up at the border between two of the largest metropolitan local governments is that it will result in a much larger contiguous block of fully restored coastal foreshore reserve. This will further cement the ongoing relationship and collaboration between all the partners working within the two cities. It will undoubtedly result in one of the best stretches of fully restored coastal foreshore reserves to be seen in Perth and fittingly frame Marmion Marine Park, the first marine park in WA. Our project areas about a very busy coastal shared path and arterial road, not to mention the many homes and cafes that overlook it, so that outcome will certainly be enjoyed and appreciated by many.

Contact: Mike Norman, Friends of Sorrento Beach and Marmion Foreshore, 0438 710 527 or [email](mailto:mike@bushlandnews.com.au).

Resources

New publications

The Lake's Apprentice Weldon, Annamaria. UWA Publishing, 2014. \$29.99. A collection of essays, nature notes, poetry and photography; place-based literature for the chain of lakes in Yalgorup National Park. Annamaria Weldon is seeing the landscape from the long past of the Bindjareb Noongar peoples, using current environmental research and thinking through to a resilient future.



Swanning around Perth: An Exploration of the Black Swan in our City George, Alexander and Cave, Charmaine. Four Gables Press, 2014. \$20. Perth's history seen through the symbol of the black swan with examples of the black swan in art, design and public life.

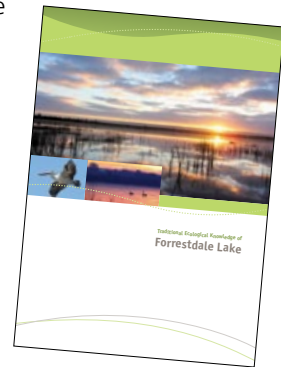
Research

Groom Christine (2015) *Roost site fidelity and resource use by Carnaby's cockatoo, Calyptorhynchus latirostris, on the Swan coastal plain, Western Australia*. [Doctoral thesis](#) submitted University of Western Australia. Also view her [video](#) Unusual Behaviours of Carnaby's Cockatoos.

Website Watch

Western Shield Action Pack Education [resource material](#) for students in years 4 to 6 to learn about threatened species and the conservation actions to help their recovery.

Traditional Ecological Knowledge of Forrestdale Lake provides pictures, translations and knowledge about the plants and animals of Forrestdale Lake with the assistance of Noongar Elders Vivienne and Mort Hanson. [Download](#) from Perth Region NRM.



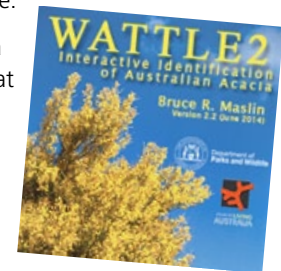
Landscape and Revegetation Guidelines Shire of Mundaring available for [download](#).

Swan Region Strategy for Natural Resource Management provides an integrated planning framework for the management of the Swan Region's natural resources. Perth NRM has consulted widely across the region and produced a [strategy](#) that brings a holistic approach to NRM from all levels of government, community, business and industry. The [Implementation Plan](#) details 15 priorities for action.

Swan Canning River Protection Strategy provides a [masterplan](#) to guide investment, keep the rivers healthy and ensure they are accessible for the community to enjoy in the long term.

Land for Wildlife has launched a new [facebook](#) page.

Wattle2 Interactive identification of Australian Acacia by Bruce Maslin. A free [web-based interactive key](#) that is a revision of *Wattles of Australia* first published on CD in 2001. Includes 1,274 species, sub-species and hybrids with links to descriptions, images and maps. Type "Wattle2" in the search box in the centre of the page and press go.



Lookout for

Firewood banksia By Julia Cullity



Starting in autumn and into winter the bush will be adorned with the spectacular flowers of firewood banksia (*Banksia menziesii*). The flower spike is actually made up of many hundreds of individual flowers which, as they open from the base, give it its distinctive two-tone colouring. At any time of the year around Perth there will be a banksia in flower. Our five common tree species have sequential and slightly overlapping flowering seasons providing a year round nectar source for birds and mammals. Photo – Kate Brown

Year round flowering of banksias in Perth (adapted from [Wheland and Burbidge](#) 1980)

	J	F	M	A	M	J	J	A	S	O	N	D
<i>Banksia menziesii</i>												
<i>B. littoralis</i>												
<i>B. ilicifolia</i>												
<i>B. grandis</i>												
<i>B. attenuata</i>												

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