

Fire – how can we do better?

By Mary Gray

Perth's bushland, while adapted to fire, suffers degradation from excessive fire frequency that contributes to biodiversity loss. The Urban Bushland Council held a seminar in May to discuss local case studies and look at how we can do better.

The seminar reviewed fire history, wildfire suppression and post-fire management for three bushland areas – Star Swamp Bushland, Warwick Bushland and Careniup Swamp, and Forrestdale Bushland. Community speakers set the scene for each bushland area followed by local government or Department of Environment and Conservation (DEC) land managers. Fire and Emergency Services Authority (FESA), local bushfire brigade and community representatives contributed useful discussion.

From the case studies it was clear that Friends groups want more communication with fire authorities and land managers. Friends groups have considerable local knowledge and expertise and want to be included in preparation of fire management plans and post fire debriefs. There was also a common perception among Friends groups that arson, the predominant cause of wildfires, is still not treated as a serious and socially unacceptable crime.

Many practical suggestions arose from the seminar, including:

For Friends groups:

- keep in touch with land managers and local fire authorities;
- invite local FESA staff to Friends group activities to help them gain an appreciation of the bushland;
- become familiar with fire management plans before each summer;



*Resprouting banksia after a fire event.
Photo – Jo Tregonning*

- meet with land managers and FESA before each fire season to discuss fire management plans;
- map the extent of each fire and keep good records; and
- monitor sites after fire.

Fire management agencies:

- hold debriefing sessions with Friends groups, land managers and stakeholders after wildfires. For example, include the high school in sessions about Warwick Bushland;
- include damage to flora (hectares burnt) and fauna in media statements;
- increase public education and strengthen legal responses to highlight that arson is a serious and socially unacceptable crime;

- keep fire management plans updated with Friends groups and land managers. There is considerable local knowledge and expertise within Friends groups which deserves recognition;
- provide bushland education programs for firefighters including site visits in winter and spring; and
- lead a fire awareness and education program for Warwick Senior High School which is located in Warwick bushland where 20–30 fires per year in this bushland are deliberately lit.

Land managers:

- keep in touch and work with Friends groups;
- update and implement fire management plans in consultation with Friends groups;
- provide up-to-date maps, contact details, access and sensitive area information for each site to respective fire stations each year; and
- conduct site visits in spring each year with local FESA staff and Friends groups.

For more information, or to borrow a mapping kit that contains GPS and camera, contact the Urban Bushland Council on 9420 7207 or ubc@iinet.net.au.

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Winter 2008

Time of Makuru and Djilba in the Nyoongar calendar.

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Department of
Environment and
Conservation



Our environment, our future

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 By David Mitchell

DEC's Urban Nature team is preparing for a busy works program during winter and spring. Like most bushland managers, we have identified many more things that we could or should be doing that we just do not have enough time for. Sometimes some of the thrill of the job is in eventually achieving much more than you thought possible.

Urban Nature is investigating opportunities to continue the successful weed control projects funded by the Australian Government's Natural Heritage Trust through the Swan Catchment Council and supported by the Department of Environment and Conservation's (DEC's) *Saving our Species* program. We are also looking at programs of management and research in conjunction with community land managers as well as operational staff from DEC's Swan Region and Regional Ecologist Geoff Barrett who has recently joined the department.

Feral honeybees given the flick By Robert Huston (DEC)



Joe Tonga treating a feral honeybee (*Apis mellifera*) hive in Bullsbrook Nature Reserve. Photo – Jim Prince

DEC, in partnership with Tiwest Joint Venture, has completed a major effort to control colonies of feral honeybees (*Apis mellifera*) in three nature reserves in the Muchea area. The successful project mapped and eradicated 38 beehives from Barracca, loppollo and Bullsbrook nature reserves. The work was completed by Joe Tonga from Natsync Environmental.

An ingenious method is used to quickly destroy the beehives. A powder chemical of 80 per cent talcum powder and 20 per cent pyrethrum base agent is injected directly into the hive. The hive is destroyed within 20 minutes of being injected and returning worker bees are also killed as they make contact with the powder remaining in the hive. The pyrethrum has a very short life once applied and does not affect avian fauna.

DEC nature conservation officers from the Perth Hills District Office will implement a follow-up program to monitor the destroyed hives for possible feral bee re-invasion and for native wildlife returning to the hollows once occupied by honeybees.

The feral European honeybee is recognised as a major threat to the terrestrial biodiversity of the south-west of WA. They invade and occupy tree hollow nesting sites (i.e. Carnaby's black cockatoo) over large areas of bushland and also pose a serious threat to native bees and other insect pollinators by out-competing them for limited food resources.

For more information email Robert at robert.huston@dec.wa.gov.au.

Weed distribution mapping

With the onset of autumn rain, weeds become more noticeable in bushland and wetlands. In the past couple of months Urban Nature staff have revisited Talbot Road Nature Reserve and Brixton Street Wetlands to update distribution and density maps of more serious weeds such as veldt grass, African lovegrass, *Tribolium uniolae* and watsonia. The distribution of these weeds across these reserves was first recorded nine years ago and was last updated four years ago. We now use a differential GPS and are able to produce very accurate maps. The maps are important tools for carefully targeted bushland management. They also provide an understanding of weed distribution and densities over time and the effectiveness of weed control programs.



Rebecca Hayes mapping weeds at Brixton Street Wetlands. Photo – Grazyna Paczkowska

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Previous newsletter issues available at www.dec.wa.gov.au

Spring Bushland News

Spring *Bushland News* contributions should be sent to Urban Nature by **Friday 29 August 2008.**

Compiled and edited by Jo Tregonning.

BUSHLAND WEEDWATCH:

Control of buffel grass (*Cenchrus ciliaris*)

By Bob Dixon (Botanic Gardens and Parks Authority)

Buffel grass (*Cenchrus ciliaris*) is an extremely tough and drought-resistant species. Widely planted in pastoral regions as a pasture grass, it is a widespread weed from Shark Bay to the Pilbara. It is found in south-west WA on roadsides used by stock trucks from the north. Native to Africa and India, buffel grass continues to spread.

Buffel grass has the ability to produce large amounts of viable seed and can flower and seed several times a year under favourable conditions. Seedlings can flower six weeks after germination, compounding control efforts, and some seed remains viable in the soil for at least five years.

Which herbicide should I use?

Our trials indicated several herbicides will control this species to varying degrees, depending on the stage of growth and drought stress of the buffel grass. However, with large-scale spraying programs you need to use the most cost-effective methods and balance this with any perceived off-target damage.

The best overall grass-selective herbicide trialled was Verdict® 104 (104 g/L haloxyfop) at 6 L/hectare plus the addition of Agral 60 at a rate of 3ml/L. Verdict® has the advantage of being grass selective, however, it will kill native grasses. The disadvantage of using this herbicide is the cost and it is very unpleasant to use in high temperatures (as are other grass-selective herbicides containing hydrocarbons). This is due to the hydrocarbons which are volatile and make some people feel sick.

Roundup Biactive® (glyphosate 360 g/L) was the only non-selective herbicide we trialled. Surprisingly many native species are fairly resistant to this herbicide. At 8 L/hectare extensive field trials indicated the main perennial shrubby species on Airlie Island (near Onslow WA), *Acacia bivenosa*, *Acacia coriacea* and *Rhagodia preissii* are very resistant to Roundup Biactive®, but a word of warning – always test rigorously as many *Acacia* species are very susceptible to glyphosate.



Buffel grass (Cenchrus ciliaris) showing underground buds which assist in the plant's tolerance to drought. Photo – Bob Dixon



Spraying using a battery operated system; the use of dyes are necessary to see where you have been spraying. Photo – M. Barrett

Spraying recommendations

Though the best time for spraying adult plants is within the range of three to five weeks after sufficient rain has fallen, we find the best time for spraying is after six weeks when parent plants are actively growing and new seedlings are large enough to spray. Spraying too early misses the seedlings while spraying too late misses the seedlings as well as the parent plants, which are dropping seed or drying off.

We prefer to use Roundup Biactive® in sensitive areas as a spot spray, avoiding susceptible native species. Use a rate of 6 L/hectare with the addition of a penetrant such as Pulse® at 2 ml/L in 400 L water. In sensitive areas it may be necessary to use Verdict® at 6 L/ha with a wetter or penetrant. The number of sprays each year depends on weather conditions. Complete kill of the plants varies – without good spray coverage or in dry conditions many plants may resprout from the base of the plant and require follow-up spraying. In cyclone-prone areas the tops and, in particular the root systems, stay intact for at least five years, reducing the risk of wind erosion.

These recommendations are based on several years of research, including implementation of large-scale spraying operations carried out on Airlie Island and funded initially by Western Mining Corporation (Petroleum Division) then Novus Petroleum and finally by Apache Energy.

References

Dixon, I.R., Dixon, K.W. and Barrett, M. (2002). Eradication of buffel grass (*Cenchrus ciliaris*) on Airlie Island, Pilbara Coast, Western Australia. In: *Turning the tide: the eradication of invasive species*. Veitch, C.R. and Clout, M.N. (Eds). ICUN Publications. Cambridge.

ECONOTES:

Karst on the Swan Coastal Plain By Jay Anderson (Australian Speleological Federation)

Caves and karst are some of the most vulnerable and interesting ecosystems in the world, containing significant geological features and subterranean fauna. The Nullarbor karst system in Australia is one of the largest in the world. Fascinating examples of karst can be explored closer to home on the Swan Coastal Plain.

Karst is a landscape created from soluble rocks such as limestone, which have been dissolved by surface water or groundwater. This process creates distinctive surface landforms (such as sinkholes and caves) and drainage features. The original 'karst' is the geographical name of a 160-kilometre-wide limestone belt in western Slovenia – a place of barren white limestone surfaces with thin soils, devoid of surface rivers and having peculiar rocks and cave entrances.

Caves were documented early in Perth's history. One report stated that "An excellent and commodious harbour was discovered about six miles from the mouth of the [Swan] river. In one part of the shore they found a romantic limestone cliff, several hundred feet high, the face of which presented spacious and magnificent caverns, hung with stalactites, of the purest and most beautiful kind. From some of them there flowed chalybeate and saline springs, nothing inferior in virtue to the most celebrated spas in England".¹ Although some of these areas have been altered and developed, evidence of limestone is still visible in many suburbs – and in many places there may be unidentified caverns or cavities in the limestone.

Karst in south-west WA is often associated with coastal calcarenites of the Tamala Limestone. On the Swan Coastal Plain, limestone occurs in the Spearwood and Quindalup Dune systems. Many of our State reserves and bushland areas contain caves and significant karst features. A drive

through some coastal suburbs reveals limestone hills and cuttings and evidence of fissures, rhizomorphs (fossilised rootlets) and solution pipes. Some interesting examples include:

- Boomerang Gorge and Crystal Cave in Yanchep National Park;
- limestone cliffs along the Swan River;
- Point Walter–Blackwall Reach (cliffs, caves and springs within a karst system);
- limestone features at the northern end of Leighton Beach; and
- Mt Eliza, Kings Park (cliff, solution pipes, aquifer and karst system).

Subterranean fauna

Karst is considered to be a complex and diverse environmental system with specialised life and ecosystems. Subterranean fauna is of interest to speleologists and karstologists, and is specially adapted to living underground. These fauna, including threatened species, can be found in many of our WA karst systems, including threatened fauna and groundwater-dependent ecosystems.

Terrestrial subterranean fauna is often referred to generally as **troglofauna** and those living in water as **stygofauna**. Terrestrial cave life has been classified according to the degree of visible external (morphological) modification, distribution and the degree of dependency on subterranean habitats. The classification scheme for subterranean fauna generally

refers to **trogloxene** (entrance dweller or animals that spend part of their life in caves), **troglophile** (spend the whole of their life cycle underground but are capable of existing on the surface) or **troglobite** (animals unable to exist outside the cave environment). However, not all fauna will fit one category.

There are several adaptations and modification to life in darkness. Subterranean fauna have reduced size, changes to circadian rhythms, loss of pigmentation, reduction in eyes, extension of sensory structures, changes in feeding appendages, elongation of locomotory spines/claws and changes to reproductive biology/life cycle. Although most of the emphasis is often on invertebrate communities, vertebrates also occur in caves. Creatures such as bats, birds, reptiles, amphibians and fish can also be found in caves.

More information

Local speleologists assist DEC and the WA Museum in ongoing research relating to our understanding of caves and subterranean life. Conservation and management issues in karst areas involve describing and protecting the diversity of a cave or karst area. Members of the Australian Speleological Federation (www.caves.org.au) undertake trips and document karst features. For more information contact Jay Anderson on 0407 473 539 or rossjay@iinet.net.au.



Left: Dr Tim Moulds and Jay Anderson document subterranean fauna for the WA Museum. Right: Examining coastal karst at Mudurup Rocks (south of Cottesloe beach) with Dr Tim Moulds during a Geographical Association of Western Australia-Australian Speleological Federation workshop. Photos – Ross Anderson and Jay Anderson

¹ The Colonist, Cape Town, South Africa, No.5, 20 December 1827 p.36. From: *Journal of the Sydney Speleological Society* (1992) Vol.36 (4) p.64.

Perth Urban Bushland Fungi Project

By Roz Hart and the PUBF team

The Perth Urban Bushland Fungi (PUBF) project was started four years ago by the Western Australian Naturalists' Club in collaboration with the Urban Bushland Council and DEC's WA Herbarium. Through the involvement of community groups in fungi forays in local bushlands, the project has produced reports and collected many fungi specimens for the WA Herbarium. Despite thousands of fungi being documented in the Perth area during this time, there is still a good chance of encountering fungi which have not yet been named. It is estimated that there are 140,000 fungi in WA and fewer than 10 per cent that have been discovered and named.

The 'fungiperth' website was updated and launched in May. The website has an improved, easier-to-use version of the Fungi Field Book to help budding mycologists identify local fungi. Bushland fungi survey reports by PUBF are available which document approximately 3,000 fungi for 48 bushland areas in the Perth region. News items and information about free public events to be held in local bushland this winter are also listed.

The original website was designed by volunteer John Weaver and has been upgraded by DEC's Brett Glossop and Sarah de Bueger from PUBF with input from DEC mycologist Dr Neale Bougher. Visit www.fungiperth.org.au/.



Decline of tuart in the Yalgorup region



Decline and death of tuart (*Eucalyptus gomphocephala*) in the Yalgorup region. Photo – Paul Barber

By Paul Barber, Katinka Ruthrof, Bernard Dell and Giles Hardy

Tuart (*Eucalyptus gomphocephala*) is an icon of the Swan Coastal Plain and is one of a few eucalypts that is adapted to calcareous soils. The largest intact stand of tuart occurs in the Yalgorup region immediately south of Mandurah, where it is suffering a serious decline in health from an unknown cause or causes.

The Tuart Health Research Group (THRG) based at Murdoch University and comprising members from universities, industry, agencies and local government, has been conducting research into the cause or causes and management of tuart decline for the past five years. THRG has demonstrated strong correlations between crown health of tuart, levels of micro-nutrients in the foliage, abundance and diversity of soil microbes, and soil chemistry. Recently a new species of *Phytophthora* was found within declining stands, however, it is not known at this stage whether this is an aggressive pathogen or a latent pathogen contributing to the decline in crown health which may be initiated by other factors.

The ultimate outcome for THRG will be finding effective methods for managing the decline of tuart to save these iconic trees as well as developing restoration strategies to increase their abundance. Trials with a range of treatments, including stem injections with nutrients and phosphite, have proven successful in reversing canopy decline in trees. THRG has held native tree decline workshops in collaboration with Green Skills Inc., Bemax Cable Sands and Alcoa Alumina Australia to advise landholders how to effectively treat trees. More information can be found at www.tuarthealth.murdoch.edu.au.

Learning opportunities



Courses to help you care for country: day and evening classes in native animals; wildflower identification and surveys; wetlands; Indigenous culture; seed collecting; bush restoration and weed control; and propagation. Enrolments 2–3 July. Classes start 21 July at Swan TAFE, Midland. Contact Anne Taylor on 9374 6314 or anne.taylor@swantafe.wa.edu.au or Ted Johnson on 9374 6314 or ted.johnson@swantafe.wa.edu.au.

Help create a better Earth by becoming a conservation volunteer in and around Perth. In May, teams of volunteers from Conservation Volunteers Australia (CVA) worked on Rottne Island to help reduce visitor impact by stabilising dunes, revegetating and

recycling old fencing and building materials. CVA completes more than 2,000 conservation projects across Australia every year. It is a great way to enjoy the outdoors, meet new people and learn new skills. To get involved freecall 1800 032 501 or visit www.conservationvolunteers.com.au.


Ecological risk assessment in wetland management course by Wetlands.edu at Cockburn Wetlands Centre, Bibra Lake. 26–27 August 2008. Enrolments close 31 July. Cost \$700. Visit www.wetlandsedu.org.au or contact Bill Phillips on 02 6281 7470 or coordinator@wetlandsedu.org.au.

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


 **Conservation Volunteers Australia** 2008 conservation activity schedule. Overnight country trips to one-day activities. 2/343 Newcastle St, Northbridge. Call Sandra or Steve 9227 5711 or visit perth@conservationvolunteers.com.au.


 **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. Held second and fourth Sunday of each month. Meet at main car park. Contact Margaret 9315 9075 or s3mmatthews@hotmail.com.


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


July


 **6 Sunday 9am–12 noon Planting day** at Rotary Wildflower Reserve with Kwinana Rotary. Call Angela at Town of Kwinana on 9439 0418.

 **10 Thursday 8pm Eurady Station – a plant paradise.** Guest speaker Brian Moyle. Contact **AWSWA**.

 **12 Saturday 9am–11am Planting at Compass Park,** Yanchepp with the City of Wanneroo. Call the Wetlands Officer on 9405 5000.


 **13 Sunday Canning River Ramble** to discover the unique riverine flora and fauna, abundant bird life. 6+ years. Cost \$13 (\$11 DC members). Contact **N2N**.

 **13 Sunday Behind the Scenes at the Observatory.** Day tour includes new 30" telescope. 7+ years. Cost \$13 (\$11 DC members). Contact **N2N**.

 **15 Tuesday 9am Euphorbia monitoring** with the Friends of Paganoni Swamp. Call Leonie 0439 921 298.


 **19 Saturday 10am–12 noon Fungi Foray** with Perth Urban Bushland Fungi and Friends of Lake Gwelup followed by a hot soup. RSVP to Wayne on 9244 7553 or 0407 383 425 or folg@mail@iinet.net.au.

 **19 Saturday 9am Activity morning** with Friends of Brixton Street Wetlands. Call Regina 9459 2964.


 **20 Sunday Guided walk** at Mount Dale. Enjoy 360° views, waterfalls in Helena National Park and morning tea. 18+ years. Cost \$13 (\$11 DC members). Contact **N2N**.

 **20 Sunday 9am–12 noon Bush regeneration and fungi spotting** with the Friends of Warwick Bushland. Contact **FPB**.




 **20 Sunday 10.30am–12.30pm Busy bee** with the Friends of Piesse Brook. Contact **FPB**.

 **24 Thursday 10am Long-range camping excursion** with Busselton Naturalists' Club. Meet at Tamala Station, Shark Bay. Bring water, firewood, fishing gear. Suitable for caravans. Call Noel Titterington 9752 3295.

 **26 Saturday 2pm–5pm Environmental Weeds Action Network (EWAN)** general meeting, speakers and networking. City West, Lotteries House. Call Diane Matthews 9457 2896.

 **27 Sunday 9am–12 noon National Tree Planting Day** at Chalk Hill, Medina with Friends of Chalk Hill. Call Angela at Town of Kwinana on 9439 0418.

 **27 Sunday 9am–12 noon Planting** at Ottawa Way Stormwater Drain, Lake Joondalup with the City of Wanneroo. BBQ lunch provided. Call the Wetlands Officer on 9405 5000.


 **27 Sunday 10am–2pm Guided walk** to view waterfalls along Kitty's Gorge, Jarrahdale. \$2 each or \$5 per family. Call **JHS**.


 **27 Sunday 1pm–3pm Planting** with the Friends of Bungendore Park (Bedfordale). Full details on Planet Ark's website www.treeday.planetark.com.


August


 **1 Friday Planting day** with the City of Rockingham followed by a sausage sizzle provided by the Lions Club of Rockingham. Contact David Mort on 9528 0487.

 **5 Tuesday 9am Bird walk** with the Friends of Paganoni Swamp. Call Leonie 0439 921 298.


 **10 Sunday 9am–11am Planting at Leemans Landing, Two Rocks** with the City of Wanneroo. Call the Wetlands Officer on 9405 5000.


 **13 Wednesday 7.30pm Protecting Water Quality in Geopraphe Bay.** Guest speaker Malcolm Robb, Department of Water. Contact **BNC**.


 **14 Thursday 8pm Archiving and its application to botany.** Guest speakers Alex George and Dr Roberta Cowan. Contact **AWSWA**.

 **15 Friday 7.30pm Frogs.** Guest speaker Glen Gaikhorst. Kwinana Rockingham and Mandurah Branch of WA Naturalists' Club. Naragebup Rockingham Environment Centre. Call 9591 3077.


 **16 Saturday 9am Activity morning** with Friends of Brixton Street Wetlands. Call Regina 9459 2964.


 **16–24 August National Science Week 2008.** Gingin Observatory is holding a stargazing night to look at 'Jupiter – Our Olympic Planet'. Adults \$29, Seniors \$25, Children \$15. Contact Carol or Donna 9575 7740 or stars@ginginobservatory.com.

 **17 Sunday 9am–12 noon Watsonia control workshop** along Piesse Brook. Schipp Rd entrance to Kalamunda National Park. Meet at the front gate. Contact **BSFH**.

 **17 Sunday 10am Guided walk** with Urban Bushland Council at Garvey Park. Meet in the parking area at the end of Fauntleroy Ave, Ascot. Contact **UBC** on 9420 7207 or ubc@iinet.net.au.

 **17 Sunday 9am–11am Planting at Middleton Park,** Alexander Heights with the City of Wanneroo. Call the Wetlands Officer on 9405 5000.

 **17 Sunday 9am–12 noon Bush regeneration, nature walk, species ID and wildflower survey** with the Friends of Warwick Bushland. Contact **FWB**.

 **17 Sunday 10.30am–12.30pm Busy bee** with the Friends of Piesse Brook. Contact **FPB**.

 **18–29 August 2008 North Eastern Wheatbelt Malleefowl Survey** with WWF at Bencubbin. Moderate fitness level required. Suggested minimum commitment is three days. BYO camping equipment and food. Contact Carl Danzi on 9387 6444 or 0427 982 011 or cdanzi@wwf.org.au. Registration forms due 28 July.

REGISTRATION/CONTACT DETAILS

AWSWA Wildflower Society of WA (Armadale Branch) History House, Jull St, Armadale (near courthouse). Call Chris 9398 9140.

BSFH Bush Skills for the Hills offers free hills-focused workshops. Contact Robbie 9424 2216 or roberta.circosta@emrc.org.au.

BNC Busselton Naturalists' Club. Meet RSL Hall, Causeway Rd, Busselton. Contact Bernie Masters 9727 2474 or bmasters@iinet.net.au.

FLG Friends of Lake Gwelup. Contact Wayne 0407 383 425 or Betty 9444 5640 or email folg@mail@iinet.net.au.

FPB Friends of Piesse Brook. Meet at the gate into Kalamunda National Park, end of Schipp Rd, Piesse Brook. Wear boots, gloves and hat. Bring drink, secateurs and a smile. Contact Linda 9293 3102 (A/H) or linda@johnstanley.cc.


FWB Friends of Warwick Bushland. Meet at bowling/tennis club car park, Lloyd Dr, Warwick. Contact Janina 9447 9494 or neen@ext.uwa.edu.au.


FSSB Friends of Star Swamp Bushland. Meet at Henderson Environment Centre, Groat St, North Beach. Contact Christine 9447 2983 or starswamp@hotmail.com.

JHS Jarrahdale Heritage Society guided walks. Share with us. Call Tony 9525 5161.

N2N Nearer to Nature activities by DEC. Affordable prices. Discount for Discovery Club (DC) members. Bookings: 9295 2244 or visit www.naturebase.net/n2n.

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.


23 Saturday 9am–12 noon

 **Watsonia control workshop** along Helena River. Meet at the end of Helena Valley Road, Helena Valley. Contact **BSFH**.


24 Sunday 9am

 **Seventh leg of the Cape to Cape Track:** Conto's Camp Ground to Boranup Lookout. Bus \$12 per adult. 17 kilometre walk requiring moderate fitness. Walkers to carry lunch. Contact **BNC**.

24 Sunday 10am–2pm

 **Guided walk to top of the Scarp, Jarrahdale.** Breathtaking views. \$2 each or \$5 per family. Call **JHS**.

26 Tuesday 9am

 **Euphorbia control and field herbarium** with the Friends of Paganoni Swamp. Call Leonie 0439 921 298.

31 Sunday 2pm

 **Guided wildflower walk** with the Friends of Star Swamp Bushland. Contact **FSSB**.


September**10 Wednesday 7.30pm**

 **A special vegetation community** of the Swan Coastal Plain. Guest speaker Andrew Webb (DEC). Contact **BNC**.

11 Thursday 8pm

 **The little things that count.** Guest speaker David Pike. Contact **AWSWA**.


14 Sunday 9.30am–12.30pm

 **Native tree decline workshop** – recognition, treatment, protecting healthy trees. Kwinana. Call Green Skills 9360 6667.

14 Sunday 9am–1pm

 **Be prepared – fire safety in the hills.** Gidgegannup Fire Shed, Toodyay Rd, Gidgegannup. Contact **BSFH**.

16 Tuesday 9am

 **Euphorbia control and field herbarium** with the Friends of Paganoni Swamp. Call Leonie 0439 921 298.

20 Saturday 9am–12 noon

 **Quadrat flora survey and basic plant identification** at Ray Owen Reserve, Lesmurdie. Contact **BSFH**.

20 Saturday 8am–9.30am

 **Guided walk** with the Friends of Lake Gwelup. Call Christine **FLG**.

20 Saturday 9am

 **Activity morning** with Friends of Brixton Street Wetlands. Call Regina 9459 2964.

21 Sunday 8:30am–11am

 **Djilba spring walk** with the Friends of Bungendore Park (Bedfordale). Call City of Armadale's Events Coordinator 9399 0111.


21 Sunday 9am

 **Wildflower walk** at Crooked Brook Forest. Bus \$10. BYO lunch. Contact **BNC**.

21 Sunday 9am–12 noon

 **Bushcare day** with the Friends of Lake Gwelup. Contact **FLG**.


21 Sunday 9am–12 noon

 **Bush regeneration, nature walk and wildflower survey** with the Friends of Warwick Bushland. Contact **FWB**.

21 Sunday 10.30am–12.30pm

 **Busy bee** with the Friends of Piesse Brook. Contact **FPB**.

26 Friday 9.30am–12.30pm

 **Native tree decline workshop** – recognition, treatment, protecting healthy trees. Serpentine-Jarrahdale. Call Green Skills 9360 6667.


28 Sunday 10am–1pm

 **Guided wildflower walk** at Jarrahdale. BYO camera and picnic. \$2 each or \$5 per family. Call **JHS**.

28 Sunday 9am–12noon

 **Lupin pull** at Star Swamp Bushland. Contact **FSSB**.

October**4 Saturday 9am–12 noon**

 **Watsonia control** along Jane Brook. John Forrest National Park, Pechey Rd, Swan View. Meet at car park opposite National Park Rd. Contact **BSFH**.

7 Tuesday 9am

 **Cotton bush control** with the Friends of Paganoni Swamp. Call Leonie 0439 921 298.

8 Wednesday 7.30pm

 **The Tamala Limestone and the Gracetown Cliff Collapse.** Guest speaker Phil Playford. Contact **BNC**.

Please send us your October, November, December events by Friday 29 August 2008.

Highlights**23–27 August 2009**

World Conference on Ecological Restoration, Perth. A scientific program of topics with debate on 'Our restoration capabilities within a changing world'. Visit www.seri2009.com.au.

4 July

Dieback Information Group Conference 2008, The University of Western Australia. Topics include dieback mapping, phosphite research, innovative education. Contact Steve McCabe steve.mccabe@water.wa.gov.au or fax 9374 0685.

26–29 September

Kings Park Festival and native plant sale. Contact Friends of Kings Park on 9480 3679 or visit www.bgpa.wa.gov.au.

29 October–19 November 7.30pm–9.30pm

Astronomy for Beginners at Gingin Observatory. Wednesday evenings. Cost \$148 for 4 lessons. Contact Peter Birch 9575 7740 or stars@ginginobservatory.com.

Sunday 2 November

Earth Solutions Expo, Northam. For information phone Helen Evans on 9574 2306.

24–27 November

2008 Australasian Wildlife Management Society Conference, Fremantle. A theme of 'Human Impacts on Wildlife' encompassing invasive and threatened species, climate change, habitat disturbance and sustainable use of wildlife. Visit www.awms.org.nz/index.html.



2008 Conservation Award winners, Conservation Council of WA. (Left) Brian Moyle, Margaret Perret (Wildflower Society of WA winner of the Len Howard Community Conservation Group Award), Norma Calcutt (Friends of Bold Park Bushland), Environment Minister David Templeman, Doug Sawkins (Friends of Foxes Lair), Robert Frith (Bridgetown Greenbushes Friends of the Forest), Marion Timms (Peel Preservation Group), Jane O'Malley (City of Mandurah, John Oldham Conservation Employee Award) and Jonathon Thwaites (Perth Sun Fair). Photo – Conservation Council of WA

Funding opportunities

Caring for our Country program will deliver Federal funding through regional Natural Resource Management bodies to local communities. The program will focus on the key goals of a healthier environment, which is better-protected, well-managed and more resilient against the challenges of climate change. It will invest in projects which match six national priorities. Visit www.nrm.gov.au or phone 1800 552 008.

Gordon Reid Lotterywest Grants for Conservation aim to support community organisations to conserve the State's natural habitats and diversity (ongoing). Visit www.lotterywest.wa.gov.au/asp/index.asp?pgid=444, email community_funding@lottery.wa.gov.au or phone 1800 655 270 or 9340 5270.

Community Coastcare Grants include small grants up to \$50,000 and larger-scale targeted grants up to \$250,000. Closes: **25 July 2008**. Visit www.nrm.gov.au/funding/coastcare.html.

Junior Landcare Grants Program includes the Coles School Garden Grant (\$1,000), the Australia Post Landcare Biodiversity Grant (\$500), and the VISY Landcare Recycling Grant (\$1,000). Closes: **1 August** and **24 October 2008**. All are partnered with Landcare Australia. Visit www.landcareonline.com/funding_opportunity_details.asp?fo_id=6.

Please send us your regional report (150–200 words) and a photo by Friday 29 August 2008. Text may be edited in response to volume of submitted reports.

'Kaala Boodja' – after the fire

By Angela Jakob

The Spectacles Wetland is the most southerly in a chain of wetlands that form Beeliar Regional Park. On 25 May a community information meeting was held at the Spectacles in the Town of Kwinana. The meeting was a local community response to the Christmas fires which burnt an area of more than 800 hectares of bushland, and had a big impact on local wildlife.

The community event was attended by more than 50 people who listened to presentations by guest speakers. DEC's David Mitchell, Trevor Walley and Penny Hussey talked about the effect of fire on the landscape, Indigenous fire use and the relationship between fire and weeds. Marilee Burt shared her experiences as a wildlife carer, and Councillor Sandra Lee encouraged the community to participate in on-ground activities in their local bushland areas. The successful day ended with a tour of the area and some delicious bush tucker. The event launched a new community group interested in protecting and restoring this area.

For more information or to register your interest in becoming a volunteer please contact Brett Brenchley on 9439 0420 or the Town of Kwinana on 9439 0200.



Trevor Walley explains how humans received fire according to Aboriginal Dreaming during a workshop at the Spectacles Wetland. Photo – Brett Brenchley

Forrestdale fire history *By Dr Rod Giblett*

Fires in Forrestdale Lake Nature Reserve in recent years have burnt vegetation, planting areas and infrastructure. The Friends of Forrestdale Inc. have been disappointed with the outcomes from these fires, in particular that the fires were not controlled to protect public property.

In January 2003 the boardwalk in the reserve was completely burnt. The boardwalk was a community project built by unemployed youth in 1994. The materials alone cost more than \$20,000. Disappointingly, the boardwalk was not water-bombed to save it as it had been during a fire some years earlier. The base of the historic flagpole from Lake Jandacot Sailing Club (circa 1950) was also nearly lost. Quick action by David James (Friends President) meant he managed to save the flagpole from being burnt by using a bucket of water.

To highlight the historic significance of the flagpole, the Friends and DEC made and mounted a plaque on the flagpole to commemorate the sailing club. However, during another fire in January 2007 FESA trucks knocked over the flagpole. Plans are underway to re-erect it, but this time bolted to steel and mounted on a concrete plinth.

We believe the development of a fire response plan involving the Friends group, FESA and the local shire is necessary to highlight significant infrastructure and vegetation for priority protection during a fire. The plan would also include post-fire recovery plans and the responsible authority for implementation.

For more information phone Rod Giblett on 93972874.

Acid sulfate soils project

By Alison Dugand (Project Officer, Wooroloo Brook LCDC)

The aim of the acid sulfate soil (ASS) project is to develop mitigation techniques for the potential use of sites that have been affected by ASS. This project was developed by Alison Dugand with support from the Department of Agriculture and Food (DAFWA). Swan TAFE students were also involved in the process to share the values of local Landcare initiatives.

Alison and Sim Kuiper identified the Kuiper property in Wooroloo many years ago as one degraded by salinity. This site was also recently confirmed as also being affected by ASS by DEC Land for Wildlife officer, Zara Kivell. Since the early 1980s, the Kuipers have progressed with a successful rehabilitation regime, with healthy stands of sheoak and melaleuca surviving the toughest odds.

The on-ground project component started recently due to early rains. Quadrats were set up to test a variety of mitigation treatments. Six tonnes of lime, coarse chaff cut from 400 bales of hay and 45 cubic metres of high-grade mushroom compost were used in the trials. Various quadrats were rotary hoed before and after chaff or



Rotary hoe process of lime application at eight tonne per hectare to trial rehabilitation of lands affected by acid sulfate soils. Photo – Alison Dugand

compost was applied. Native and fodder crop species planted in the quadrats will be monitored for five years and DAFWA scientists will analyse data as part of a larger research project.

For more information phone Alison at the Eastern Metropolitan Regional Council on 9424 2264.

For an explanation of ASS see Bushland News Issue 65 p.10.

City of Rockingham carbon neutral program



Revegetating Baldvins Tramway in 2007 as part of the City of Rockingham's Carbon Neutral Program. Photo – David Mort

By David Mort

The City of Rockingham's carbon neutral program is in its third year. The program aims to offset carbon emissions from the city's machinery and vehicle fleet on an annual basis. Funds raised by the program are used to plant endemic native seedlings on dedicated sites, usually for improvement of the rural environment.

This year the City of Rockingham Men of Trees and Singleton Primary School will plant 2,000 trees and shrubs at the Dixon Road Conservation Precinct in Hillman.

The site is being revegetated after Rail Link withdrew its construction yard. Six thousand trees will also be planted at Westonia, east of Merredin to fight Wheatbelt salinity.

The City of Rockingham invites you to join them on 1 August for a day of planting, followed by a sausage sizzle and soft drinks provided by the Lions Club of Rockingham. *Phone David (Conservation Officer, City of Rockingham) on 9528 0487. For more information on the Carbon Neutral Program visit www.carbonneutral.com.au.*

Wildflower Society celebrates 50th anniversary

By Diane Matthews

The Wildflower Society of Western Australia Inc., a voluntary community organisation, is celebrating its 50th anniversary in 2008. Through its principle aims of 'knowing, growing and conserving our native flora' the society plays a significant role in developing community awareness of the values of the State's unique flora, as well as leading and participating in its study, and encouraging its place in our landscapes.

The society was recently awarded the Conservation Council of WA's Len Howard Community Group Award in recognition of its outstanding commitment and success in the conservation of the WA environment. This was a worthy acknowledgment of the professionalism and expertise of the dedicated members in this organisation.



This year is also the 20th anniversary of the society's successful Flora Survey Project that has contributed approximately 3,000 specimens to the WA Herbarium. This program continues to provide opportunities for both members and landholders to discover the 'treasures' to be found on their land.

Through a diverse range of activities, including cultivation and publications, the society's members develop their interests and achieve their own personal goals. Over the years there have been individual members who have made outstanding individual achievements that have benefited the society and WA.

For more information phone the society on 9383 7979.



Star Swamp is recovering from fire

By Christine Curry

Since 1987 there have been 10 fires in Star Swamp Bushland Reserve. The fire on 5 March 2007 burnt approximately 60 per cent of the reserve, including a large part of the swamp and surrounding melaleuca (paperbark) trees. Efforts to put out the fire were hampered initially as water bombers were unable to fly during the night and the use of chemical fire retardants in the swamp was limited. The fire was intense and FESA estimated fuel loads were 38 tonnes per hectare in some areas (seven tonnes is ideal).

After the fire, the City of Stirling undertook a clean up, carried out track maintenance, replaced fencing and removed 10 burnt-out trees next to tracks. Ten days after the fire a public meeting was held and attended by 50 people. Speakers from groups such as FESA, the Friends group, and the City of Stirling outlined the issues surrounding the fire from their perspective. The City of Stirling presented a report to its council three weeks after the fire that identified priority issues. It then contracted weed spraying, began a photo-monitoring project in parts of the burnt area and began a rabbit and fox baiting program.

Since the fire there has been an amazing amount of regrowth and, in particular, grass trees have made a strong recovery. Melaleucas and most medium-sized shrubs and trees have resprouted and there are hundreds of parrot bush (*Dryandra sessilis*) seedlings emerging. We hope these will grow rapidly and replenish stocks relied on by Carnaby's black cockatoos (*Calyptorhynchus latirostris*) which visit the reserve. Hundreds of tuart tree seedlings have germinated in the ash beds beneath the tuarts destroyed in the fire. Hopefully the next bushfire will not occur before the seedlings have grown sufficiently to withstand fire.

On the downside, we have noted a lot more dead wood on the remaining tuart trees and dense growth of veldt grass in some parts of the burnt area. Frequent fires are not good for the bushland, but it has been very interesting to watch strong natural regeneration and bushland recovery.

For more information phone Christine on 9447 2983.

Mystery woylie decline

By David Mitchell (DEC)

On 14 February 2008, researchers, managers and community members held a symposium on recent dramatic declines of woylies (*Bettongia penicillata ogilbyi*) throughout south-western Australia. The symposium included presentations on the patterns and possible causes of these declines.

Woylies are small nocturnal marsupials that weigh 1–1.5kg and are distantly related to kangaroos. They are also known as brush-tailed bettongs because of the distinctive black brush they have at the end of their tail. 'Woylie' is their Indigenous Nyoongar name.

These marsupials forage primarily for underground fungi (native truffles) and also eat seeds, tubers and bulbs. Their diggings help water seep into the ground and move nutrients in the soil. Fungal spores survive being eaten by woylies and are dispersed around the forest in woylie scats (droppings). As fungi help plants to grow, woylies play an important role in the re-establishment of native vegetation. Woylies are also known to disperse and store seeds which also affect the recruitment and regeneration of vegetation.

Woylies originally occupied most of the Australian mainland south of the tropics, including the arid and semi-arid zones of Western Australia, the Northern Territory, New South Wales and Victoria. However, by the 1970s their occupancy was reduced to three locations in WA – Tutanning Nature Reserve, Dryandra Woodland and the Perup/Lake Muir area.

Conservation success story 'unravels'

In 1975 there were thought to be less than 2,000 woylies remaining and they faced extinction due to habitat clearing and predation by foxes. As a result of DEC's *Western Shield* program (a large scale fox-baiting and native species translocation program), the woylie and some other mammals made a remarkable recovery. Hailed a wildlife conservation success story, in 1996 the woylie was the first species to be removed from State and Commonwealth endangered species lists due to specific recovery actions. By 2001 the woylie population reached approximately 40,000.

These conservation efforts increased the number of locations that the woylie could be found – from Shark Bay to the south-west of WA; in three re-established wild populations in SA (two islands and at mainland Venus Bay Conservation Park); and in fenced sanctuaries in WA, SA and NSW.



A dramatic decline in woylie numbers has been observed over the past few years. Photo – Babs and Bert Wells/DEC



Scientists research the possible causes for the woylie decline. Photo – Marika Maxwell

However, since 2001 there has been a huge decline in numbers (as high as 95 per cent in some populations). This decline is of such significance that in 2008 the woylie was re-listed as endangered under the *State Wildlife Conservation Act 1950*.

New conservation initiative

The Woylie Conservation Research Project coordinated by DEC started in 2006. It involves collaboration with Murdoch University, Perth Zoo and the Australian Wildlife Conservancy, as well as support from the South Australian Department of Environment and Heritage, The University of Western Australia, the University of Adelaide, and the South-West Catchments Council.

The project has received \$626,000 from DEC's *Saving our Species* biodiversity conservation initiative, and more than 85 experts and 120 volunteers have been working long and hard to save the woylie. The collaborations are the greatest strength of the research project and provide the greatest prospects to solving what is a very complex mystery.

The project has investigated the main possible causes for the decline – limits on food resources, predation, disease and parasites.

Preliminary outcomes suggest that an unknown disease is either killing woylies or weakening them and making them more vulnerable to predation by introduced foxes or cats.

Interestingly the decline is not occurring in woylie populations at the 265-hectare Karakamia Wildlife Sanctuary near Perth. Karakamia has a fox-proof fence and frequent fox baiting. Woylie numbers are high and even show signs of food limitation compared to other populations. This population provides an important comparison for the research on the declining populations.

More information

Visit www.naturebase.net/content/view/3230/1524/ for information on woylie conservation, including the *Progress Report of the Woylie Conservation Research Project*.

GROUPPROFILE:

Friends of Talbot Road Reserve By Rebecca Hayes (DEC) and the Friends group

The Friends of Talbot Road Reserve formed when local residents expressed concern over the extension of O'Connor Road through the reserve to Stratton Boulevard and proposed development of bushland adjoining Talbot Road. Other significant threats included a proposed extension of the cemetery and talk of a golf course being built within the reserve. The Friends first met in December 1996 and became incorporated in 1997.

Talbot Road Reserve is 106.9 hectares located in the Perth foothills on the border of Stratton and Swan View and includes 66 hectares of A-class reserve. It contains banksia, marri and wandoo woodlands and 366 known flora species. Three flora are priority species and two of the vegetation communities are critically endangered. The list of known fauna includes seven frog species, more than 47 bird and 54 spider species, as well as bandicoots, kangaroos and honey possums.

The reserve has been recognised by the Australian Heritage Commission, the National Trust and *Bush Forever*. It is the largest, most intact area of its kind remaining on the Ridge Hill Shelf soil type north of the Swan River. The land, in particular Blackadder Creek, is also of great significance to the Nyoongar people, as it is the home of the Green Bullfrog Dreaming Track and is part of the Dreaming Track of the Ancestors.

Friends

After lobbying to protect the reserve from development, the Friends obtained funding to produce a management plan in conjunction with the City of Swan and the Department of Conservation and Land Management (now DEC). The plan was published in July 1999 and is still used to guide bushland management. The Friends have been actively involved over the years, particularly with rubbish clearing, weed control and dieback treatment, using funding gained from numerous sources.

Membership of the group waned during 2005 due to the departure of several key members and the death of Helen Gardiner – the chairperson at the time. In June 2007, the Urban Nature team organised a planting day followed by a guided wildflower walk in September. This resulted in 10 people expressing their interest in re-activating the Friends group. The previous treasurer, John Basell, volunteered to continue his role in the re-established group. Since then, the Friends have organised a number of litter clean-up days, and are beginning to tackle some of the weedier areas of the reserve.

Partnerships and plans for the future

A large fire in 2007-08 provided the perfect opportunity for weeds such as African lovegrass (*Eragrostis curvula*), typha (*Typha orientalis*), pig melon (*Citrullus lanatus*) and *Watsonia* spp. to



(From left) Dave Harwood, Jan Lynn, Mark Gloyn and Wendy Booreman cutting lovegrass (*Eragrostis curvula*) along Blackadder Creek. Photo – Rebecca Hayes

invade the relatively intact bushland along Blackadder Creek. While this could have potentially become a massive problem, the fire also provided a window of opportunity to control these weeds before they spread. The Friends, Swan TAFE, City of Swan and DEC have 'pooled' resources to target the most invasive species along the creek – follow-up control and ongoing monitoring will determine the success.

In addition, the Friends have contributed substantial funding towards the installation of a diversion pipeline at the end of O'Connor Road, in order to stop severe erosion occurring towards Myles Road and the natural creek bed. This work will be undertaken by City of Swan and DEC. Once completed, the Friends will partner with City of Swan and DEC to begin rehabilitating this massive erosion channel.

Projects planned for next spring include tackling African lovegrass along Blackadder Creek and *Watsonia* control. We also plan to rehabilitate disturbed sections along the creek and walk trails, as well as work with DEC on a variety of dieback management projects.

Taking 'time out'

A picnic lunch at a local winery in December was a recent social highlight which was thoroughly enjoyed by all attendees. Walks to look at nocturnal animals, birds, wildflowers and fungi will be organised in the near future. A dieback awareness day is also scheduled to coincide with the installation of new dieback signage.

The Friends of Talbot Road Reserve are hoping to generate more interest from local residents to join in and help protect this special patch of bush. For more information call Rebecca at Urban Nature on 9423 2924.

Resources

Publications

Plant Names – A guide to botanical nomenclature (2007)

R. Spencer, R. Cross and P. Lumley. Royal Botanic Gardens, Melbourne. CSIRO Publishing
www.publish.csiro.au/.
RRP \$39.95. A guide

to the naming and writing conventions for wild plants, plants modified by humans, why plant names change, their pronunciation, hints to help remember them and a detailed resources guide.



Are your details correct?

Please check your mailing details and let us know if we need to change anything by phoning us on 9423 2914. If you'd prefer to receive this newsletter electronically, send an email titled 'email me' to urban.nature@dec.wa.gov.au.

Website watch

New weed management guides now available on the Weeds CRC website are: African boxthorn (*Lycium ferocissimum*), Coolatai grass (*Hyparrhenia hirta*), buffel grass (*Cenchrus ciliaris*), periwinkle (*Vinca major*), Spanish heath (*Erica lusitanica*) and other *Erica* spp. Coming soon are guides on brooms (*Cytisus scoparius*, *Genista monspessulana*) and related species, cat's claw creeper (*Macfadyena unguis-cati*) and feather and mission grasses (*Pennisetum* spp.). These weeds threaten biodiversity and the guides detail identification, biology and their control. Visit www.weeds.crc.org.au/publications/weed_man_guides.html#biodiversity.

Perth Urban Bushland Fungi Project

website has been updated and was launched in May. Visit www.fungiperth.org.au/.

PaDIL Pest and Diseases Image Library provides images of exotic insect and marine pests and also diseases such as fungi and bacteria. Visit www.padil.gov.au/about/Overview.aspx.

Implications of Climate Change for Australia's National Reserve System - A Preliminary Assessment. This report summarises information about the potential impacts of climate change on biodiversity, provides an estimate of which

impacts might be more important in different regions, and discusses key implications for conservation policy, management of protected areas and the strategic framework used to develop the National Reserve System. Prepared by CSIRO Sustainable Ecosystems for Parks Australia (now in the Department of the Environment, Water, Heritage and the Arts) and the Australian Greenhouse Office (now the Department of Climate Change). Visit www.climatechange.gov.au/impacts/publications/nrs-report.html.

The **A Natural Resource Management Plan for Western Australia** has been

released for public comment. The plan provides a vision, set of goals, outcomes and actions to provide direction for all Western Australians involved in natural resource management.



The plan and supporting documents are available at www.nrm.wa.gov.au and hard copies and CD versions are also available from Sarah Bellamy at the State NRM Office on 9368 3561 or email sbellamy@agric.wa.gov.au with postal details.


bushland news

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