bushland news urban nature

Issue 72
Summer 2009-2010
Time of Birak and Bunuru in the Nyoongar calendar.

www.dec.wa.gov.au

Assisting local government to protect natural assets

By Renata Zelinova

PERTH BIODIVERSITY PROJECT
Councils Caring for their Natural Communities

For the past eight years the Perth Biodiversity Project (PBP) has worked in partnership with 30 local governments and many organisations and groups to promote conservation planning and management of natural areas.

PBP offers technical support, training and spatial datasets to local governments to assist with strategic biodiversity conservation planning and management. Until 2008, financial assistance for local government was offered through a targeted grants scheme and 80 strategic and on-ground projects were funded in the Perth region. PBP facilitates forums for natural area managers and biodiversity planners to encourage a collaborative approach and a sharing of knowledge.

Grant McKinon, Natural Area Manager, City of Swan shares his knowledge of a local reserve during a PBP workshop on Jarrah forest reference sites. Photo – Renata Zelinova

The resulting partnerships have been essential to the efficacy of PBP and have included local governments, the Western Australian Local Government Association, Swan Catchment Council (now Perth Region NRM), Greening Australia WA, Department of Environment and Conservation (DEC), Department of Planning, Birds Australia WA, and the Australian Government's Natural Heritage Trust (NHT1 and NHT2) and *Caring for Our Country* programs. Funding from the State Government's 2009–10 NRM program will ensure the continuation of this project for the next 12 months.

Key achievements of the project include:

- *Local Government Biodiversity Planning Guidelines for the Perth Metropolitan Region* (June 2004);
- development of local biodiversity strategies and/or a strategic approach to natural area management by local governments;
- use of the Natural Area Initial Assessment (NAIA) templates by 21 local governments to assess their reserves;
- development of the online Regional NAIA Database using information from 19 local governments;
- development of an online spatial environmental data viewer for environmental planning hosted by the Department of Agriculture and Food;
- increased recognition of local biodiversity conservation needs through increased resourcing within local governments;
- recognition that a local biodiversity strategy is a critical step towards integrating conservation objectives into land use planning;
- extension of the project methodology outside the Perth region through the South West Biodiversity Project in 2006.

It is with considerable regret that the South West Biodiversity Project closed on 30 September 2009. Hosted by the City of Bunbury, the project worked with 12 local governments and coordinated the South West Regional Ecological Linkages (SWREL) project. The *SWREL Technical Report*, prepared in partnership with DEC, provides an ecological framework on sustainable land use planning.

New outputs for the PBP will include the development of a regional framework for local biodiversity conservation for the Perth and Peel regions. Many of the current services to local government such as the Natural Area Management Network eNewsletter and forums, and the Milestone Awards program will continue. For more information contact PBP Manager, Renata Zelinova on 9213 2047 or rzelinova@walga.asn.au.

Department of Environment and Conservation

Bushland News *is a quarterly newsletter of Urban Nature, a Department of Environment and Conservation (DEC) program to support community involvement in bushland conservation.*

Urban Nature **UPDATE**

It's been a busy spring at Urban Nature. We have been involved in field days at Wandi and Bullsbrook Nature Reserves, Talbot Road and Brixton Street. Spring has also seen us organising weed management contracts, assisting in rare flora surveys and monitoring the restoration of plant communities at our demonstration sites in the hills and on the coastal plain. Urban Nature presented research on managing Geraldton carnation weed at the 2009 Western Australian Weeds Conference. And following on from the publication of management and biology information on geophytes in the *Swan Weeds Database*, a set of 70 woody weed species has been added to *Florabase*. A full list of the species to be covered and links to information on each is available on http://florabase.dec.wa.gov.au/weeds/swanweeds/. Work on the database will now extend to the environmental grass weeds which are problematic in the region. The aim is to have this information available in 2010.

Weed management on Penguin Island

DEC staff continue their work to control weeds on Penguin Island. The weed management program developed by Urban Nature aims to remove populations of invasive weed species and replace it with native flora. Native sea spinach (*Tetragona implexicoma*) is an important component of coastal vegetation on Penguin Island. It provides habitat for penguins, and the fleshy fruits are a food source for king skinks and seabirds. Native sea spinach is easily propagated from the fruits or cuttings, and where it occurs naturally could be used to displace the invasive coastal weed *Tetragona decumbens*. The weed can be easily distinguished by its dry, four-winged fruit.

Fleshy fruits of the native Tetragona implexicoma *(top) are easily distinguished from the dry four-winged fruit of the weed* Tetragona decumbens *(above). Photos – Kate Brown.*

*Top: King skink (*Egernia kingii*) grazing on the fleshy fruits of native sea spinach (*Tetragona implexicoma*). Photo – Kate Brown*

Carnaby's black cockatoo roost counts

by Dr Geoff Barrett

Summertime in Perth is when we can look to the skies and see black silhouettes of Carnaby's black cockatoos as they fly down the coast with their babies flapping awkwardly behind them. This migration from the breeding grounds in the wheatbelt to feeding areas on the Swan Coastal Plain occurs every year, but will only continue if there is sufficient banksia woodland and coastal heath for food and nearby roost sites where cockatoos can drink of an evening and sleep for the night.

Last summer and autumn, volunteers counted cockatoos as they flew into their roosts. Part of a joint project run by DEC and Birds Australia WA, these surveys identified 80 roost sites in the Swan Region. The surveys give us an idea of whether the birds bred successfully the previous spring (three birds flying together usually represent two parents and a squawking youngster).

DEC funding, received through the State NRM program, has enabled us to continue our cockatoo surveys for another year. We are looking for people to count birds as they return to their roost at the end of the day. If you can help us to count birds, or know the location of a Carnaby's black cockatoo roost site, please contact Geoff Barrett on 9423 2907 or geoff.barrett@dec.wa.gov.au.

Autumn *Bushland News*

Autumn *Bushland News* contributions should be sent to Urban Nature by **Wednesday 24 February 2010.**

Compiled and edited by Jo Tregonning.

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bushland **weed**watch

Blackberries

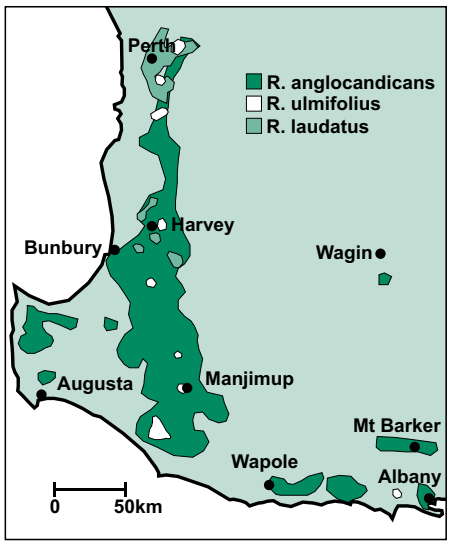
By Julia Cullity

Blackberries are environmental weeds that form dense bramble and thorn thickets up to 2 m high in waterways of south-west WA. Four weedy species have been identified in WA and no native *Rubus* species.

For many years in Australia, the closely related blackberries were treated similarly and clumped together into a single taxon, *Rubus fruiticosus* aggregate. However, since work began on biological controls, and with the release of the European rust fungus *Phragmidium violaceum*, there has been a greater need for specific identification. In 2004–05 a large-scale project to determine the overall distribution and incidence of blackberry was undertaken. The Department of Food and Agriculture WA (DAFWA) identified four species as declared plants, prohibiting the movement of these plants and requiring weed control in certain shires.

Common or European blackberry (*R. anglocandicans*) is the most common and widespread blackberry in WA. Making up more than three-quarters of all surveyed specimens, it is not widespread in Perth but occurs from Perth to Albany. Originally from Europe, it is susceptible to the bio-control rust. It can be distinguished by summer flowering with white flowers which may have a pink tinge in bud.

Elm-leaf blackberry (*R. ulmifolius*) is originally from Europe and occurs in isolated patches around the State. It is only partially susceptible to the bio-control rust. It can be distinguished by summer flowering with pink flowers at all stages.



Current and confirmed distribution of the weedy blackberry Rubus species in WA. Image – adapted from the CSIRO field guide.

Himalayan blackberry (*R. rugosus*) is only known from one historical herbarium record from Roleystone and was not found in the 2004–05 study. Originally from tropical Asia, it is unlikely to be susceptible to bio-control rust. It can be distinguished by its large single leaves and evergreen habit unlike the other WA *Rubus* species which have three to five leaflets, are semi-deciduous and shed most of their leaves in winter.

American or early blackberry (*R. laudatus*) is the main weedy species in the Perth metropolitan area although it also occurs near Harvey. Originally from America it is not susceptible to the bio-control rust. It can be distinguished by its earlier, spring flowering and pure-white flowers. Leaves are green on the underside unlike other *Rubus* species which tend to have white undersides. It also has red glands on the cane surface observable with a hand lens.

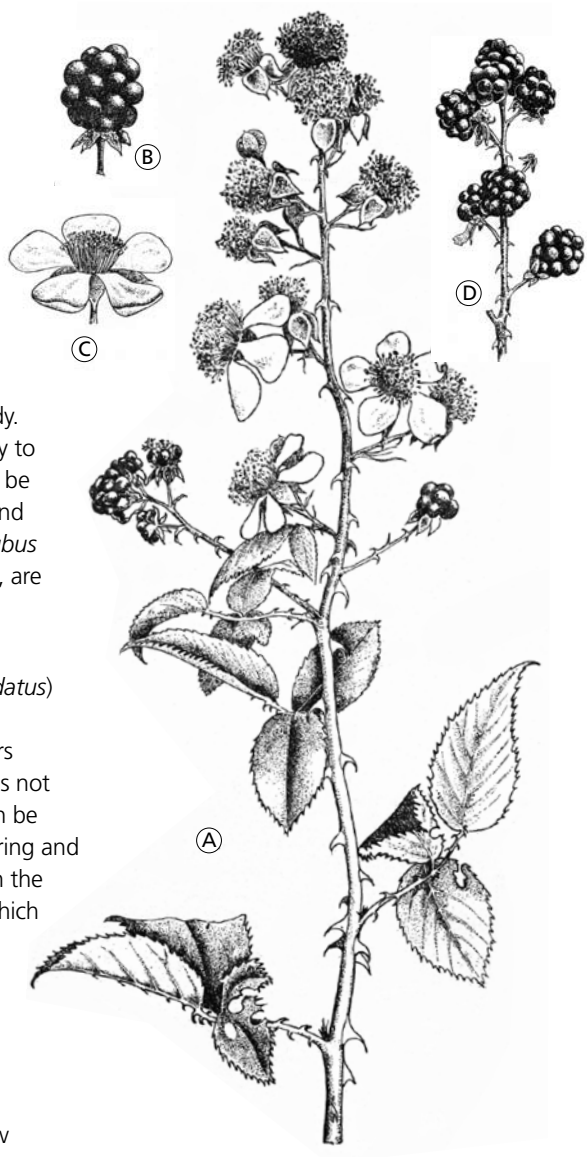
Mangagement

Plants spread by root suckers, stem layering (which occurs when canes grow roots on touching the ground) or when the delicious summer fruit is eaten by birds and mammals, particularly foxes, and its seeds are spread in their dung.

Blackberries are hard to control and often a combination of physical, chemical and bio-control techniques are used. Small plants can be hand pulled but all root material must be removed. There are a number of herbicides that can be used but, in most cases, repeated applications will need to be carried out over a number of years. Herbicide can either be applied as a foliar spray, by cut and paint technique or by slashing canes and applying herbicide to the leafy regrowth. Blackberry has a period of dormancy in winter so optimal treatment times are in spring and summer and vary slightly between species.

Blackberry-free buffer

The biological control rust fungus *Phragmidium violaceum* only affects blackberry of European origin and has no effect on American blackberry. While it won't eradicate common blackberry, it has the potential to reduce its impact and spread.



Weedy blackberries share these common characteristics. As members of the rose family, the pink or white flowers resemble a mini dog rose (C). Thorns form on the stems, leaf stalks and midribs (A). The berries are made up of many succulent fruitlets which start green and turn red through to black when ripe (B and D). Illustration – Charles A Gardner (Western Australian Herbarium, DEC collection)

In 2007, a DAFWA project commenced to create a 6-km-wide blackberry-free buffer zone from Australind to Darkan. The aim is to separate the American blackberry to the north and the common blackberry to the south of this line. This will prevent the American species simply replacing the common blackberry as the bio-control agent takes effect. As blackberries are removed from the buffer zone, new priorities would be to control the wrong species on the wrong side of the buffer.

More information

CSIRO Field Guide www.ento.csiro.au/weeds/blackberry/WABB_fieldguide_speciesID.pdf

Florabase http://florabase.dec.wa.gov.au

Christmas spiders – our bush decorations

By Brad Durrant

Every year in the months leading up to Christmas, small, yellow floating dots appear through the Australian bush and people's gardens. On closer inspection these dots are not floating, but sit in carefully constructed spider webs. Christmas spiders (also known as jewel or spiny spiders) mature at this time of the year and their bright yellow, white and black bodies decorate the bush throughout summer.

Every Christmas I get asked the same question: "Where do Christmas spiders go for the rest of the year?" Thankfully, this is very easy to answer. They don't go anywhere. Only juveniles are about from autumn to spring and they are just much harder to see during the earlier stages of their life cycle.

Christmas spiders (*Austracantha minax*) begin life within an egg sac, laid by females during autumn each year. Each egg sac may comprise of dozens of spiderlings. The silken egg sac can be a variety of shapes and is usually attached to a twig close to the web. Towards the end of autumn, the spiderlings emerge. Dispersal is possibly like many other orb-weaving spiders which use special silk that the spiderlings spin and use as a 'balloon' to float wherever the wind takes them. If the spiders land in a suitable position, they build a web to feed and grow. At this stage, they and their webs are very small, and as juveniles their colours are less distinct than those of the adult females that we usually see.

From the middle of spring the spiders are being noticed as they undergo their final moulting stages towards fully grown adults. Finally, Christmas spiders look more like Christmas decorations, with their bright colours and six large spines around their abdomen. They are particularly noticeable where, unlike most orb-web building spiders, they form large clusters, with their webs connected to or overlapping each other, in a similar way to golden orb-weavers.

Other orb-web builders, such as the garden orb-weavers, are nocturnal, building a fresh web every night and ingesting the previous day's web. Christmas spiders can usually be found sitting in the middle of their web all day and they keep the same web. Unlike many other spiders that have retreats or shady spots somewhere around the edge of their web, Christmas spiders rest in the hub of the web. Their hard abdomen protects the spiders from drying out in the sun as opposed to the soft bodies of most other orb-weaving spiders.

While most other spider webs are made to be quite inconspicuous, the silk lines that hold the Christmas spiders' web in place are dotted with balls of silk, making them far more noticeable. This is likely to prevent larger animals from walking or flying through their low webs which may require a lot of repair work for the Christmas spider.

Once the Christmas spiders have matured in early summer the males begin to look for a mate. Female Christmas spiders are around three times larger than the males, so the courtship ritual needs to be done carefully or the male could be mistaken for prey. The male approaches the web of the female and plucks the silk of her web with his front legs to convey his intentions. If she is receptive, this courtship behaviour will suppress her predatory instinct and the male can approach her for mating.

*Christmas spider (*Austracantha minax*) is the only representative of the genus Austracantha and it only occurs in Australia. Here the spider is widespread and can be found in all mainland states and Tasmania. Austracantha is very closely related to the genus Gasteracantha which occurs mainly in the tropics, with many stunningly coloured and bizarre, spiny forms. Christmas spiders have six spines and are usually a combination of yellow and white surrounded by black. Photo – Brad Durrant*

Finally in autumn, all the eggs are laid and the female Christmas spiders die shortly after, leaving behind the next generation of bush decorations and a swathe of beautiful webs that the weather will eventually break apart and dispose of. Then it is only a short six months until I'm asked "Where have the Christmas spiders been?"

Funding opportunities

Natural Resource Management (NRM) Community Grants Program 2009–10

The State Government has allocated $5 million for a community grants component of the State NRM Program. Projects ($5,000 to $250,000) must address at least one of the government's NRM priorities of biodiversity, biosecurity, water quality, NRM interaction with planning, climate change adaptation or community engagement.

Eligible groups include regional, sub-regional, catchment and community groups, industry and local governments. Groups must be incorporated or be able to use an Incorporated Association or equivalent for all financial management. State Government agencies are ineligible to apply for funding, but may be partners in proposals.

Applications close 5pm Friday 29 January 2010. Visit www.nrm.wa.gov.au/stateNRMprogram.htm or contact Barbara Morrell on 9368 3177 or barbara.morrell@agric.wa.gov.au. Applications can be sent electronically to Barbara or posted to Barbara Morrell, State NRM Office, Locked Bag 4, Bentley Delivery Centre, 6983.

Urban Nature can assist you with your applications, particularly biodiversity and weed control issues (biosecurity). Contact Julia Cullity on 9423 2925 or email julia.cullity@dec.wa.gov.au.

Environmental Community Grants Program

The State Government is expected to allocate $1.5 million for the second year of its four-year $6 million Environmental Community Grants Program. Categories are expected to be similar to 2009: biodiversity conservation; sustainable catchment management; fauna rescue and rehabilitation; nature appreciation in natural areas; regional parks and Bush Forever sites; support for major conservation and environment organisations; and protection of high value areas by landholders on private land. The second round of funding is expected to be advertised in February 2010. Visit www.dec.wa.gov.au/ecg.

Gordon Reid Lotterywest Grants for Conservation

These grants are aimed at supporting community organisations to conserve the State's natural habitats and diversity. Examples of projects that may be considered are revegetation activities and the protection of remnant vegetation; flora and fauna surveys; management plans for reserves; public education projects such as the production of brochures; or research projects which will assist in the conservation of WA's biodiversity. Visit www.lotterywest.wa.gov.au/grants/grant-opportunities/vosh/612.

Swan Alcoa Landcare Program

For 11 years, the Swan Alcoa Landcare Program has run an annual funding program to assist community groups in the restoration and management of bushland, wetland and foreshore vegetation, and the protection and enhancement of surface and groundwater quality. The 2011 funding round is likely to be opened in February–March 2010. Visit www.perthregionnrm.com.

Coastwest grants

Coastwest grants are for projects designed to improve the condition and amenity of the coastal zone in Western Australia. The grants provide opportunities and resources to assist community groups, in association with local coastal managers, to undertake on-ground coastal management activities to facilitate community involvement and capacity building. Grants can assist in the implementation of existing coastal management plans through cooperative coastal manager and community actions. Visit www.planning.wa.gov.au/Plans+and+policies/Statewide+planning/Coastwest/default.aspx. The 2010 funding round is expected to open in February.

It's back… the Barefoot Radler Coastcare grant scheme

Barefoot Radler and Coastcare are again joining forces to help groups improve the resilience of their local coastline to the effects of climate change. The funds distributed to the 2009 Coastcare winners enabled work to be completed on minimising dune erosion, restoring local fauna and protecting native habitats. The 2010 Barefoot Radler Coastcare grant scheme will open in early 2010. For your chance at a share of the funds visit www.barefootbrewers.com.au.

Rediscovered after 63 years

A close-up of Dampiera triloba. *Photo – David Mickle*

During a flora survey in September 2008, DEC botanist David Mickle discovered a flowering *Dampiera triloba*. Not seen on the Swan Coastal Plain since 1945, the specimen was found in a local government reserve in the City of Wanneroo. Thought to be extinct on the Swan Coastal Plain, this erect perennial herb or shrub grows to 0.5 m height and has blue flowers from August to December. This discovery prompted the listing as a Priority 1 species because of the limited number of historical collections. The WA Herbarium has specimens from Gnangara, Cunderdin, Avon Valley and Bayswater. DEC staff will undertake surveys to locate additional populations in spring 2010. This find highlights the importance and special diversity of our bushland reserves on the Swan Coastal Plain and, in David's opinion, the top one of the 34 biodiversity hotspots of the world.

*Examining the golden splash tooth fungus (*Phlebia subceracea*) during a Perth Urban Bushland Fungi survey. Photo – Neale Bougher*

PUBF is a collaborative effort between the WA Naturalists' Club and the Urban Bushland Council in conjunction with DEC's WA Herbarium, with financial support from Lotterywest. Overall leadership is provided by Dr Neale Bougher from the WA Herbarium. Visit www.fungiperth.org.au.

what's on

Opportunities for you to participate! Visitors always welcome but please confirm activities with contact person. Most activities are FREE!

Recurrent activities

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

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

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

Sundays 8.30am
Bushcare activities with the Friends of Wireless Hill are on the second and fourth Sunday of each month. Meet at main 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 or visit www.friendsofpiessebrook.org.au.

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

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

January

16 Saturday 8am
Guided walk at Lake Gwelup. Contact Christine 9447 2983 or folgmail@iinet.net.au.

23 Saturday 8am
Guided walk at Star Swamp. Contact Christine 9447 2983 or starswamp@hotmail.com.

23 Saturday 9am–12 noon
Weeding and seed collection with the Friends of the Spectacles, Kwinana. Contact Lynda Smith 9439 1928 or outback3@iinet.net.au.

February

2 Tuesday 6.30am
Park walk with the Friends of Mosman Park Bushland. Registrations open Monday 4 January. Contact the Heart Foundation on 1300 362 787 or www.heartfoundation.org.au/walking.

21 Sunday 9am–12 noon
Weeding and seed collection with the Friends of the Spectacles, Kwinana. Contact Lynda Smith 9439 1928 or outback3@iinet.net.au.

March

1 Monday 9am
Park walk with the Friends of Woodman Point. Registrations open Monday 1 February. Contact the Heart Foundation on 1300 362 787 or www.heartfoundation.org.au/walking.

2 Tuesday 7.30pm
Cockatoos with guest speaker Ron Johnstone (WA Museum). Urban Bushland Council WA AGM, West Perth. Call 9420 7207.

20 Saturday 9am–12 noon
Weeding and seed collection with the Friends of the Spectacles, Kwinana. Contact Lynda Smith 9439 1928 or outback3@iinet.net.au.

Highlights

2 Tuesday February
6th Annual Wetland Management Conference, Cockburn Wetlands Education Centre, Bibra Lake. 'Caring for wetlands – an answer to climate change'. Contact Denise Crosbie on 9417 8460 or denise@cockburnwetlands.org.au.

20 Saturday–21 Sunday March
11th WA Environment Festival at Naragebup Rockingham Regional Environment Centre. 'The Future in Our Hands'. Call 9591 3077.

Activities key

Hands on – bushland and wetland management activities.

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

Skills development activities – talks, presentations, training courses and workshops.

Meetings and events – group meetings, expos, festivals and conferences.

Please send us your April, May and June 2010 events by Wednesday 24 February 2010.

Learning opportunity

Catchments, Corridors and Coasts program 13–15 January 2010

The Catchments, Corridors and Coasts program provides a 'snapshot' of environmental education in WA and is presented by the Australian Association for Environmental Education (WA). Learn about environmental issues, available resources, what is being done by community groups and government, and how we can work together for a better environment. The program focuses on skills development, reflection on WA environmental education practitioners, and will provide a resource toolkit for participants to use in their own workplace.

Visit www.aaeewa.org.au. Contact Catherine Baudains on 0409 374 231 or c.baudains@murdoch.edu.au.

regionalreports

Deadly dieback *By Valerie Jenner*

Friends of Alps Street Reserve, Mount Helena, decided for the third year to accept Alcoa's offer of some dieback-resistant jarrah seedlings. We have been a little disappointed with previous low survival rates; 35 out of 80 planted in 2007, and five out of 50 planted in 2008. We were allocated 42 in 2009, and we planted 22 in the heavily dieback-affected north-west quadrant of the reserve in an area where we have previously had low success.

With permission, we potted the 20 weakest seedlings into pots to be kept at my home to harden off during summer and for planting in early winter 2010.

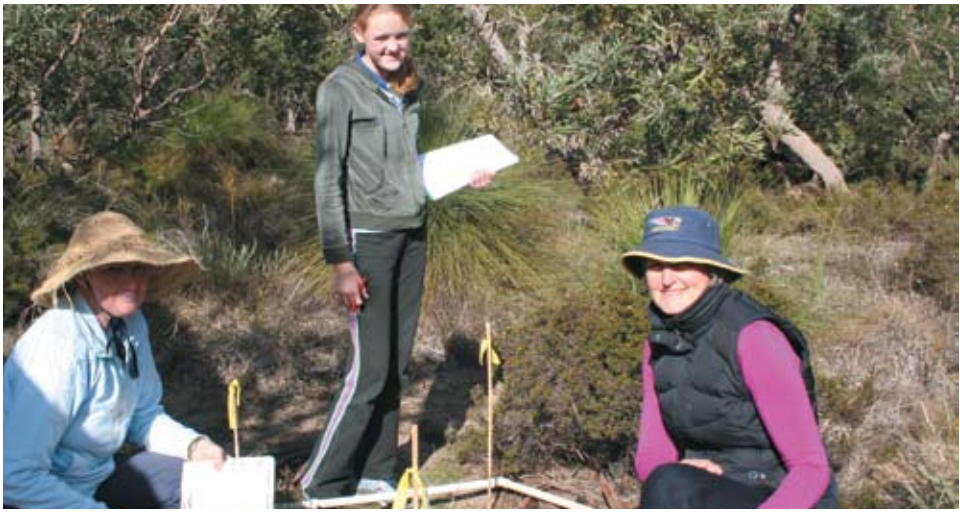
Monitoring of the planted seedlings in early November indicated a high survival thanks to the mild conditions and we intend to water them during summer. Unfortunately, four of the seedlings in pots have died. *Call Valerie on 0423 237 473.*

regionalreports

Please send us your regional report (150–200 words) and a photo by Wednesday 24 February 2010. Text may be edited in response to volume of submitted reports.

Mt Henry Peninsula Conservation Group

In 2009, volunteers from our group, the local community and Aquinas College continued our 'war on weeds', with rose geranium (*Pelargonium capitatum*), climbing fumitory (*Fumaria capreolata*), Geraldton carnation weed (*Euphorbia terracina*), pink gladioli (*Gladiolus caryophyllaceus*), Asteraceae species and woody Geraldton wax (*Chamelaucium uncinatum*) on the agenda. Thanks to funding through the Swan Alcoa Landcare Program, control of perennial veldtgrass (*Ehrharta calycina*) and other grass weeds is an ongoing annual project. Our work to eradicate yellow soldiers (*Lachenalia reflexa*) continued with further herbicide treatment by both the contractor and a member of our conservation group, together with hand weeding by 30 volunteers at a bush care day in September. Before control, yellow soldiers covered approximately 1 ha of the bushland under the dryandra grove and beyond. In 2007 and 2008, funding through DEC enabled a contractor to be employed to spray this weed. Monitoring the efficacy of weed control against perennial veldtgrass and yellow soldiers in seven transects showed a 95 per cent reduction in the weeds and return of native plants, including native grasses.



Angela Carr (left), Alexandra and Kendra Morgan monitoring a quadrat on a transect set up in 2007 for Lachenalia reduction assessment. Photo – Jan King

In November, Joe Tonga demonstrated how to use GPS to record the location of 10 micro-bat roosting boxes constructed by the Year 10 woodwork extension class at Aquinas College. Joe has removed feral beehives from the Peninsula in preparation for installation of the boxes. This project is funded by the 2009 Environmental Community Grant for Nature Appreciation in Natural Areas. *Contact Jan King 9255 3025 or email Jan.King@aquinas.wa.edu.au.*

Coastal rehabilitation at Kwinana Beach *By Craig Wilson*

Following the construction of two offshore breakwaters to combat coastline erosion at Kwinana Beach, a 200 m section of Kwinana Beach was re-nourished and a vegetation rehabilitation program developed. Through support from Coastwest, the first stage of the project has began. Community volunteers from Kwinana Beach Coastcare Group and Conservation Volunteers Australia installed 350 m^2 of jute matting and coastal species to resist the salt laden winds that buffet the area. Jute matting traps wind blown sand, assists in soil moisture retention and reduces invasive weed establishment.

On the opposite side of the walkway, two 20-m-long sand trap fences have been installed to reduce sand blowing onto the adjacent car park, and provide a sheltered area for the establishment of coastal plants. In the six months since installation, sand has started to accumulate between the fences and a range of plants including *Spinifex*, *Atriplex* and *Carpobrotus* have been planted. The invasive weeds *Tetragonia decumbens* and *Cakile maritima* will initially be retained to help stabilise the sand until the native species are well established.

The success of the two sand trapping methods will be assessed over time and the most effective method will be used in the next stage of the rehabilitation program. It is anticipated that the completed rehabilitation project will link vegetation in the adjacent coastal reserve to complete the link between Kwinana and Rockingham reserves. *Contact Craig on 9439 0433 or craig.wilson@kwinana.wa.gov.au.*

Bungendore bush breakfast and book launch By Kim Sarti

Bungendore Park Management Committee held its seventh annual Bungendore Bush Breakfast in November. About 100 people enjoyed a cooked breakfast in the bush provided by the committee and Armadale Lions Club. The breakfast was followed by the official launch of *Birds of Bungendore Park* by WA Chief Scientist Professor Lyn Beazley (see page 12). A lively auction then followed of the original watercolour artwork used on the book covers to help recoup printing costs. A Kelmscott resident was the highest bidder for the red-tailed black cockatoos, and the City of Armadale outbid others for the western spinebill illustration – the city's emblem. *Contact Kim on 9470 2297 or kimsarti@bigpond.net.au.*

WA Chief Scientist Professor Lyn Beazley at the Birds of Bungendore Park *book launch. Photo – M Owen*

Friends of Talbot Road and Urban Nature join forces

By Jan Lynn

During the cooler months our Friends group meets monthly to clear rubbish, weed, brush walkways or plant at Talbot Road Reserve. A $10,000 grant will assist us with the ongoing fight against weeds in 2010.

Planting at Talbot Road Reserve. Photo – Jan Lynn

In July 2009, Kate Brown and Grazyna Paczkowska joined 16 Friends to plant 2,000 seedlings. Eight species were planted, having been grown from seed collected the previous year by DEC staff and raised in a nursery near Kwinana. Following the planting, we warmed ourselves by the mobile barbecue provided by DEC. This was a special day enjoyed by all the participants. Follow-up inspections have shown that the plants are surviving well.

Bush Skills for the Hills assessed the effects of fire and weeds on flora and vegetation in the reserve during September using photo monitoring points. They also completed a baseline survey of birds. This information was collated in an excellent handbook for use by our group. *Contact Jan on 9374 0548.*

Saving Hepburn Heights Bushland

By Ralph Henderson

In August, our book *Saving Hepburn Heights Bushland* was launched at the Connolly Community Hall where 100 guests enjoyed afternoon tea catered by the Wanneroo and Districts Historical Society. Many of the guests were involved in the original fight to save the bushland and the event was as much a reunion as a book launch. The book was officially launched by Mayor Troy Pickard, representing the City of Joondalup which sponsored the publication of the book, followed by speeches from co-authors Alan Lloyd (Friends of Hepburn and Pinnaroo Bushland) and Bill Marwick (Wanneroo and Districts Historical Society). (See page 12)

Co-authors Bill Marwick (left) and Alan Lloyd at the launch of their book Saving Hepburn Heights Bushland. *Photo – Miguel Castillo*

Award recognises work at Piesse Brook

By Linda Stanley

The Friends of Piesse Brook continue to expand their work on private landholder's properties, progressing upstream to remove weed seed sources that can reinfest Kalamunda National Park downstream. Private landholders have been very supportive in participating in the program to rid the brook of invasive weeds on their own properties. These efforts assist the Friends in keeping Kalamunda National Park free of invasive weeds that destroy the park's biodiversity and wildlife habitats. The Friends obtained $24,922 funding in 2010 to continue their work. In 2009 the Friends of Piesse brook Inc were finalists for the second consecutive year in the prestigious National Banksia Environmental Awards.

We are always looking for volunteers to assist us at our monthly work mornings held between April and November. Visit www.friendsofpiessebrook.org.au or email linda@johnstanley.cc.

Studying turtles at Yellagonga *By Graham Sinclair*

Survival of the long-necked turtle (*Chelodina oblonga*) in Yellagonga Regional Park is under threat due to predators, principally foxes. Dr Jacqueline Giles assisted Friends members with the collection of data on turtle numbers. This involved boating around lakes Joondalup and Goollelal in a canoe, observing, catching and marking the turtles. The information will provide a baseline against which future studies can be compared. The possibility of engaging a trapper to eradicate foxes from Lake Goollelal is being considered. If this proves successful we will be seeking involvement from DEC and Joondalup and Wanneroo councils in a much bigger project in the area surrounding Lake Joondalup.

Watering seedlings is a continuing challenge on some of the sites which the Friends manage, so with the cooperation of DEC we have installed reticulation in an area near Lake Goollelal, adjacent to Hepburn Avenue. We look forward to the successful revegetation of this area now it has water. Another of our sites on the edge of Lake Goolelal is close to a retirement village on Hocking Road. A group of village residents has become involved with that site, and the additional 'manpower' should ensure successful rehabilitation of the area. DEC is looking at the possibility of also providing water to this site. *Email friendsofyellagonga@bigpond.com.*

Dieback treatment at Wireless Hill *By Glen Byleveld*

During Conservation Week in March 2009 the Friends of Wireless Hill Park hosted a highly successful dieback treatment day. More than 80 volunteers carried out phosphite stem injection in the beautiful banksia and eucalypt woodland to prevent the spread of *Phytophthora* dieback. This 40-ha bushland bursts with wildflowers during spring and is an important refuge for many species of birds and reptiles. The Friends hosted a second treatment day in November to continue this valuable work. *Contact Glen on 9458 5664 or glenbyleveld@sercul.org.au.*

2009 beach litter survey *By Larry*

In October, volunteers from the Friends of Marmion Marine Park, Joondalup Community Coast Care Forum, Stirling Natural Environment Coastcare and the Department of Fisheries joined forces to clean up the coast between Sorrento and Burns Beach. Collected litter was weighed and sorted using the Tangaroa Blue Ocean Care Society's Marine Debris Identification Manual, which proved to be a very valuable tool. A total of 1,498 items weighing an estimated 59.3 kg were gathered from a total area of 2.15 ha. A comparison of the results with the 2008 survey showed a 54 per cent increase in the number of items and a 114 per cent increase by weight. However, it is not possible to say that this reflects a trend towards more irresponsible public attitudes to litter, as the amount of litter also depends on the prevailing weather and sea tides before the survey. The results did indicate an ongoing issue with bait box strap bands being thrown overboard and issues for the City of Joondalup with removing glass and cigarette butts from beaches. For more information contact Larry by email larry59@iinet.net.au or Don by email dpoynton@iinet.net.au.

Sorting litter collected at northern metropolitan beaches in October. Rae Kolb (SNEC) (from left), Lynda Arnold (FOMMP), Liz Curtis (FOMMP) and Mike Norman (JCCCF). Photo – Don Poynton

Conservation of the graceful sun-moth

By Matthew Williams

The graceful sun-moth (*Synemon gratiosa*) is a small, brightly coloured day-flying moth found only on the Swan Coastal Plain. Monitoring the adult moth has presented a challenge as it appears for only a few weeks each year, mainly in March, and has a limited distribution determined by the availability of suitable mat-rush habitat. Further surveys in 2010 hope to clarify the conservation status of the species.

Endemic to south-western Australia, the graceful sun-moth is restricted to the Swan Coastal Plain between Quinns Rocks and Mandurah. It is specially protected fauna under the WA *Wildlife Conservation Act 1950* and listed as Endangered under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*. Surveys since 2002 have revealed few populations of the graceful sun-moth and all are in banksia woodland and coastal heath remnants. These relictual populations are thought to have a high risk of local extinction.

Biology

The larvae (caterpillars) grow to only about 20 mm long, are pure white, and look like beetle grubs. For most of the year, the larvae live underground where they feed on the subterranean parts of two closely related mat-rushes (*Lomandra maritima* and *L. hermaphrodita*). They pupate inside a silk-lined tunnel that they construct in the soil beside their host plant. The pupae are mobile and can move up and down this tunnel. The adult moths emerge in late February and March. They have dark grey-black fore wings and bright orange hind wings. They may feed on flowers, but this has never been observed – there are few plants in flower during March! After mating, females spend all of their time seeking out plants to lay eggs on, which they do by inserting their ovipositor into the soil at the base of a suitable mat-rush.

Conservation

Distribution of the host plants is the major determinant of potential graceful sun-moth habitat. *Lomandra maritima* was identified as a larval host plant only recently, and this has widened the potential habitat of the graceful sun-moth to include many areas zoned for clearing in near-coastal parts of the Perth and Peel areas. This creates an urgent need to clarify the habitat and distribution of the species to resolve any potential conflict between the species' conservation and future development.

When at rest, the graceful sun-moth's dark grey-black forewings cover the bright orange hind wings. Photo – David Pike

2010 surveys

DEC Research Scientist Carly Bishop will be coordinating a project in 2010 to survey the graceful sun-moth and its habitat. These surveys will extend from Wilbinga in the north to Binningup in the south, including existing and proposed conservation reserves. The project will determine the habitat and distribution of the graceful sun-moth, provide a regional context for environmental impact assessment processes and clarify the conservation status of the species.

There will be extensive surveys and searches for adult graceful sun-moths between late February and early April 2010. To help with these surveys we are seeking the participation of volunteers, community and Friends groups. DEC staff and environmental consultants will also be conducting surveys.

DEC will be conducting training sessions on survey methods for the graceful sun-moth in mid to late February and early March. For more information or to participate in the February–April 2010 surveys, please email carly.bishop@dec.wa.gov.au.

Faunal extinctions – where and why?

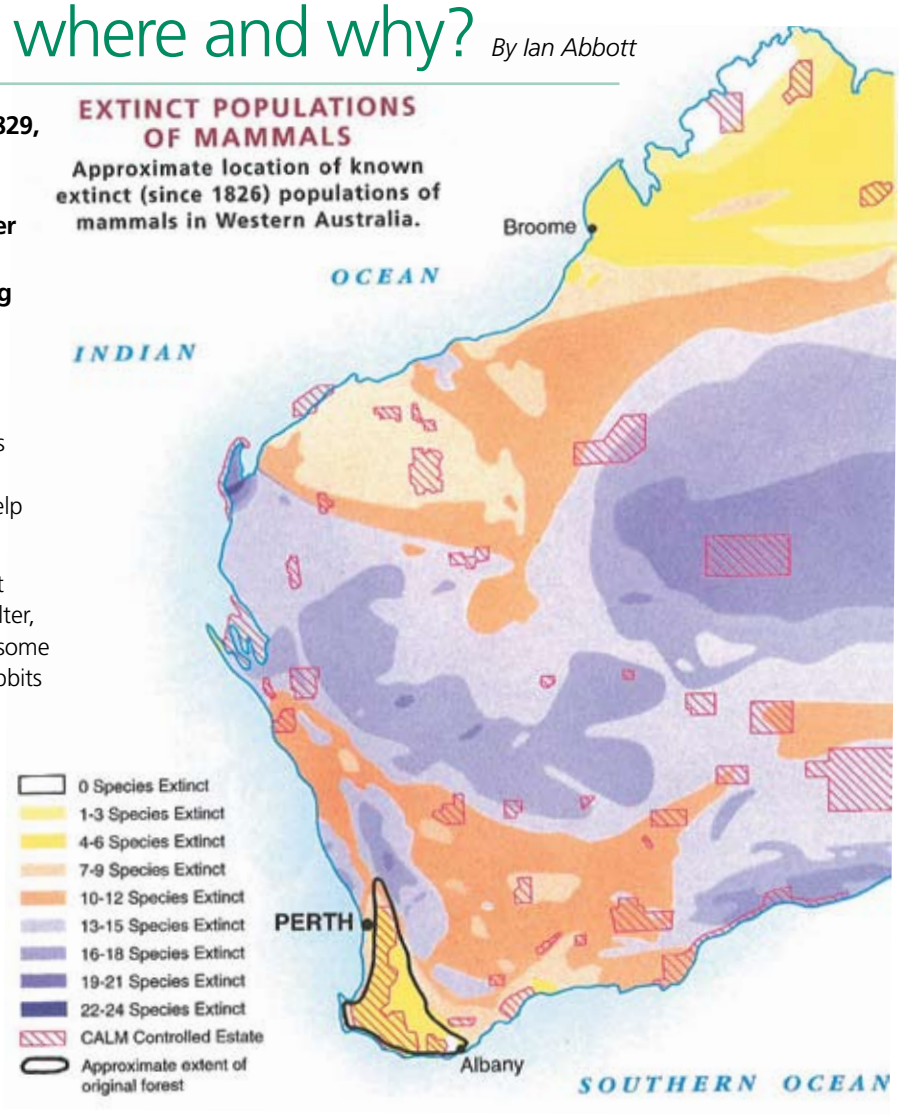
By Ian Abbott

When the British settled Western Australia in 1829, the bird and mammal species present were the legacy of two opposing processes operating in geological time – extinction and speciation. After 180 years of European settlement, how do we sort out the potential factors involved in causing extinctions? Why is it necessary to know this?

Bones in caves near Cape Leeuwin indicate the extinction of the koala and wombat in WA some 30,000 years ago and the occurrence of rock wallabies there 5,000 years ago. These extinctions probably resulted from a change in climate, possibly with the help of hunting by Nyoongars.

Since European settlement, people have colonised vast areas of WA, clearing native vegetation to provide shelter, food, energy and income. Livestock were introduced, some of which have become feral. Other animals such as rabbits and foxes migrated from South Australia.

Using all available information, we have been able to reconstruct where populations of each species are known to have disappeared (local extinction), map these and combine them into a single map showing the pattern for all species.



Birds

Most local extinctions have been on the Swan Coastal Plain followed by the central wheatbelt (view map in Abbott 2009). This has resulted from native vegetation being destroyed to create the city and suburbs of Perth, and to grow crops and pasture. In much of the interior, extinctions have been few, even though many species are less common than before pastoralists occupied the land. The largest part of the south-west with the fewest extinct bird populations is the jarrah and karri forest.

Mammals

Interestingly the pattern of mammal extinction is unlike that for birds and there is no single dominant cause (see map). Most mammal population extinctions have been in the least-settled parts of WA. The first wave of extinctions in 1880–1920 occurred in the western half of WA and was probably due to disease. The disease appears to have started around Shark Bay and spread quickly to the north, east and south to reach Albany by 1920.

The second wave of extinctions started soon after 1911 with the arrival of the fox from South Australia. Some populations recovered after the first wave of extinctions, only to succumb to predation by the fox. The prior arrival of the rabbit from South Australia in 1895 helped maintain large populations of foxes, thus intensifying predation of native mammals. Although cats were feral throughout WA by 1890, observations in northern South Australia and southern Northern Territory in the 1920–30s reveal that the mammal fauna was intact there until the fox arrived in 1930.

The Canning Stock Route (Halls Creek to Wiluna) and the Nullarbor Plain still retained many native mammal species until the 1930s, even though the feral cat had been present for many decades. It seems that traditional mosaic burning by desert Aborigines helped buffer native mammals against predation by cats and foxes, for when Aborigines left the deserts for towns, fuel levels increased and subsequent lightning strikes caused extensive wildfires. These removed the shelter of native mammals, making it easier for cats and foxes to kill any surviving or re-colonising animals.

Relevance to management

Knowledge of where extinctions have occurred means that once threats are diminished, DEC can attempt to restore original distributions with confidence. DEC staff have translocated numerous species to Peron Peninsula, Lorna Glen, Dryandra and elsewhere.

More information

Abbott, I (1997) Extinctions in Western Australia. *LANDSCOPE* 12(3): 49-53.

Abbott, I (1999) The avifauna of the forests of south-west Western Australia: Changes in species composition, distribution, and abundance following anthropogenic disturbance. *CALM Science Supplement 5: 1-175. Corrigenda. Conservation Science Western Australia* 5: 136 (2004).

Abbott, I (2006) Mammalian faunal collapse in Western Australia, 1875-1925: the hypothesised role of epizootic disease and a conceptual model of its origin, introduction, transmission, and spread. *Australian Zoologist* 33: 530-561.

Abbott, I (2008) Historical perspectives of the ecology of some conspicuous vertebrate species in south-west Western Australia. *Conservation Science Western Australia* 6(3): 1-214. [available online]

Abbott, I (2009) Faunal extinctions: where and how have populations disappeared? Available at http://www.dec.wa.gov.au/component/option,com_docman/Itemid,1/gid,3690/task,doc_download/. *Department of Environment and Conservation, Western Australia, Science Division, Information Sheet* 21/2009, DEC, Kensington, WA. 2 p.

groupprofile

Children can make a difference

By Jo Tregonning

"What can we do, we are only children?" This was the catch-cry which inspired the development of the Baldivis Children's Forest 10 years ago. In the face of radical change from rural to urban living, students at Baldivis Primary School determined to preserve some of the region's fast diminishing natural environment. This empowerment of young people to influence change has resulted in a unique and far-reaching project in conservation and sustainability, transforming a farmland block into a vibrant educational centre surrounded by beautiful bushland.

Children collecting tree guards, stakes and weeding in the two-year old rehabilitation area at Baldivis Children's Forest. Photo – BCF Inc

In the early years, children planted seedlings annually in the 19.79-ha degraded tuart woodlands and Outridge Swamp. Faced with poor seedling survival rates of less than 10 per cent, children were asked what could be done. The children's ideas were actioned and were as good as any trained revegetation specialist – plant more carefully, fence out the hungry kangaroos, give the seedlings a drink in summer and pull out the weeds. Ten years later, a whopping 25,700 seedlings have been planted and the past three years has seen a 70 to 90 per cent seedling survival rate. Young children eagerly show me the plants they planted the year before (always the biggest ones) before enjoying the wildlife in the planted areas, pulling weeds and planting more plants.

Led by Joe Tonga, children and community have responded to the loss of fauna habitat by creating nest boxes for cockatoos, bats, possums, birds and honey possums. This work has been complemented by a program to remove feral honey beehives from tree hollows. Encouraging are the sightings of possums and large monitor lizards in the old treated hollows. The excitement of children spotting these animals on night stalks is great to hear.

Education

Trialled as an idea in 2004, the concept of school activity days in the Forest has rapidly grown to include 1,500 students from 15 schools annually. Children rotate through two to four activities during their day learning about fire, insects or macro-invertebrates, holding native animals, running around the bush on a treasure hunt, creating an obstacle course, moulding clay, eating damper, throwing boomerangs or walking with Aboriginal Elders. At least one of the activities contributes to the conservation and management of the Forest such as planting, collecting seed, monitoring plants and animals or mapping weeds.

Voluntary community service has also played a pivotal role in transforming the reserve during 2009. Nine school groups involving 300 high school children and 45 teachers have worked to create mulched walk trails, install signs, move irrigation, paint bins and a banner or inject phosphite into sick trees. The children benefit from the training while making a positive contribution to Forest management.

The enthusiasm of local children is catching, and we received many requests from families to run some community events. Bush survival, art, snake handling, a music concert and numerous night stalks and treasure hunts have packed the 2009 calendar. The popularity of these events is a testimony to the terrific educators that run them.

Partnerships

This project is only possible because of the wonderful generosity of many individuals, groups and organisations that share their expertise and resources. Although the Forest now has its own entity, teacher Judith Hill and Baldivis Primary School continue to be major drivers and supporters of the project. The City of Rockingham built an outdoor classroom through Work for the Dole in 2005, an amphitheatre in 2007 and continues to be a solid partner. Our group has received sponsorship from numerous businesses, with our major sponsor BHP Billiton Nickel West contributing since 2006. Baldivis Volunteer Fire Brigade has been with us since the first seedling was planted. Every year Baldivis, and now Singleton, firefighters talk to children about fire safety.

Aboriginal cultural learning has formed an important part of developing the Forest and it has been a wonderful experience to work with local Aboriginal Elders. A bush tucker garden, artwork, mia and the district's dreamtime trail are physical evidence of Aboriginal learning at the Forest.

Media

An important part of attracting and maintaining industry and business sponsorship is by media promotion and project recognition. Since 2006, the multi-award-winning Forest project has been recognised in state, national and international arenas for biodiversity conservation, education and Aboriginal cultural reconciliation. Children speak at numerous events and conferences, the most recent being at the International River Health Conference in Canberra during October where 'kids teach kids'.

Visit www.baldivis-childrens-forest.com.au for more information.

Resources

New publications

Birds of Bungendore Park (2009) Johnstone, RE and Kirkby, T, Bungendore Park Management Committee, 44 pages. Compiled by local ornithologists, this book details 98 bird species reliably recorded in Bungendore Park, Bedfordale in the City of Armadale. It gives information on relative abundance, habitat preferences, breeding and movements. Changes in bird status are detailed following environmental changes; the 1994 wildfire and the invasion of some exotic species into the park. The book includes exquisite artwork by Rob Fleming. $20 from Armadale Tourist Centre, Jull Street or SERCUL, Horley Street, Beckenham; or $22 (including postage) from Bungendore Park Management Committee, PO Box 538, Armadale WA 6992.

Common Butterflies of the South-West (2009) Williams A, Powel R, Williams M, Walker G. Department of Environment and Conservation, Perth, 72 pages. RRP $6.50. This book describes and illustrates 31 of the most common butterfly species to be found in suburban bushlands around Perth and major regional centres.

Saving Hepburn Heights Bushland (2009) Lloyd A. and Marwick B. City of Joondalup, 200 pages. RRP $30 (plus $3 postage). A beautifully presented historical document that details the campaign that not only saved the bushland, but raised awareness of the importance of urban bushland. Essential reading for anyone passionate about preserving natural bushland. Cheques should be made payable to 'Friends of Hepburn and Pinaroo Bushland Inc.' and mailed to The Treasurer, 31 Drummer Way, Heathridge, WA 6027. All money raised by the sale of the book goes to the Friends group for projects associated with the bushland. Contact Alan Lloyd on 9401 6652 or Bill Marwick on 9309 3611.

Website Watch

Natural Area Initial Assessments Regional Database is now publicly available online. To access data for many Perth metropolitan and south-west local government reserves visit www.walga.asn.au/about/policy/pbp/na_database.

National Animal Pest Alert brochures on ferret, Rusa deer and red-eared slider turtle have been produced by the WA Department of Agriculture and Food. Alert brochures already published focused on the Indian ringneck parrot, the house crow and the common myna. Visit www.agric.wa.gov.au and search 'pest alert'.

Information on **weeds of national significance** is no longer available at www.weeds.org.au. Visit www.weeds.gov.au. Useful links to information on **invasive plants** can be found at www.dec.wa.gov.au/management-and-protection/invasive-plants/index.html.

Recent research

Commander L.E, Merritt D.J., Rokich D.P., Flemantti G.R., Dixon K.W. (2008) Seed germination of *Solanum* spp. (Solanaceae) for use in rehabilitation and commercial industries. *Australian Journal of Botany* 56(4): 333–341.

Millar M., Byrne M., Coates D. (2008) Seed collection for revegetation: Guidelines for Western Australian flora. *Journal of the Royal Society of Western Australia* 91(4): 293–300.

Turner P.J., Scott J.K., Spafford H. (2008) The ecological barriers to the recovery of bridal creeper (*Asparagus asparagoides* (L.) Druce) infested sites: Impacts on vegetation and the potential increase in other exotic species. *Austral Ecology* 33(6): 713–722.

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