

Issue 74

Winter 2010

*Time of Makuru and
Djilba in the Nyoongar
calendar.*

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Threatened mammals discovered in Perth's southern suburbs

By Brian Chambers

A project to study the effectiveness of fauna passages under the Perth to Bunbury Highway has yielded exciting results at Paganoni Swamp Reserve in Karnup. Recent trapping at Paganoni has resulted in the capture of a brush-tailed phascogale and a chuditch or western quoll, both of which are threatened species.

Brush-tailed phascogales (*Phascogale tapoatafa*) are small grey tree-dwelling marsupials, the size of a small rat, with a large black brush on the end of their tail. Chuditch (*Dasyurus geoffroyi*) are small carnivorous marsupials about the size of a domestic cat, with distinctive brown fur with large white spots. A combination of factors such as clearing, changed fire regimes, disease and predation have probably contributed to the decline of both species.

The discovery of a brush-tailed phascogale in Paganoni Swamp Reserve follows the previous capture of one in Marlee Reserve, 6 km to the south in September 2009 by the research team.

The chuditch was captured in Paganoni less than 200 m from the boundary of the area proposed for rezoning from 'Parks and Recreation' to 'Urban' under the draft *Southern Metropolitan and Peel Sub-Regional Structure Plan*.

I hope that the discovery of two threatened mammals in the reserve will lead the Planning Commission to rule out this proposed rezoning to ensure that the habitat of these animals is protected. Chuditch require large areas of protected habitat, as individuals regularly cover more than 5km² searching for food and mates. Protecting large areas of bushland, as well as ensuring that there are connections between protected areas, is



Chuditch captured in Paganoni Swamp Reserve. Photo – Davide Santoro

therefore vital if this species is to re-establish populations on the Swan Coastal Plain. Our results also demonstrate the incredible value that reserves, such as Paganoni, have in conserving native fauna on the Swan Coastal Plain.

The week-long trapping in Paganoni also resulted in the capture of brushtail possums (*Trichosurus vulpecula*) and quendas or southern brown bandicoots (*Isodon obesulus*). All of the native mammals captured were microchipped before being released, so that microchip scanners placed in the underpasses will reveal if animals use them. Our research for Main Roads WA aims to find the best ways of constructing and managing the fauna underpasses

to improve the ability of native animals to move about the landscape. We are optimistic that there are more chuditch in the area and we hope further trapping later this year will result in more individuals being discovered.

Funded by Main Roads WA, the fauna trapping in Paganoni involved researchers Dr Brian Chambers, PhD students Valentina Mella and Paul Chachelle and Associate Professor Roberta Bencini, with the help of undergraduate students from The University of Western Australia and volunteers from the Friends of Paganoni Swamp. For more information email Dr Chambers at brianc@animals.uwa.edu.au.

Urban Nature weed mapping workshop

By Julia Cullity

A recent workshop hosted by Urban Nature brought staff from the Department of Environment and Conservation (DEC) together to discuss weed mapping techniques and standards. Mapping weed species is an important step in setting priorities for control work in bushland.

If standard techniques are consistently applied, these records can also provide a measure of the effectiveness of weed management over time. Protocols required for detailed mapping of the distribution and density of serious weeds in bushlands and wetlands were discussed. DEC staff and external providers also presented information about GPS systems available to collect the data needed for mapping and monitoring.

Following on from this, Urban Nature will be hosting a workshop aimed at helping



DEC staff discussing protocols for weed mapping. Photo – Julia Cullity

community volunteers get the most out of their GPS using relatively inexpensive software. Practical exercises will take participants through the steps to use OziExplorer software and GoogleEarth to create maps from data collected with a GPS overlaid with aerial photos. Places are limited for this technical workshop to be held on Saturday 31 July, 9am to 1pm (optional extra time till 2.30pm) at Integracom, Burswood. Contact DEC to register your interest on 9423 2900 or julia.cullity@dec.wa.gov.au.

Conservation of the graceful sun-moth

By Carly Bishop

Between February and April 2010 more than 120 volunteers carried out surveys of bushland remnants (mostly Bush Forever sites) across the metropolitan region, searching for the endangered graceful sun-moth (*Synemon gratiosa*). The surveys aimed to clarify the distribution of the species and better determine its conservation status. DEC staff conducted surveys of existing and proposed national parks and nature reserves from Australind to Kalbarri. These combined efforts surveyed well over 1,000 ha of potential habitat, with the volunteers covering much more ground than DEC staff!

The graceful sun-moth was found to occur in two types of sites. One is banksia woodlands in the western half of the Swan Coastal Plain, where the moth is very scarce (a total of 13 moths were found at only four sites). The other is coastal heathlands, where densities were higher (291 moths seen at 13 sites). New populations of the sun-moth were found both north and south of the previously known distribution, but they could not be found at several sites where they had been recorded in the past. The data are now being collated and analysed to enable a conservation plan to be developed for the species. For more information contact Carly Bishop at carly.bishop@dec.wa.gov.au.

Great Cocky Counts 2010

By Quinton Burnham

Wednesday 7 April saw the first of 'The Great Cocky Counts 2010' organised by Birds Australia WA and DEC. More than 350 volunteers took part and, thanks to their efforts, 189 potential roost sites were surveyed. Results suggest that 130 of these sites are being used by Carnaby's black cockatoos (*Calyptorhynchus latirostris*), with 60 of the roosts known before the count and 70 new roosts located. On the evening of the count there were approximately 6,500 Carnaby's black cockatoos recorded in the Swan DEC region, which compares with a previous estimate of 8,000–10,000 birds for the whole of the Swan Coastal Plain. Since the Great Cocky Count, there has been a follow-up count in May and further monthly counts are planned until August, when most of the cockatoos return to the Wheatbelt to breed. For more information contact Dr Geoff Barrett on 9423 2907 or geoff.barrett@dec.wa.gov.au.



Quinton Burnham, Carnaby's Roost Survey Coordinator, counting birds at a roost site in the pines at Bentley. Photo – Geoff Barrett

Spring Bushland News

Winter *Bushland News* contributions should be sent to Urban Nature at urban.nature@dec.wa.gov.au by **Wednesday 25 August 2010**.
Compiled and edited by Jo Tregonning.

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

Weed a wattle By Dr Sally Peltzer

National Wattle Day on 1 September is a time to celebrate our national floral emblem – the golden wattle (*Acacia pycnantha*). A sprig of wattle encourages us to preserve our fragile environment, so that future generations can enjoy the golden bloom in our bushlands. However, in Western Australia, much of the golden bloom in our bushland is from introduced wattle species from the eastern states.

Acacia pycnantha is a major environmental weed in WA and is one of a group of naturalised wattles from the east that are taking over. These wattles include the Sydney golden (*A. longifolia*), silver (*A. dealbata*), Queensland silver (*A. podalyriifolia*), Flinder's Ranges (*A. iteaphylla*), early black (*A. decurrens*), blackwood (*A. melanoxylon*), Cootamundra (*A. baileyana*), Mearns black (*A. mearnsii*) and kangaroo thorn (*A. paradoxa*). Originally planted in gardens, shelter belts and plantations, these wattles have since become major weeds across much of the southern half of WA.

Reproductive strategies

Wattle species are fast-growing trees or shrubs which reach sexual maturity quickly, with most setting seed within two to five years. Many produce masses of seed that can remain dormant in the soil for many years. The seed is easily dispersed by birds, ants, mammals, water, machinery and garden refuse. Wattles fix nitrogen from the atmosphere which increases soil fertility, changes soil characteristics and ultimately changes the indigenous species composition. These characteristics can easily result in the plants rapidly colonising an area and becoming weeds.

Many of the weedy wattles also sucker and/or resprout, enabling them to spread easily and making them harder to control. 'Suckering' is the formation of sprouts from adventitious buds in the lateral roots. Some species sucker in response to crown removal or root damage. 'Re-sprouting'



Queensland silver wattle (*Acacia podalyriifolia*) has escaped garden plantings to become a serious environmental weed. Photo – Bruce Maslin

or coppicing refers to the growth of shoots from dormant buds in the stem or root crown after the canopy has been removed or damaged. Thus cutting down a suckering and/or a re-sprouting species such as silver, blackwood, golden or early black wattles can exacerbate the problem rather than control it.

Controlling weedy wattles

Controlling weedy wattles in our bushland is no easy matter. As all are trees or large shrubs and due to the long-term dormancy of the seeds, new seedlings and any weed regrowth needs to be controlled each year.

Non-chemical control (for non-suckering species only)

Remove seedlings by hand. Saplings and trees can be cut at 5–15 cm above the ground. Stumps must be cut below any branches and close to the ground (to prevent re-sprouting) as some species may have dormant buds.

Chemical control

Spray the foliage of seedling and juvenile trees with glyphosate. Paint or spray the lower 50 cm of bark with a mixture of Access® and diesel. This method is only suitable for smooth-barked species such as golden, Cootamundra, Sydney golden and black wattles. Alternatively, drill 8–10 mm diameter holes at a downward angle around the base of the tree at intervals. Inject the holes with Tordon Timber Control® herbicide or glyphosate. This method works well on Sydney golden, early black and Cootamundra wattles, but is not as successful for golden wattle.

Grow local

In WA there are more than 600 native species. Grow them instead! If in doubt, ask your nursery about the plant you are buying and ask: Is it native to this area? Is it a weed anywhere else? Some local south-west garden alternatives are grass wattle (*Acacia willdenowiana*) (0.3–0.6 m), dune moses (*Acacia lasiocarpa*) (0.2–1.5 m), white-stemmed wattle (*Acacia xanthina*) (1–4 m) and golden-wreath wattle (*Acacia saligna*) (1.5–6 m).



On the farm with cameras, foxes and quendas

By Alan Elliott

The Serpentine–Jarrahdale Landcare Centre, in partnership with the Waroona Landcare Centre, has run a community baiting program for the past eight to 10 years to control foxes and rabbits. Embraced by landholders, the program is yielding excellent results.

My wife and I are the proud owners of 320 acres of mainly natural bush. Several years ago we noticed a decline in the number of quendas (southern brown bandicoots) and bobtail lizards in our bushland and were looking for reasons. We tried to blame local dogs or weather conditions or most anything else we could think of but nothing seemed to fit. Fortunately, at this time we were doing a trial fauna monitoring program with Greening Australia using camera traps. Bingo – every area on our property we trapped we photographed foxes. We had found the reason for our native animal decline. The camera traps have proven to be an invaluable monitoring tool, working discretely and continuously in all conditions.

As keen supporters of our local Serpentine–Jarrahdale Landcare Centre we joined its fox baiting program and set to work. I selected six areas that the cameras had identified as being most populated with foxes and began baiting with 1080 baited eggs. Each time bait was taken I would replace it and when an area started to not get results I would reposition it. My initial results were very slow so I reasoned that I needed something to help attract the fox to the bait. I had been told sardine oil was good but it didn't help much and I got sick of eating sardines for breakfast each day. After some thought, I came up with the idea of blood and bone as our dog tries to excavate our garden each time we use it. It is easy to use and I normally have a bag of it in the shed. I placed a teaspoon of it on the egg before covering and sometimes I tried a short trail to the egg on slow-moving sites. It worked, and in the first year 34 baits were taken and in the second 42.



An uncommon fox sighting during daylight belies the reality of high numbers of foxes photographed at night. Photos – Alan and Marrion Elliott

At the same time a neighbour was spotlight shooting. While I'm not sure of his total over the two years, I know he did shoot five in one night. How much wildlife do 81 foxes consume per year?

We are fox baiting again this year but already have more quendas and bobtails on our block. The bonus are the animals that have increased but we had not previously noticed such as shrub dwelling birds (for example wrens, robins, quails, fantails), reptiles (for example dragons, skinks, monitors) and frogs.

This program has been instrumental in protecting our declining native fauna

population and needs to be continued and expanded. It is a low cost but effective method to remove a threat to our native fauna and can be safely performed by almost anybody. I am amazed that Serpentine–Jarrahdale Landcare Centre has yet to secure funding to continue this program. As it stands, this will be the last year unless somebody in a glass castle can see the importance of these programs before our heritage is lost forever. If somebody in such a position can pick up a pen and send a few thousand dollars to the Serpentine–Jarrahdale Landcare Centre they will save a lot of wildlife.

Background to the community baiting program *By Kristy Gregory*

The community baiting program covers the shires of Serpentine–Jarrahdale, Murray, Waroona and Harvey. It offers subsidised baits to landholders to bait foxes and rabbits at optimum times of the year to achieve maximum impact. Baiting for foxes and rabbits is carried out at the end of summer when feed is low, and again for foxes in spring when they have young in the den.

Landholders who take part in the program bait foxes for the benefit of local native fauna species (such as quendas and western brush wallabies) as well as to protect their agricultural assets including lambs and free-range poultry. Rabbit baiting is carried out

to reduce competition with grazing livestock, help prevent over-grazing and erosion, and to protect remnant native vegetation on both public and private land.

Historically, external funding to keep the program running came from the Agricultural Protection Board and the Serpentine–Jarrahdale, Dandalup–Murray, Coolup and Harvey River land conservation district committees. These funds are now at a low ebb and we are actively seeking opportunities to ensure that the program continues. For more information contact Kristy Gregory on 9526 0012 or 0407 526 989 or Kristy@landcaresj.com.au.

Bush Blitz

Bush Blitz is the world's first continental-scale survey – a three-year \$10 million partnership jointly funded by the Australian Government (\$6 million) and BHP Billiton (\$4 million).

The funding will support survey trips and research studies managed by the Department of the Environment, Water, Heritage and the Arts. Teams of 10 to 12 scientists will document the plants and animals in reserves that have been added to Australia's National Reserve System within the past 15 years.



The surveys are expected to uncover hundreds of new species and provide baseline scientific data. Australia boasts more than 560,000 native species, yet scientists say only one-quarter of this biodiversity has been properly documented. Visit www.bushblitz.org.au/.

Leeches – our poorly known invertebrates

By Adrian Pinder

Understanding the number and types of plants and animals occupying an area or habitat underpins most conservation work, yet for invertebrates this is often a challenge. Many species are not formally described and identification keys have not been produced because the fundamental taxonomic research has not yet been carried out. One aquatic invertebrate group about which we know very little in Western Australia is the leeches.

In April, DEC Technical Officer Anna Leung and I had the opportunity to assist Anna Phillips from City University of New York to collect leeches during her week-long visit to south-west WA. Her studies focus on the leech family (Hirudinidae) that contains the medicinal leech (*Hirudo medicinalis*), so knowledge of the family's biodiversity has potential medical spin-offs. Anna was visiting Australia under the auspices of the American Museum of Natural History in New York where she is based. Anna sampled numerous south-west rivers and wetlands, including the Lake Muir wetlands, Seppings Lake in Albany, Serpentine Falls and several wetlands in the Perth metropolitan area. She has now taken these specimens, along with material borrowed from DEC and the Western Australian Museum collections, back to New York for detailed examination.

Anna's preliminary analyses of the material she collected in Australia suggest the Australian Hirudinidae are monophyletic.



Leech taxonomist Anna Phillips at Owingup Swamp in April. Photo – Adrian Pinder

This means that they are all more closely related to one another than they are to leeches in the same family elsewhere in the world, and therefore the Australian hirudinid fauna represents a unique lineage. New information arising from this trip will be added to data collected from other parts of the world to produce a new analysis of the group's evolution and classification.

The collaboration with DEC enabled Anna to visit many more types of wetlands than she would otherwise have managed, and will provide us with an opportunity to advance our knowledge of the State's invertebrate taxonomy and biodiversity. For more information contact Adrian Pinder on 94055153 or adrian.pinder@dec.wa.gov.au.

Rust alert

The myrtle rust fungus (*Uredo rangelii*) was detected on native *Agonis flexuosa* at a commercial cut flower and foliage property on the New South Wales central coast in April. This is the first time this fungus has been found in Australia and it is identified as a disease of significance in the Nursery Industry Biosecurity Plan. These types of rust affect commercial plant growing operations and native ecosystems, infecting many known and potential Australian native plant species. Early identification of this rust is vital to eradication efforts. The myrtle rust fact sheet is available at www.ngia.com.au/files/news/Pest_Alert_and_Factsheet.pdf. To report suspect cases of myrtle rust please call the Exotic Plant Pest Hotline on 1800 084 88.

2010 Banksia Awards

2010 Banksia Awards are open for entry in 10 categories. **Closes August–October** depending on category entered.

Visit www.banksiafdn.com or phone (03) 9684 4667 for award queries.



2010 Western Australian Environment Awards

2010 Western Australian Environment Awards are open for nominations in 11 categories. Acknowledge

the businesses, government agencies, community groups and individuals who make a valuable contribution to protecting and conserving the State's natural environment. **Closes Friday 23 July.** Visit www.dec.wa.gov.au/awards.



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 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@acquinas.wa.edu.au.
-  **Sundays 8am–10am Bushcare activities** every Sunday with the Friends of Shenton Park Bushland. Call Dani 9381 3470.
-  **Sundays 9am–11am Bushcare activities** with Cottesloe Coastcare are on the first Sunday of each month. Visit www.cottesloecoastcare.org or call Robyn on 9384 7668.
-  **Sundays 8.30am Bushcare activities** with the Friends of Wireless Hill are on the second and fourth Sunday of each month. Meet at main car park. Contact Margaret 9315 9075 or s3mmatthews@hotmail.com.
-  **Sundays 9.45am–12 noon Bushcare activities** with the Friends of Piesse Brook are on the third Sunday of each month. Email linda@johnstanley.cc.
-  **Sundays 9am–12 noon Bushcare activities** with the Friends of the Spectacles (Kwinana) are on the third Sunday of each month. Contact FS.
-  **Mondays, Wednesdays, Fridays 9am–12 noon Bushcare activities and wetlands walk trail maintenance** with Yanchepp National Park Volunteers. Call Julia 9405 0771.
-  **Tuesdays, Thursdays 8am–11am Koala maintenance** at Yanchepp National Park. Call Julia 9405 0771.
-  **Wednesdays 9am Bushcare activities** at Mary Carroll Lake, Gosnells. Call FMCL.

-  **Thursdays 8am–9am Bushcare activities** every Thursday with Byford Enviro-Link. Call Johanne Garvey or Kristy Gregory 9526 0199.
-  **Weekdays 26 July–17 September Planting Days** at Vasse Wonnerup Wetlands near Busselton with South West Catchments Council and Conservation Volunteers Australia. Call Emily Lewis on 9755 3432.
-  **Conservation Volunteers Australia activity schedule.** Overnight country trips or one-day activities. Call Andrew 9227 5711.
-  **Research into bird populations** with the Herdsman Lake Bird Banding Group. People are welcome to call Bill Rutherford (ABBBS Coordinator) 0438 910 252 and organise a visit.

July

-  **3 Saturday 8am Planting** at Bay View Park, Mosman Park. Barbecue lunch provided. Call Diane Aynsley on 9384 1633.
-  **4 Sunday 8.30am Planting** with Waterbird Conservation Group. Meet at Maramanup Pool Baldvis Doghill Rd off Young Rd. Call Ruth on 9339 5501.
-  **5 Monday Fungi walk** with Friends of Paganoni Swamp. Call Leonie 0439 921 298.
-  **8 Thursday 10am–12 noon Tiny Piney Invertebrates.** Learn about the minibeasts at Piney Lakes ages 6–14. \$5 pp. Contact PLEEC.
-  **8 Thursday 9am–1pm or 1.30pm–5.30pm Microbat workshop.** Construct your own bat box. \$165 pp/box. Call Perth Zoo on 9474 0365.
-  **8 Thursday 9.30am–1pm Guided Nyoongar walk** to celebrate NAIDOC week at the Spectacles Wetlands, Kwinana. Bush tucker morning tea. **Planting** session sponsored by the Heart Foundation, DEC and Friends of the Spectacles. Bookings 1300 36 27 87.

-  **10 Saturday 4.30–6pm Great Cocky Count** at Mary Carroll Lake. Call FMCL.
-  **11 Sunday 9am–1pm Planting** at Coogee Beach. Barbecue lunch provided. Call City of Cockburn on 9411 3444.
-  **11 Sunday Life through a lens** photographic workshop, Mundaring. Age 8+ years. \$20 pp. Call N2N.
-  **12 Monday 10–12noon A Variety of Vertebrates** family event with the Kanyana Wildlife Rehabilitation Centre team. \$5 pp. Contact PLEEC.
-  **12 Monday Planting** with Wandii Landcare. Call Fred Erdtsieck on 9397 2232.
-  **13 Tuesday 8pm Samphires** with guest speaker Dr Kelly Shepherd. Email WSWA(P).
-  **13 Tuesday 1–3pm Beautiful Birds** family event with Birds of Prey Australia. \$5 pp. Contact PLEEC.
-  **13 Tuesday 6.30–7.30pm Bird Biodiversity** family event on local bird species with Birds Australia. \$5pp. Contact PLEEC.
-  **16 Friday 10am–12 noon Reptilian Love** hands-on family event for snake lovers. \$5pp. Contact PLEEC.
-  **17 Saturday 9.30am–12.30pm Fungi foray** with the Friends of Lake Gwelup Reserve in partnership with PUBF. Bookings call 9447 2983.
-  **17 Saturday Night stalk** at Karakamia Sanctuary, Chidlow. Age 8+years. \$20 pp. Call N2N.
-  **18 Sunday 9am–12 noon Bushcare activities** at the Spectacles Wetlands. Contact FS.
-  **18 Sunday 9am Bush regeneration** and fungi spotting at Warwick Bushland. Contact FWB.
-  **18 Sunday 9am SALP planting** at Mary Carroll Lake, Gosnells. Call FMCL.

-  **25 Sunday 1pm–3pm Planting** in Bungendore Park, Bedforddale. Drive through opened gate at Admiral Rd entrance and follow signs. Bring afternoon tea to share. Call Kim 9470 2297.
-  **27 Tuesday July–7 Saturday August Long range camping excursion** with Busselton Naturalists' Club at Mt Elvire station north of Bullfinch, Balardji Rock, Diemals, Youanme, Payne's Find. Suitable for 2WD vehicles and caravans. Leader: Alan Standing 9755 5254.
-  **31 Saturday 9am–1pm (optional 2.30pm) GPS & map making for bush regenerators** with Urban Nature. Learn how to collect GPS data and make maps using OziExplorer software overlaid onto GoogleEarth aerial photos. Places are limited. Call DEC 9423 2900.

August

-  **3 Tuesday 9.30am Heart Foundation Guided Walk** at Kings Park with the Kings Park Guides. Bookings call 1300 362 787.
-  **10 Tuesday 8pm Wetland Plants of WA** with guest speaker Greg Keighery. Email WSWA(P).
-  **11 Wednesday 7.30pm Stream Ecology and the Value of Riparian Vegetation** with guest speaker Dr Andrew Storey. Contact BNC.
-  **14 Saturday 5.15–7.15pm Night Stalk** with Joe Tonga at Baldvis Children's Forest. Includes bush damper supper. \$10 per adult, \$5 per child (6–16 years). Contact BCF.
-  **15 Sunday 9am–12 noon Bushcare activities** at the Spectacles Wetlands. Contact FS.
-  **15 Sunday 9am Bush regeneration and nature walk** at Warwick Bushland. Contact FWB.
-  **Sunday 15 9.30am–11.30am Bird and frog ramble** at Baldvis Children's Forest. Includes bush damper. 8+ years. Contact BCF.

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

- BCF Baldvis Children's Forest.** Contact Mary 9524 1150 or mary.rayner@det.wa.edu.au. Wednesdays during school hours.
- BNC Busselton Naturalists' Club.** Meetings at RSL Hall, Causeway Dr, Busselton. Bus bookings contact Bernie Masters 9727 2474 or bmasters@inet.net.au.
- BSFH Bush Skills for the Hills** offers free hills-focused workshops. Contact Joanne Woodbridge on 9424 2216 or joanne.woodbridge@emrc.org.au.
- FMCL Friends of Mary Carroll Lake.** Meet at Eudoria St car park, Gosnells. All welcome. Call Eunice 9398 7126
- FS Friends of the Spectacles.** Meet at MacLaughlan Rd car park, Kwinana. Contact Lynda 9439 1928 or outback3@inet.net.au. Morning tea provided.
- FWB Friends of Warwick Bushland.** Meet at bowling/tennis club car park, Lloyd Dr, Warwick. Contact Janina Pezzarini 9447 9494 or neen@ext.uwa.edu.au.
- N2N Nearer to Nature** activities with DEC. Affordable prices. Discount for Discovery Club (DC) members. Bookings 9295 2244.
- PLEEC Piney Lakes Environmental Education Centre** activities for the school holidays, Leach Hwy, Winthrop. \$5 pp. Bookings Penny Musgrove 9364 0790 or penelope.musgrove@melville.wa.gov.au.
- WSWA(P) Wildflower Society of WA (Perth Branch).** Subiaco Community Centre. Email wildflowers.perth@ozemail.com.au.



Funding opportunities

Environmental Grants – Town of Vincent

Grants of up to \$2,500 are offered for proposals that address at least one of five goals: biodiversity, cleaner air, water conservation, waste management, and/or sustainable energy use. Community groups and not-for-profit organisations can apply. Schools within the Town of Vincent are eligible for grants up to \$750 and schools outside of the Town up to \$500. Opens: Monday 21 September and **closes: Friday 16 October**. For more information contact the Town's Environmental Officer on 9273 6027 or environment.enquiry@vincent.wa.gov.au. Visit www.vincent.wa.gov.au/3/566/1/environmental_grants_and_awards.pm.

Community Partnership Funding program – City of Melville

Incorporated community groups in the City of Melville are eligible to apply for innovative projects, programs or activities that contribute to climate change action and environmental sustainability. Levels 1 (\$1,000) and 2 (\$1,000–\$5,000) are open all year round. For more information contact Marcia Coelho on 9364 0660 or email marcia.coelho@melville.wa.gov.au to discuss your proposal.

Find Green Money offers a range of funding opportunities to groups and individuals for specific energy and water-saving products and services as well as for environmental management strategies and educational programs. Visit www.findgreenmoney.com.au/index.html

Groundworks South West Land Management Tender Round 2

Funding is available through South West Catchments Council for on-ground works that address the Australian Government targets for biodiversity protection, eradication of Weeds of National Significance, invasive species control in RAMSAR wetlands, threatened community and species protection, coastal rehabilitation and water quality improvements. Individual grants are capped at \$100,000; community coastal projects at \$50,000; and grants under \$15,000 have a simplified application form. Funding **closes Monday 5 July**. Visit www.swccnrm.org.au under 'Funding'.

South-West Waterways Funding

South West Catchments Council through the Australian Government's Caring for Our Country Program and GeoCatch and Peel-Harvey Catchment Council through the Department of Water are providing funding for onground activities such as fencing, revegetation and associated weed control, stock crossings and off-stream watering points to landowners adjacent to waterways within South-West Coastal Hotspots. Contact Emily Lewis on 9755 3432 or Emily.Lewis@swccnrm.org to discuss eligibility.

Junior Landcare Grants

Schools or youth groups partnering with their local landcare group are eligible to apply for \$1,000 of Coles funding for students to create gardens in their school or community (bush tucker, waterwise or vegetable gardens), or \$1,000 of Yates funding to undertake School Environmental Management Plans. **Closes:** (Round 3) on **Friday 6 August** (Yates and Coles) and (Round 4) on **Friday 22 October** (Yates). Visit www.juniorlandcare.com.au.

Caring for Our Country 2010–11 Community Action Grants

The grants are targeted towards established community-based organisations which have sustainable farming and/or protecting and enhancing the natural environment as their principal objective. \$5,000–\$20,000. **Opens shortly**. Visit www.nrm.gov.au/cag/index.html

Highlights

16 July Friday
Dieback Information Group (DIG)
Conference 2010, Murdoch University.
Email Brendan.Nock@emrc.org.au.

30 July Friday **Schools Tree Day**.
Visit <http://treeday.planetark.org/>.

1 August Sunday
National Tree Day. <http://treeday.planetark.org/>.

14 Saturday–22 Sunday August
National Science Week. Visit
www.scienceweek.gov.au.

15 Sunday August 10am–2pm
A Dance of Science community fair at
Canning River Eco Education Centre, Kent St,
Wilson. Call Amy on 9458 5664.

21 Saturday–29 Sunday August
Conservation Week 2010 hosted by the
Conservation Council of WA. Visit
www.conservationwa.asn.au/.

25 Wednesday–27 Friday August
Perth Urban Ecology Symposium, DEC
Kensington. Contact W.Veber@murdoch.edu.au.

6 Monday–12 Sunday September
Landcare Week. Visit <http://svc018.wic008tv.server-web.com/>.

27 Monday–30 Thursday September
**Australian Association of Environmental
Educators (AAEE) Conference 2010**,
Canberra. Visit www.conferenceco.com.au/aaee.

28 Tuesday September–1 Friday October
**Australian Network for Plant Conservation
Inc 8th National Conference**, Perth. Visit
www.anbg.gov.au/anpc/index.html.

September–October
5th 'Stop the Cane Toad' Muster.
Email kim@stopthetoad.org.au.

1 Friday–4 Monday October
Great Greenie Gobfest. Introduction to
citizen science at Woody Island, Esperance.
Come for one or all four days. BYO food and
accommodation at www.woodyisland.com.au.
Bookings Nic Dunlop on 9420 7282.

1 Friday–16 Saturday October
**Tiwest Great Australian Marsupial Night
Stalk**. Join in a local night stalk. Visit
www.perthzoo.wa.gov.au/nightstalk.

11 Monday–14 Thursday October
13th International River Symposium,
Perth. Visit www.riversymposium.com.

**27 Monday September–8 Friday
October**
Wheatbelt camping tour including the
Mangowine Concert at Nungarin, then joint
excursion with River Conservation Society,
York. Leaders: Alan Standing 9755 5254
and Bernie Masters 9727 2474.

October

8 Friday
From the Top Down biodiversity
seminar with the Urban Bushland Council
WA. Call Marg Owen 9420 7207.

9 Saturday
**Biological survey at Dempster Head,
Esperance**. Vegetation monitoring with
the Conservation Council of WA. Call Nic
Dunlop on 9420 7282.

16 Saturday 10am–12 noon
**Weeds of National Significance
in the Hills** workshop. Learn how to
identify and treat these weeds.
Lesmurdie Hall. Contact **BSFH**.

16 Monday 8.30am

Bird walk at Paganoni Swamp
Reserve with Birds Australia. Call
Leonie 0439 921 298.

22 Sunday 9am

Walk the rapids to Mowen fire
tower on the Augusta to Busselton
Heritage Trail. Easy 12–13 km. Bus
\$10. Bring picnic lunch. Contact **BNC**.

22 Sunday 2pm

Spring wildflower walk with the
Friends of Star Swamp Bushland.
Wildflower art exhibition by local
school children open **1–5pm**. Henderson
Environment Centre, Groat St North
Beach. Call Christine 9447 2983.

22 Sunday 10am–12 noon

Great Dinosaur Dig to uncover
bones and create a fossil cast. Includes
morning tea. 6+ years. Contact **BCF**.

29 Sunday

Brunch with the Birds at Bay View
Park, Mosman Park with Birds Australia.
Brunch provided. Call Diane Aynsley
9384 1633.

September

1 Wednesday 8am

Heart Foundation Guided Walk at
Churchmans Bushland, Wungong with
Churchmans Bushland Association.
Bookings call 1300 362 787.

4 Saturday 9am–1pm

Rapid Habitat Assessment
workshop with Geoff Barrett.
Parkerville Hall. Contact **BSFH**.

8 Wednesday 7.30pm

**Wrack Investigations in
Geographe Bay** with guest speaker
Kathryn MacMahon. Contact **BNC**.

14 Tuesday 8pm

**The Nature of Seeds – unlocking
the secrets to germination** with
guest speaker David Merritt. Email
WSWA(P).

18 Saturday 4pm–5.30pm

Guided bird walk to discover the
evening chorus with Birds Australia at
Baldivis Children's Forest. Contact **BCF**.

19 Sunday 9am

Walk to discover wildflowers of
Whicher Escarpment. Easy–moderate
9 km. Bus \$10. Bring picnic lunch.
Contact **BNC**.

19 Sunday 9am–12 noon

Bushcare activities at the
Spectacles Wetlands. Contact **FS**.

19 Sunday 9am

Bush regeneration at Warwick
bushland. Contact **FWB**.

30 Thursday 9am–1pm or 1.30pm–5.30pm

Microbat workshop. Construct your
own bat box. \$165 per participant to
make box. Call 9474 0365.

Please send us your October,
November and December 2010 events
by **Wednesday 25 August 2010**.

Please send us your regional report (150–200 words) and a photo by Wednesday 25 August 2010. Text may be edited in response to volume of submitted reports.

City Bush Guides ready



Robert Powell instructing City Bush Guides at Kensington Bushland. Photo – Lesley Shaw

By Lesley Shaw

After a flurry of applications, 13 people are training to become the second group of City Bush Guides. The Urban Bushland Council's series of training programs for 2009–10 are designed to stimulate an interest in ecosystems, flora, fauna and fungi, and to develop the skills to lead walks in urban bushland.

Kensington Bushland in Victoria Park has been the classroom for a number of field observations and walks, while the facilities adjacent to the reserve have provided a venue for PowerPoint presentations. During the seven-week period, the transition of seasons is evident at Kensington Bushland. Field observations highlight the relationships between plants and the wildlife that rely on them in a highly developed urban environment. In 2010 International Year of Biodiversity, we are reminded that Perth's bushland is unique and of immense value to human health and wellbeing.

The new City Bush Guides will soon be ready to become involved in the activities of their local bushland groups and we urge you to support them. Please make them feel welcome and provide suitable mentors so they can continue their quest for knowledge and guiding skills. For more information call the Urban Bushland Council on 9420 7208.

Local biodiversity of south-west WA in the national spotlight

By Renata Zelinova

Western Australian Local Government Association's Perth Biodiversity Project and the South West Biodiversity Project won the Department of Environment and Sustainability Biodiversity Award in this year's United Nations Association of Australia World Environment Day Awards. This award acknowledges effective partnerships between local government and non-government organisations, and State and Federal government that led to successful local biodiversity planning. Most importantly, both projects have increased the capacity of local government to conserve biodiversity. The projects have provided new resources to support informed decision-making and encourage investment in biodiversity conservation by local government, in particular through adoption of Local Biodiversity Strategies. For more information on the award visit www.unaavictoria.org.au/pages/home.php.

Mt Henry Peninsula Conservation Group

Mt Henry Peninsula Conservation Group continues to work in partnership with Aquinas College. Eighteen students and nine adults attended the April bush care day to repair track erosion in preparation for the college's cross-country running. Furrows were dug on the slopes and mulch was evenly distributed along the track, leaving a sand shoulder at each side to prevent mulch spreading into the bush.

This year we have made three grant applications to control perennial veldt grass on the Peninsula, carry out revegetation at Westcourt using local native plant stock, and to install and monitor micro-bat roosting boxes in the City of South Perth that were made by students last year. Bush care days are held on the fourth Saturday of the month. Contact Jan King on Jan.King@aquinas.wa.edu.au.



Friends of Marmion Marine Park conducted a walk along the coast at Hillarys in April to talk about flotsam and jetsam as well as the terrestrial flora and fauna. Part of a Heart Foundation and DEC initiative, the walk was well received and the Friends have been asked to repeat the walk in September. Envirogrant funding has enabled their brochure of Marmion Marine Park to be updated and reprinted. For more information email Lynda at larry59@iinet.net.au. Photo – Lynda Arnold

Graceful sun-moth at Wandí

By Fred Erdtsieck

During March, Wandí Landcare Group and DEC conducted four surveys for the critically endangered graceful sun-moth (*Synemon gratiosa*) in the Wandí Nature Reserve and Jandakot Regional Park. Mat-rush (*Lomandra hermaphrodita*) is found in Wandí and provides suitable habitat for this day-flying moth. Three specimens were sighted, of which one was trapped. There was previously only a single recording of the moth in the Jandakot area some 30 years ago, so this new finding in Wandí is very important.

Following on from our group's efforts in removing pigface from the reserve in 2009, we held two pigface removal days during May. We had a great response from volunteers and managed to hand pull nearly all of the remaining plants. Inaccessible infestations of pigface located deep within the reserve were sprayed with herbicide. Many large piles of pigface were created and it gave a great feeling of satisfaction. A Green Jobs Corp team will visit any remaining areas to complete the job.

Our planting efforts this year will concentrate on Magenup Swamp beside the entrance to the nature walk and adjacent to Magenup Riding Club. With pre- and post-planting weed management we are aiming to transform this weed wasteland. Two community planting days and a planting day with Baldivis Children's Forest and Baldivis Primary School are planned in partnership with the Town of Kwinana. Call Fred on 0428 604 032.

National Wattle Day

By Bruce Maslin

The incorporation of wattle (*Acacia*) into the national psyche commenced in the 19th century and today is honoured through its use as important symbols at national governmental and local community levels, including the annual celebration of National Wattle Day on 1 September.

The long-standing differences of opinion and confusion as to which date, 1 August or 1 September, is more appropriate for Wattle Day was settled in 1992. As discussed by Panter (1997) at least one reason for the discrepancy in dates relates to differences in flowering times for some of the more popular species of *Acacia*. For example, in 1916 the date of Wattle Day in New South Wales was changed from 1 September to 1 August. The reason for this change was that it enabled the Red Cross to use the earlier flowering and more familiar Cootamundra wattle (*Acacia baileyana*) rather than golden wattle (*Acacia pycnantha*) in their efforts to raise money to support the war effort.

Gazetted on 24 August 1992, National Wattle Day was declared by the then Minister for the Environment, Ros Kelly, and was signed by the Governor General, Bill Hayden, on 23 June 1992. Four years earlier the golden wattle (*Acacia pycnantha*) was officially proclaimed as Australia's National Floral Emblem. This 1988 proclamation occurred in the year of Australia's bicentenary. The proclamation ceremony was conducted on the first day of spring (1 September) in the Australian National Botanic Gardens, Canberra.

In Australia, the wattles are the largest genus of flowering plants containing about 1,000 species which grow in extremely diverse habitats from rainforest to arid lands. A species of wattle was one of the first plants ever collected from Australia by Europeans. Given their abundance and distribution within Australia, it is not surprising that wattles are incorporated into our Australian culture in many ways:



Golden wattle (*Acacia pycnantha*) Australia's National Floral Emblem. Photo – Bruce Maslin

- green and gold are Australia's national colours (the predominant colours of wattle foliage and their yellow flowers)
- a species of wattle is included in the Australian Coat of Arms
- wattle flowers are featured in many of the Australian medals of honour (including The Order of Australia)
- wattles are used as floral emblems of some local shires for example in Western Australia Dalwallinu has Kimberly's wattle (*Acacia anthochaera*) and Hyden has Lane's wattle (*Acacia lanei*) while in New South Wales Cootamundra has the Cootamundra wattle (*Acacia baileyana*).

More information

Hitchcock, M. (1991) *WATTLE*. Australian Government Publishing Service: Canberra.

Panter, R. (1997) Australia's Wattle Day. *Current Issues Brief* No. 1 for 1995-96. Department of the Parliamentary Library, Canberra.

<http://wattleday.asn.au/> is dedicated to the commemoration of Wattle Day.

www.worldwidewattle.com/ provides a historical background of Wattle Day.

Learning opportunities

The Western Australian Naturalists' Club is an organisation that aims to encourage the study and protection of the natural environment. It has branches in the hills (Kalamunda), northern suburbs (Henderson Centre) and Rockingham (Naragebup); groups for juniors, walkers and photographers; a Conservation Committee; and a field station at Yunderup. All branches have a monthly meeting to which the public is invited. Excursions, walks, camping trips and workshops are also offered. There is a monthly newsletter and a scientific journal. Visit www.wanats.iinet.net.au, phone 9228 2495 or email wanats@iinet.net.au.

'In the Wild West' Harry Butler Lecture Series 2 is a program of lectures by WA Museum scientists and associates at locations in Perth, Fremantle, Albany, Geraldton and Kalgoorlie-Boulder during July–November. Visit www.museum.wa.gov.au/whatson/year-of-biodiversity.asp.

Why do we plant?

By Julia Cullity

As the winter revegetation season unfolds, it is useful to reflect on why we plant. As a bush regenerator, my ultimate goal is to conserve or create self-sustaining natural systems. Plant communities capable of natural regeneration don't need supplemental planting; instead they need threats managed to assist the regeneration of the plants that are already there.

Assessing vegetation condition is an essential first step in determining regeneration potential. By definition, bushland in good condition or better has the ability to regenerate. Learn about the composition of plant species and their structure in your patch. Visit reference sites in the best possible vegetation condition that are closely matched in terms of landform, soil, topography, plant communities and distance (areas in good condition or better within your patch may be your best reference site). Observe reference sites when they are intact or recovering from disturbance and compare to your patch. If your patch still has the species composition and structure of the reference sites, with intact soil profiles and a native seedbank, then it is unlikely to require revegetation.

Reasons for revegetation

There are many sound objectives for revegetation that may include:

- restoring areas in degraded or completely degraded condition
- erosion control

- restoring ecosystem function e.g. hydrological regimes in wetlands or streamlines, providing habitat for fauna, reinstating canopy
- reintroducing locally extinct species that belong to the remnant community (make sure you know they were there historically and at what density)
- creating ecological linkages between remnants
- managing locally disturbed areas in intact bush
- creating buffers to protect intact vegetation from adjacent threats
- managing access through track closure
- amenity (this isn't bush regeneration).

Revegetation methods

Good revegetation of degraded areas should consider the following:

- plan long-term timeframes over more than one year
- separate activities into yearly funding cycles if needed
- controlling weeds at your degraded site for two years or more will lead to better plant establishment and a reduced weed cover once seedlings are planted
- use provenance seed to ensure genetic diversity is maintained
- collect seed 12 to 18 months before propagation as the majority of seed is available for collection in late spring to early summer but nursery propagation often starts mid-spring to enable enough growth for planting in late autumn to winter
- only plant species that are already in your remnant

- focus on returning species into the plant communities where they already exist in the landscape of your patch
- plant species at similar densities to your natural areas—e.g. often we have many more understorey than canopy species in our bushlands (refer to reference sites)
- plant pioneer species—i.e. after a natural disturbance, how does your plant community usually react? If it is normally a flush of legumes or grasses, consider weighing the ratio of your species mix towards these in the early stages of a planting program.

Funding pressure often means you are required to provide instant results, but it is important to be clear about what you are trying to achieve and your reasons for revegetation. Much bushland doesn't need planting for restoration but requires protection of good bush. Employ the Bradley method of working from bush in good condition before working in degraded areas. Remember to direct your time, energy and resources where it will have the greatest benefits for biodiversity.

More information

Perth Region Plant Biodiversity Project, Bush Forever and Jarrah Forest Reference Sites. www.walga.asn.au/about/policy/pbp/projects/prppb.

Joan Bradley (1988) *Bringing Back the Bush*. Landsdowne-Rigby, Sydney.

Robin Buchanan (1989) *Bush Regeneration: recovering Australian landscapes*. OTEN, Sydney.



Area at Brixton Street Wetlands before (above left) and after weed control and restoration planting to buffer intact bushland from further weed invasion. Photos – Kate Brown and Grazyna Paczkowska

group profile

Experiences of a wildlife carer *By Lyn Hancock*

The experience of raising a wallaby 35 years ago developed into a lifelong passion and commitment to rehabilitating wildlife for Lyn and Bob Hancock. Om Shanti Marsupial Hospital was established in 1981, and is particularly concerned with the plight of wildlife in the Baldy and Kwinana areas.

In the early 1970s, a phone call found us caring for a tiny hairless western brush wallaby (*Macropus irma*) weighing only 150 g. With the invaluable knowledge of Iris Anderson (wildlife angel now sadly deceased) and Taronga Park Zoo we raised 'Walla' and a love affair was born.

Since this time, we have rehabilitated marsupial species from all round Western Australia including western grey and red kangaroos; western brush or black-gloved, tamar and speckled hare wallabies; euros; brushtail, ringtail and honey possums; quendas; woylies and burrowing bettongs. We have worked with the navy to conserve tamar wallaby (*Macropus eugenii*) on Garden Island for the past 27 years. We look back on the heartache, tears, pain, money, long hours, travel, trying, learning, difficulties with finding willing vets and ask ourselves – would we do it all again? Yes – in a heartbeat.

Om Shanti Marsupial Hospital operates from within our home, so we prefer to work in partnership with our core of long-term foster mums (other carers) rather than have different volunteers coming in to Om Shanti. The continuity of one carer with consistent methods (rather than rotating volunteers in a centre) works extremely well – reducing stress to the animals.

When a marsupial comes in to Om Shanti the animal is stabilised (i.e. feeding well, treated by a vet) before going out to live with a foster mum. We provide weekly visits, backup support and additional vet care if needed. With our support, the marsupial stays with the same 'mum' in the same place during its rehabilitation, which for an unfurred marsupial can take between 18 and 24 months and is a 24-hours-a-day, seven-days-a-week commitment. When the animal is ready for



(Above) Burrowing bettong (*Bettongia lesueur*) from Barrow Island. Photo – Bob Hancock.

(Above right) Lyn with young red kangaroos (*Macropus rufus*) at Om Shanti. Photo – Jo Tregonning

release it returns to Om Shanti to finish its rehabilitation prior to release at about two years of age.

Education

In recognition of the need to educate children about wildlife, we have partnered with Charlie Ballard (Science and Environment Teacher, Calista Primary School) since 1998. We provide students with hands-on experiences with a variety of marsupials. Some of the students' work has resulted in a booklet on joey care, the construction and distribution of possum nest boxes to local areas and participation in the annual Great Australian Marsupial Night Stalks.

Lobbying to save bushland

In the early 1980s we formed a lobby group COKE (Conservation of Kwinana Environment) and fought and won a huge battle to save bushland in Leda from urbanisation. A handful of Kwinana's stalwarts fought for seven years to save nearly 400 hectares of bush. This bushland is now the A-Class Leda Nature Reserve and an asset to Kwinana's dwindling bush. We are currently liaising with local developers to leave more bushland and larger linking corridors, as isolated remnants are not sufficient for wildlife sustainability.

How you can help?

Much of our wildlife is struggling to survive, with the woylie (*Bettongia penicillata*) listed as endangered and the ringtail possum (*Pseudocheirus occidentalis*) as threatened under the *Wildlife Conservation Act 1950*. Of concern are unrestrained cats and dogs in our reserves that are decimating our wildlife. Owners need to be more responsible for their pet's actions.

There are numerous individual wildlife rehabilitators and larger centres in the metropolitan area. Donations of materials and funding are always welcome and much needed to cover the expenses of rehabilitating marsupials. Many of the carers are 'getting on' in years and we need younger long-term wildlife rehabilitators with stamina and commitment. To be a wildlife rehabilitator you must be registered with DEC, have completed the DEC training course and have spent at least 12 months assigned to an experienced carer.

Should you find an injured or abandoned native animal in need of care it is vitally important to put it in a warm, quiet and dark (covered) location. Call your nearest carer or Wildcare on 9474 9055. Om Shanti is located in Wellard and Lyn can be contacted on 9524 1127 or 9524 3060.

Resources

New publications

Willows WEEDeck contains information on data collection, mapping, management and identification of 15 weedy willows. Contact Kelly Snell (National Willows Coordinator) on (03) 5226 4625 or 0448 532 701 or kelly.snell@dpi.vic.gov.au. Visit www.weeds.org.au/WoNS/willows.



Draft *Phytophthora Dieback Best Practice Management Framework*.

This framework on management procedures for local government will be trialled within the City of Armadale and the Shire of Mundaring during 2010. For more information contact Brendan Nock on 9424 2248 or brendan.nock@emrc.org.au

Rabbit suppression fact sheets are now available from Robyn Nicholas on 9938 0109 or bpc@nacc.com.au.

Website watch

Friends of Lake Gwelup has recently updated its website and has a new address www.friendsoflakegwelup.org.

Friends of Star Swamp has launched a new website at www.friendsofstarswamp.org.

The Australian Native Plant Guide has more than 500 photographs and a key to select species that meet your requirements. Suitable for home and landscape gardeners, farmers, government, councils, landcare groups and students. Download a free copy at <http://nativegrowth.com.au/nativeguide>.

PestMaps provides access to maps on the occurrence, distribution and abundance of significant invasive animal species throughout Australia (such as cane toads, common carp, fox, rabbit, starling, wild dog, wild deer, feral cat, goat and pig). Visit www.feral.org.au/content/PestMaps/PestMaps.cfm.

Global Invasive Species Database lists 100 of the worst invasive alien species based on their impact on biological diversity and/or human activities. Visit www.issg.org/database/species/search.asp?st=100ss.

Missed out on the **WA Museum In the Wild West** lecture series? Download the podcasts at www.museum.wa.gov.au/biodiversity.

The Guide to Environmental Careers in Australia (2010) updates the 2004 edition and takes into consideration the rapid growth and development of the environmental industry during the past six years. A career advice resource for all who are looking to enter and move within the green collar workforce. Visit www.environmentaljobs.com.au/sites/environmentaljobs.com.au/files/TheGuide2010.pdf

Recent research

Conser, C. and Connor, E.F. (2009) Assessing the residual effects of *Carpobrotus edulis* invasion, implications for restoration. **Biological Invasions** 11: 349–358.

Quinn, L.D. (2008) Germination of invasive plant seeds after digestion by horses in California. **Natural Areas Journal** 28 (4): 356-362.

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