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WHAT IS THAT LURKING IN THE CREEK?

Claire Smart, Melissa Weybury and Peter Speldewinde

Have you ever wandered along a creek, heard a splash and caught movement and wondered what it was? It is quite possible it was a Water Rat. The Water Rat or Rakali (*Hydromys chrysogaster*) is one of Australia's most unusual native animals. It is unusual in that it is one of the very few Australian mammals which are semi aquatic. Because of this, Water Rats possess adaptations suitable for this lifestyle; they have a flattened head with small ears and eyes, dorsally located nostrils on a blunt nose, and a large number of whiskers. The Water Rats use these highly sensitive whiskers and nose for foraging along the bottom of rivers and creeks in their search for food. They also have partially webbed hind feet for efficient swimming, and thick, waterproof fur. This partial webbing can be seen in tracks left by the hind feet. The animals are often most easily recognised from the distinctive white tip to the end of their darkly furred tail.

Water Rats are about the same size as a bandicoot and as such are among the biggest rodents in Australia. Unlike other rodents however, Water Rats are not entirely nocturnal so they can occasionally be seen in the late afternoon and early evening. Their food mainly consists of macroinvertebrates, such as yabbies and cockles, but they will also eat fish (mulies are usually used for bait when trapping Water Rats), frogs and even birds eggs. Sometimes you will see Water Rat 'food middens' left by the animals on rocks and fallen tree limbs in rivers and creeks. These middens are small piles of inedible food remains, such as yabbie carapaces. Sometimes, if you are lucky, you may even see one basking near the midden.

Water Rats are most commonly mistaken for pest rodent species such as the Black Rat (*Rattus rattus*) or the Brown Rat (*Rattus norvegicus*). These common pest species also have dark brownish-black fur and can be common in urban, disturbed areas. However they are both substantially smaller than adult Water Rats, have hairless ears and tails, and lack the distinctive white tip to the tail, webbed feet, and small ears and eyes. Water Rats may also be confused with another native mammalian species in the south-west, the Quenda or Southern Brown Bandicoot (*Isoodon obesulus*). In historic times, bandicoots were known as 'bandicoot rats' and so some resemblances to rodents are present. Bandicoots can be of a similar weight and size to Water Rats, and also have dark brownish-grey fur, small rounded ears and small eyes. However, they lack the distinctive elongated rodent tail, and are more commonly found in urban bushland than wetlands and lakes.

Water Rats like living near permanent fresh, brackish or marine water sources. They are distributed along

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EDITORIAL

Hello all!

Just recently we published comment from a reader about the footprints of a mysterious web-footed animal alongside a creek; in this issue you can read more about the beautiful native Water Rat. It was believed that there were plenty of these animals still around, but maybe they are less common than was thought. Keep an eye out for them, if you have suitable habitat on or near your place.

This issue also contains a cautionary tale, about a pretty Western Australian native plant that has gone feral in South Australia. Do think carefully before planting anything out of its natural range.

The colour format seems to have stimulated many people to send in photos for us to enjoy – and learn from. The Helena Gum Moth shown in the last issue prompted quite a few responses, and it seems this striking animal is seen quite frequently in the Leeuwin-Naturaliste region, but we did not hear from anyone who had noticed it over towards Walpole or points east. Thank you everyone for your useful distribution data.

Please do continue to send in photos and records of interesting or unusual sightings. All such records get passed on to an appropriate expert and contribute to our general knowledge. Also, please let the editorial team know if there is any particular topic you would like to see featured in the magazine.

Throughout this issue, there are reports on events held to celebrate the International Year of Biodiversity, and to highlight the importance of natural ecosystems. Have we learnt anything more about the amazing diversity of species with which we share this land? Here at *Land for Wildlife*, we know we have! Many of the stories that we print in *Western Wildlife* contain information that is new to the editorial team.

And, most importantly, has everyone made a resolution to help preserve this biodiversity into the future? In the face of uncertainty, we can at least manage our land so as to keep the bushland resilient, and give the flora, fauna and fungi that live there the best possible chance of survival into the future.

Claire writes: "It is great to be back with *Land for Wildlife* after six months away working in another branch of DEC. I am looking forward to contacting the new *Land for Wildlife* members who have been waiting patiently for a property assessment and would be delighted to hear from the many *Land for Wildlife* members I have visited in the Perth region over the past 11 years."

Best wishes for 2011.

Claire Hall and Penny Hussey

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FAUNA

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Water Rats

most coastal areas and inland water systems nationally in every Australian state and territory, and are also found in New Guinea and offshore islands. In the eastern states they are particularly numerous in the Murray-Darling Basin where habitat is still suitable. Within WA, they have been found as far north as Barrow Island and as far south as Albany.

Most of what we know about Water Rats comes from studies in eastern Australia. In the past 18 months, two honours students from The University of Western Australia, Claire Smart and Melissa Weybury, have conducted research into the ecology of Water Rats in WA. Until recently there has been very little information available about what kind of habitat Water Rats prefer. These two studies have found that they like areas where the river banks are stable (they like to burrow into the banks) and where the vegetation around the water is dense, providing cover from predators such as foxes and cats.

During the 1920s and 30s, Water Rats' fine pelts were in high demand in the fur trade and they were hunted nearly to extinction in south-east Australia. Since hunting has stopped their numbers have increased. But now degradation of our waterways has taken its toll. Being at the top of the food chain, the Water Rat is sensitive to changes in the aquatic ecosystem either through decreases in its food sources or through bioaccumulation of pollutants. Recent research has found that in areas of heavy metal contamination Water Rat numbers are low.

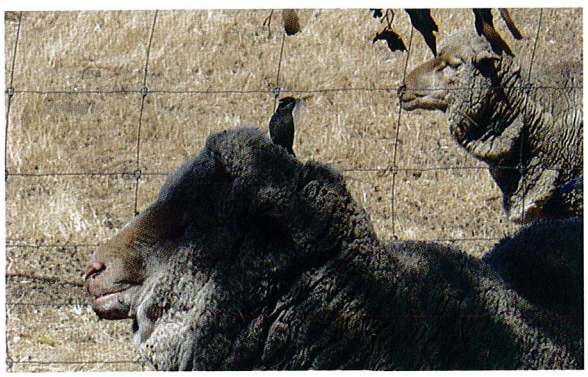
Water Rats can sometimes be a pest, marron farmers in the south-west often complain about Water Rats stealing stock and in the eastern states there have been reports of them damaging farm dam walls.

Recent studies have indicated that although Water Rats are sighted around waterways and are presumed to be numerous, they are notoriously difficult to catch. It is unclear whether this low trappability is due to the animals being trap shy or if it is due to low numbers. Recently a study was carried out at Two Peoples Bay near Albany, at a site with numerous sightings of Water Rats. Repeated trapping in the area resulted in very few captures of Water Rats, but surprisingly all the animals were recaptured on subsequent occasions. This result combined with the fact that the animals travel quite a distance while foraging suggests that maybe the Water Rat isn't as numerous as we think and observers are seeing the same animals multiple times rather than multiple animals.

So next time you see something lurking down near the water, don't write it off as a bandicoot or 'just a rat', have another look — it might be an elusive Water Rat.

Assistant Professor Peter Speldewinde, Claire Smart (research assistant) and Melissa Weybury (Honours student) are from the Centre for Excellence in Natural Resource Management, UWA, Albany. For further information, you can contact Peter on: 9842 0845. (Photos: Bert and Babs Wells, DEC)

Winter warmer



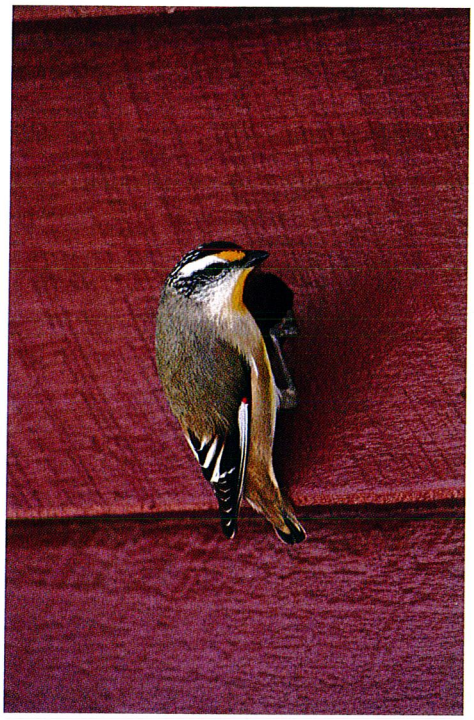
What better material could be used to line your nest than nice warm wool? The ram doesn't seem to be concerned about sharing some of his woolly topknot with a White-naped Honeyeater!

Geoff Delane, Beverley

ECO-EDUCATION

PARDALOTES AT OUR DOOR

Juliet Rushton



Those who work in the EcoEducation office in Mundaring, (we used to be called 'The Hills Forest') have some new neighbours! Mr and Mrs Pardalote recently moved into the bijou apartment, only accessible by a small hole in the weatherboard, and have since become the proud parents of five chirpy chicks! The couple industriously built their nest using pieces of bark and grass. Typically these birds nest by excavating a tunnel in an earthen bank so the cavity within our weatherboard building has sufficed as a dark and cosy chamber. Their continuous soft 'wee-diddup' calls have become a familiar soundtrack at the centre. This pair of Striated Pardalotes (*Pardalotus striatus*) can often be seen hanging upside down feasting on lerps which they prise off the underside of gum leaves. No doubt the new family will soon move on but for now, mum, dad and babies are doing well.

A longer term resident of the EcoEducation office is Possum who lives up in the rafters. He can often be heard plodding around upstairs when he wakes from his daytime slumber but he waits until dark to venture outside.

On arrival at the office each morning staff are often greeted by a kangaroo or two in the carpark and the sounds of the rollicking laughter of the Kookaburra and the high whistled melodies of the Honeyeaters filling the air.

Students and teachers attending one of EcoEducation's many experiential learning programs in the jarrah forest are also lucky enough to experience chance encounters with our many furry and feathered neighbours. Spontaneous sightings are just one of the many advantages and attractions of using the forest as a natural classroom.

EcoEducation has hosted more than 250,000 students in 17 years, mostly in four-hour, conducted programs. A range of curriculum-linked programs are offered for each stage of development from early childhood to year 12. These programs have been designed to provide students with hands-on discovery experiences in the bush with the overarching objective of instilling an in-depth understanding and appreciation of the natural environment in order to assume custodian roles and responsibility to ensure its conservation.

In the early childhood 'Busy in the Forest' program, children are able to get down on their hands and knees and search for the smaller treasures of the forest using a magnifying glass. Squeals of excitement and delight resonate upon discoveries of invertebrates such as scorpions and centipedes. This program also provides the opportunity for closer encounters with native fauna. such as the threatened Bilby or Woylie so that children are better able to understand their plight.

Older students have opportunities for hands-on discoveries in programs which explore the jarrah forest ecosystem, biodiversity and sustainability. They also have the opportunity to take part in scientific measuring and monitoring the recovery of threatened animal species. Biology students can participate in the *Western Shield* program which includes the ever-popular 'Monitoring Marsupials' activity. Students set traps in the evening and then check them the following morning, processing the animal and adding important research data to the Department's recovery program. Some groups have even been lucky enough to trap a Chuditch or Possums.

On top of all the wonderful wildlife, wildflowers and sometimes wild children running around the forest, teachers are also able to be part of something special at EcoEducation. Professional Development symposiums are offered annually with an abundance of topics to choose from. Fire, water, Aboriginal culture and the arts are just some of the courses offered and at times are booked out well in advance.

Juliet Rushton is Customer Services Officer for DEC's EcoEducation Program. For infomation about activities phone 9295 6149 or email: DEC-EcoEducation@dec.wa.gov.au (Photo: T Walley)

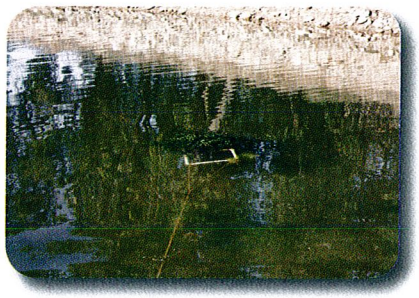
MEMBERS' PAGE

SOMETIMES NATURE NEEDS A HELPING HAND!

For about the past 10 years we have had a resident female Australasian Grebe (*Tachybaptus novaehollandiae*) on our farm dam, and every winter she is joined by her mate. Once they have renewed their friendship, nest building starts. Although we do not have any reeds around the dam (something I will have to rectify) there is plenty of weed in the bottom of the dam, and within a week or so a sizeable nest takes shape. The problem is, there is nothing to anchor the nest to and it floats around the dam at the mercy of the wind. Although she lays a couple of eggs every year, the nest disintegrates before they can hatch.

This year I devised a plan to give her a helping hand. I had some old electrical conduit in the shed and made a 300mm square and attached some 25mm mesh to the middle of it. The conduit had just enough buoyancy for the platform to float. I then strung the floating platform across one corner of the dam with some rope.

Success! Although she did not build her nest on the platform as planned, she did use the rope for support and this year the nest stayed put and she hatched four chicks. Although two have since disappeared (reason unknown) the remaining two are growing rapidly, and now that all the hard work has been done, the male has also returned. It is little successes like this that give so much satisfaction.



Richard Janes, Chittering

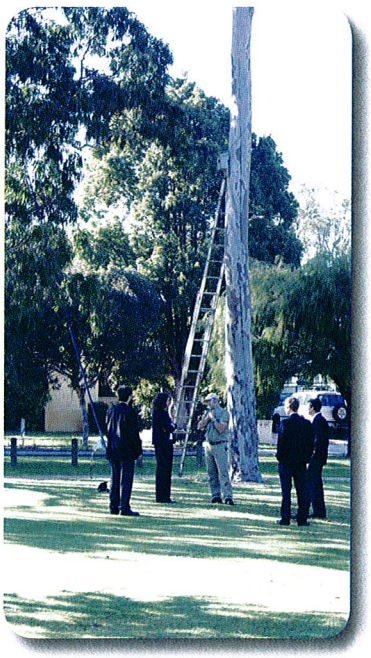
NATURE APPRECIATION IN NATURAL AREAS

In 2009, the then Minister for the Environment, the Hon. Donna Faragher, approved a grant to the Mt Henry Peninsula Conservation Group for "Construction and placement of micro-bat roosting boxes and removal of feral bees and hives on Mt Henry Peninsula".

With this help, the students in the year 10 woodwork class at Aquinas College made 13 boxes and these have been placed in nature reserves in South Perth.

The City of South Perth also received a grant for Joe Tonga, Natsync Environmental, to monitor the occupancy of the boxes and track the movements of the tiny flying mammals with an electronic bat detector.

Aquinas College students Richard Walley, Sam Browning and Nicholas Brook, who had made some of the boxes, attended the presentation of the grant at MacDougall Park in South Perth. Joe Tonga has helped install about 500 boxes in Perth, each capable of holding 150 micro-bats, each of which can eat up to 1,000 mosquitoes a night. Thus the activities of these animals are very important for the control of mosquito-borne diseases and to improve the outdoor lifestyle of those people living near water and bushland.



Jan King, Co-ordinator, Mt Henry Peninsula Conservation Group

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IN BRIEF

DO HUMAN OBSERVERS APPRECIATE PLANT DIVERSITY?

The activities of human beings have caused a decline in biodiversity all over the world. If we are to halt that decline, it is important that everyone in the community understands why biodiversity is important. Apart from the economic and ecological value of the natural world, people often talk of an aesthetic or even spiritual value they derive from it. But what do people appreciate? Is it a diversity of species, or just certain individual species, or nature as a whole? In order to try to answer this question, a number of experiments were carried out in Germany and Switzerland, both in botanic gardens and in the field, to record the response of 'passers by' to arrays of grassland plants*.

The results demonstrate that the more diverse the arrays of plants, the more the observers appreciated them – that is, plant diversity in itself is attractive to humans.

This conclusion may bear especial relevance to wheatbelt woodlands, where it is the understorey that contains the diversity, and in grazed woodlands that component has often been lost.

Where possible we should remind revegetators not just to replant trees and tall shrubs, but to ensure that the annuals (e.g. daisies), perennials (e.g. orchids and lilies) and native grasses are also encouraged to return. Because it is often these species that provide the 'wow factor' that encourages the observer to appreciate the plant community – and so support funding programs to continue the revegetation work!

[* for ref. contact Ed.]

EFFICIENCY OF FERAL PIG ERADICATION: SANTA CRUZ ISLAND, CALIFORNIA

Invasive animals such as pigs and goats can cause major changes to whole ecosystems, so that land managers often make decisions to control their numbers. Where possible, on islands or in fenced areas for example, a decision might be made to eradicate the pest, as occurred on Santa Cruz Island, California*. This 25,000ha island is wholly dedicated to nature conservation. Pigs were introduced in the mid-19th century and have caused extensive damage to the island's natural resources, including driving 10 local species to endangered status, as well as erasing an otherwise intact record of human habitation spanning millennia.

If an eradication effort is implemented rapidly, it reduces the risk that it will fail, so a blitzkrieg involving several sequential approaches was taken. First, the island was divided into five zones by fencing (at a cost of nearly $US2 million) then a fixed-price contract featuring a substantial final payment based on the absence of feral pigs was let to a professional hunting firm. A sequence of control techniques was deployed in each zone.

Firstly, traps were used; this took care of 16% of the pigs, though some were radio-collared and released to locate other pigs. Then aerial hunting from helicopter removed 77% of the pigs, but some on-ground areas were not suitable for this method. Ground hunting with the help of trained pig-dogs removed 5%. Though the last 2% took quite a lot of effort, it is now believed, after 14 months of work and killing 5036 pigs that the island is free of them.

The reasons why the project succeeded were given as:

- substantial pre-operational planning by land managers and project sponsors;
- the fixed-price contract based on final results drove efficiency and shortened the timeframe, to the benefit of both the contractor and the sponsors – the latter because it cut down the time available for the adverse publicity and litigation that always accompanies such projects in the USA;
- the contractor had significant experience in this type of operation, including a well-trained workforce; and
- the contractor also invested in state-of-the-art technology to collect data and monitor effectiveness, useful for both amending daily work programmes and long-term monitoring after the project was completed.

This project represents an advance in eradication best practice, and should be studied by any land manager considering eradicating large herbivores.

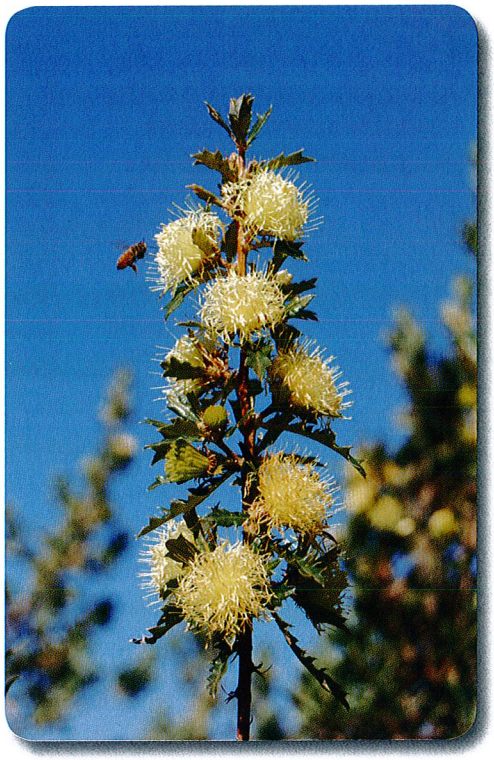
[* for ref, contact Ed.]

STERILISE TREE PRUNING TOOLS

If you are pruning branches from trees – whether the branches are alive or dead – think about the disaster of spreading fungal disease and sterilise your cutting implement when you move from one tree to another. The easiest way to do this is to wipe (or spray) all blades with methylated spirits and then leave the blades wet for two minutes to allow full contact with any fungal material on the cutter. A puffer spray bottle would deliver an adequate dose, even into the intricacies of a chain saw.

IN BRIEF

POLLINATOR - OR NECTAR THIEF?

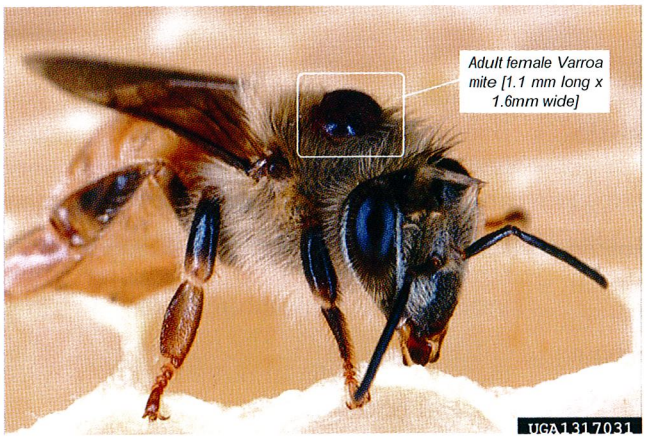


In the April issue of *Western Wildlife* (WW 14/2 page 15) we published a photo from Sheila Howat showing a honeyeater taking nectar from a grevillea flower. You can see how, as the bird pushes its beak into the flower, it touches the pollen presenter and so will carry pollen from flower to flower. In this photo, a honey bee can be seen taking nectar from a grevillea, but is nowhere near the pollen presenter. For many of our specialised native plants, honey bees are nectar thieves, not pollinators at all. Conceivably this is a real problem for seed set, and so for the long-term survival of that species.

Alternatively, banksias (dryandras) such as this Pingle (*B. carduacea*) are pollinated when honey bees crawl across the inflorescence. They replace the honeyeaters during the day and honey possums at night who would previously have been tempted by the abundant nectar.

VARROA MITES AND HONEY BEES

Honey bees (*Apis mellifera*), both managed and feral, are facing a major new threat since the detection of Varroa Mites (*Varroa destructor*) in Australia. This mite lives within the honey bee colony and sucks haemolymph ('blood') from developing larvae, pupae and adult bees. They can build up populations very quickly and destroy a colony of bees within months under certain environmental conditions. The only option for apiarists is chemical management of hives to keep mite numbers down.



This has major implications for agriculture and biodiversity in Australia. On the one hand, it is expected that all feral bees will be wiped out within three to four years. On the other hand, crops such as apples, stone fruit, citrus, tomatoes and canola rely on honey bees for pollination. It may well be that growers will have to hire commercial bee hives for 'pollination services' – increasing the cost of crop production.

A document about this entitled *A honey bee industry and pollination continuity strategy for Australia 2010* is available electronically. Contact the Editor if you would like one sent to you. (Image taken from this document.)

WEEDS and FERALS

A NATIVE PLANT GOES FERAL - BLUEBELL CREEPER

Melissa Herpich

This is a cautionary tale - take care when planting species outside their natural range!

Bluebell Creeper (*Billardiera heterophylla)** is endemic to south-western Western Australia. Owing to its invasive potential and popularity as a home garden plant, the species has naturalised in Tasmania, Victoria and the temperate regions of South Australia.

In SA, naturalised Bluebell Creeper has been recorded for the Mount Lofty Ranges/Fleurieu Peninsula, Kangaroo Island and South East regions. Outbreaks in Victoria are also relatively widespread and have been recorded in the greater Melbourne, Eastern, Gippsland, South West and Otways regions. The plant appears to naturalise more readily in areas with rainfall above 500mm per year.

In the lower south east of SA and adjacent areas of Victoria, infestations are currently known from 14 discrete locations. For the most part, these locations are relatively small but there are a couple

that are greater than 100ha and one that is nearly 1000ha in size.

Seed is spread by birds and other animals from gardens, or from garden refuse dumped in bushland areas. With an eye-catching fleshy berry the plant is particularly attractive to birds including Silvereyes, Red Wattlebirds, Singing Honeyeaters and Spiny-cheeked Honeyeaters. Seed of Bluebell Creeper has also been recorded from the scats of kangaroos, Brushtail Possum and Fox although other small mammal species probably spread it as well.

Bluebell Creeper infestations are insidious and difficult to pick up in the early infestation phase, appearing as a few scattered plants within the understorey of native woodlands. It is only after a site is burnt that the weed potential of the plant is really felt. The image shows a site in Stringybark woodland in south east SA at which, after a fire, thousands, if not millions of Bluebell Creeper seedlings germinated and proceeded to overrun the site. Bluebell Creeper at this site now makes up more than 80% of the understorey and covers hundreds of hectares.

The challenge for managing the weed potential of Bluebell Creeper include having it removed from sale in nurseries, managing dumping of garden waste in remnant bushland and improving pre- and post-burn weed surveys to pick up infestations as early as possible.

* This plant used to be called *Sollya heterophylla*, but has had a name change, and its common name in WA is Australian Bluebell.

Melissa Herpich is Senior Wetland Ecologist with the South Australian Department of Environment and Natural Resources, based in Mount Gambier. She can be contacted on: Melissa.Herpich@sa.gov.au

NEW ALERTS PUT THE SPOTLIGHT ON PEST BIRDS

The Western Australian Department of Agriculture and Food (DAFWA) has coordinated the production of three National Animal Pest Alerts to assist in raising public awareness about the potential risk of new invasive species establishing populations in Australia and becoming pests. They can be downloaded from DAFWA's website: www.agric.wa.gov.au by searching for 'pest alert'.

The pest alerts, covering the Canada Goose, Red-whiskered Bulbul and Barbary Dove, have been designed to educate the public about the risks these emerging pests pose to agriculture, the environment and society. This will increase community awareness and encourage vigilance. This is because there is a great reliance on the public to report pest species.

Information and pictures showing these birds in the wild in Australia have been included in the brochures. These include four Canada Geese discovered at large in New South Wales in 2007, and Barbary Doves at large in Melbourne. Importantly, the pest alerts also distinguish these non-native species from similar-looking native birds. Because many reports of introduced birds turn out to be native species, it is hoped that this will focus reporting to the problem species.

Any sightings of unusual birds or animals should be reported to the DAFWA's Pest and Disease Information Service on Freecall 1800 084 881.

Marion Massam, DAFWA

MEMBERS' PAGE

Congratulations!

A number of *LFW* affiliates did well in the WA Environment Awards this year.

Green Skills Denmark not only won the 'Community Achievement – Regional Award' they were also the 'Overall Environment Awards Winner'. Those readers who have had anything to do with Green Skills since its inception in 1989, will know that it is an amazing programme that has worked on a huge variety of projects and made an enormous contribution to sustainable land management throughout the south coast region. The awards were accepted by two people, Louise Duxbury and Dorothy Redreau, who besides having long-term involvement with Green Skills, is also *LFW* Officer at Denmark. Well done, folks!

Friends of Poison Gully Creek (Kalamunda), who registered their Shire reserve with *LFW* in August 1999, were awarded Highly Commended in the 'Bush Land and Waterways Award'. The work of this small group is so comprehensive, but also so unobtrusive, that you would think this beautiful, showcase area was simply as nature meant it to be, without human intervention.

The winner of the 'Bush Land and Waterways Award' went to the Helena River Catchment Group, and was accepted by Penny Hussey, wearing a private hat as Chair of the HRCG. The group is rehabilitating several areas of the Helena River, involving massive weed control.

The Conservation Council of WA gave Penny Hussey an award as the 'John Oldham Conservation Employee, 2010'. This was a great surprise, but is only possible because of the wonderful group of people who make up the *LFW* team – thank you everybody!

NATURAL BORER CONTROL

In the last few issues of *Western Wildlife* we have been talking about borers and borer management in trees. Margaret Owen of Friends of Underwood Avenue Bushland has sent in this magnificent photo, showing one way that nature managed to control borer populations – cockies eat 'em!

But in so doing, the damage – in this case to an *Acacia saligna* stem – can be quite severe. Isn't that damage worse than the borer damage itself? Research says no, without their predators, the borers can build up huge populations, and the damage to plants becomes much worse. Go back to *Western Wildlife* 1/3 page 11 (July 1977, the very first year that *LFW* was operating – it is on our website, see page 2 of this issue for the web address) and read the story 'Banksias, bardies and cockies – a finely tuned balance'.

SPIDER WASPS

This photo comes from Stuart Hicks of Margaret River. It shows a Spider Wasp (*Cryptocheilus* sp.) family Pompilidae, dragging its prey, a Huntsman Spider. (For a similar picture, but in black and white, taken at Coorow, see WW 11/1 page 15.) Attacks on Huntsmen Spiders are quite often observed, but recently a smaller, but similar-coloured spider wasp has been noted dragging a Red-back Spider to its burrow. That was a very unusual sighting.

So, could all readers look out for a spider wasp with a Red-back Spider? If you see one, take a photo, collect both the wasp and the spider, record locality, date and detail of your observation, then send it to Dr Terry Houston at the WA Museum, Locked Bag 49, Welshpool DC, WA 6986. He will then send it to an Australian wasp expert, Dr Andrew Austin at the University of Adelaide, who is studying these wasps. [This request is taken from the June Newsletter of the Western Australian Insect Study Society.]

NEWS

USING FIRE IN BUSHLAND WHY AND HOW

Many *LFW* members are concerned about fire in their bushland, either as a potential threat to their property or the lack of it as vegetation becomes older.

When Bernie and Carolina Masters of Bokal, West Arthur, said they planned to use fire as a regeneration tool on their property, *LFW* thought it would be an excellent practical opportunity to look at the use of fire in maintaining biodiversity, asset protection and implementing a controlled burn.

It proved to be a popular topic with 18 people attending the field day and others asking for printed material.

Some of those attending were unsure if fire would be a good thing for their property and wanted to hear the debate. Others were concerned that their large patches of bushland (more than 250ha and fenced for many years) were 'going backwards' and wanted to see how fire could help maintain its health.

Presenters John Tonkin, FESA's Great Southern Area Manager and Mitch Davies, DEC's Great Southern District Fire Coordinator, along with the collective knowledge of participants shed light on the subject.

The Masters intend to ask the local Bush Fire Brigade to help them with the burn. As John Tonkin pointed out, "Burning the bush is not a brigade activity. Bush fire officers will only be covered by insurance if the owners produce a Fire Management Plan which is approved by the Shire who then directs the local brigade to take part in the activity".

The Fire Management Plan is crucial to any planned fire, the aim needs to be clearly stated, issues such as maintaining habitat, weed invasion, presence of Declared Rare Flora, grazing animals both feral and native and dry seasons all have to be taken into account. Our Wildlife Note *The Use of Fire in Small Remnants* will help in developing this plan.

Bernie and Carolina's aim for their property is to maintain habitat for the Western Brush Wallaby. The property was burnt in an escaped clearing fire in 1983 after which it blossomed with wild flowers, shrublands and prickly poison thickets which provided excellent Brush Wallaby habitat. However, since 2000 they have witnessed a gradual thinning of the shrublands. The Masters intend to reverse this trend by creating six compartments, one of which would be burnt every three years, which along with a rest season, would provide a 21-year rotation.

Two of the local Fire Brigade officers present were also *LFW* members. When asked of the practicality of implementing such a regime they queried the resources needed to maintain it and provided practical suggestions such as conducting a small winter burn along the compartment break to reduce the fuel load, making an early autumn burn more controllable.

Bernie and Carolina have much to think about as they refine their Fire Management Plan. Many of those present expressed an interest in revisiting the property a year after the first burn and requested an invitation to a similar field day in 21 years' time – the question of access for zimmer frames was duly noted!

Avril Baxter

WATTLE DAY, WAROONA

Although pretty low key, this display to celebrate Wattle Day, in the entrance to the shopping centre in Waroona, attracted a lot of interest.

(Photo: H Adamson)

[For the background to Wattle Day, read WW9/3 page 12 - Ed.]

FESTIVAL OF THE LAKES, COCKBURN

(Photo: Z Kivell)

NEWS

PRAISE FOR *LFW* MEMBERS

Harry and Merle Bardwell and Chris Pip were highly praised during a recent field day on their property looking at enhancing bushland values and on-farm revegetation.

During the past 10 years the Bardwells have taken advantage of funding opportunities to implement their farm plan. This has included re-fencing two large remnants (each 120ha), connecting them with a 20m wide corridor, fencing and revegetating all creeklines and planting marginal valley flats to saltbush. All bushland is now interconnected and they have retained individual paddock trees.

Our main speaker Dr Patrick Smith, an agricultural ecologist with CSIRO Sustainable Ecosystems, lauded the Bardwell's vision. Patrick reported on the results of his research work on the use of revegetation to birds, reptiles and mammals, revegetation designs and the values of paddock trees. He praised the Bardwells for "softening the agricultural landscape for native fauna whilst maintaining a profitable enterprise".

Harry explaining the bushland connections (Photo: A Baxter)

The 'Bushland to Saltland' field day was held in partnership with the Wagin Woodanilling Landcare Zone to help showcase some of the new work that is being undertaken through their Conserving Natural Heritage project.

Avril Baxter

REGAN'S FORD WILDFLOWERS

As a contribution to the International Year of Biodiversity, *LFW* combined with the Eastern Hills Branch of the Wildflower Society of WA for a weekend excursion to document plants on a property east of Regan's Ford. *LFWer* Tony Ruse has some superb bushland, mostly woodland and kwongan on sand and laterite, but running right down to the bank of the Moore River, and he wanted to know what it contained. Over the two days, 27 people attended, and were divided each day into three teams. Each team planned to walk about one to two km but, so diverse was the vegetation, that no group walked much more than 100m before the time was up! All told, more than 500 specimens were collected, representing at least 200 taxa. And that was only what was in flower! Is it a surprise that we are a 'world biodiversity hot spot'? (Any attendees who have not received a plant list, and would like one, please contact the Editor.)

Tony arranged that the group could camp and use the bunkhouse facilities on his property, and also finished the Saturday with a wine tasting, sharing and discussing the wines produced on his property at Denmark, 'Silverstream'. Perhaps it was this genial conviviality that sent people to bed early, instead of working late into the rainy night on plant ID! Eventually an illustrated list of the day's finds will be produced. Everyone thanked Tony for sharing this magnificent site with us.

Penny Hussey

Afternoon tea on the Moore River floodplain (Photo: P Hussey)

VICTORIA PLAINS WILDFLOWER WALK

(Photo: Z Kivell)

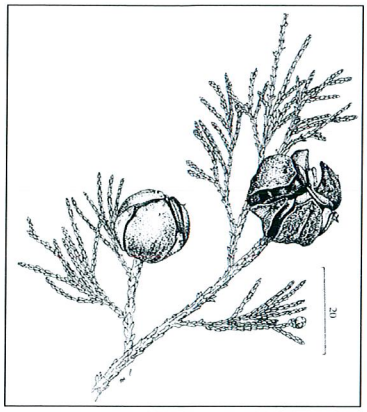
FLORA

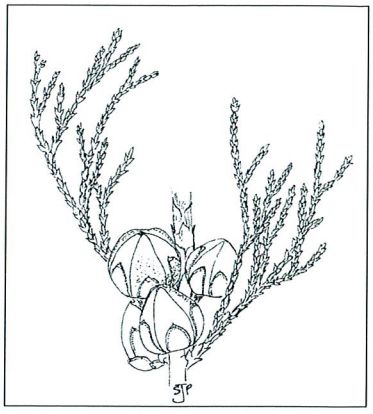
CYPRESS-PINES IN WA

Penny Hussey

The cypress family, Cupressaceae, is found worldwide, mostly in temperate regions of the Northern Hemisphere. In Australia there are 17 species in two genera (around 140 species in 19 genera worldwide). One genus occurs in WA, *Callitris*, which includes three species formerly placed in a separate genus, *Actinostrobus*.

These plants are evergreen trees or shrubs with small, scale-like leaves flattened along the stems. They are conifers and reproduce by means of cones. The male cones are usually small and borne at the tops of branches, the female cones are larger and enlarge into hard woody fruits.





Above left: C. columellaris; *above right,* C. pyramidalis; *right,* C. preissii.

On a world scale, many cypresses are important timber trees, such as the Monterey Cypress from California (*Cupressus macrocarpa*) that is such a feature as windbreaks in rural New Zealand, or the Western Red Cedar (*Thuja plicata*) from North America, exported to Australia as weatherboards for housing. A couple of cypress species adorn cemeteries throughout the world; the pencil-shaped Funereal Cypress (*Cupressus fastigata*) and the larger Mediterranean Cypress (*Cupressus sempervirens*), often as their golden cultivars. And most people will, at some time, have drunk a cypress-flavoured spirit – gin – which is flavoured by Juniper berries (*Juniperus communis*). Juniper is one of the few plants in the family to produce fruit as a berry rather than a cone.

Early settlers in NSW and Victoria found the cypress-pines to be very useful timber and firewood. Cypress timber is golden, and often has a beautiful figure. It also has very little shrinkage. Trees grown as plantations and managed for timber in the same way as pine (i.e. pruned to minimise knots) would produce a furniture timber probably superior to pine. It is a great pity that early forestry softwood experimentation did not include this genus; the authorities persisting, as most new settlers did, in believing that exotic would always be better.

There are nine species of *Callitris* in WA. They are distinguished by having cones with six valves. The original *Callitris* species have three long and three short cone-valves, the three that were formerly *Actinostrobus* have all the valves the same length (see illustrations).

One of the best known is Rottnest Island Pine (*C. preissii*). It is a tree to 10m that was common on coastal sandy soils around Perth and also occurs on the coast and islands from Albany to Mt Ragged, and inland to the Goldfields, where it was formerly known as *C. tuberculata*. Much of Perth's limestone coast and islands were originally covered with dense forests of Rottnest Island Pine. Allan Cunningham, surveying Rottnest in 1822 with Philip Parker King, reported cypress "abundantly over the island, growing to 25' (6 m) tall". He likened it in shape to a Cedar of Lebanon. A few years later, in 1827, the NSW botanist Charles Fraser was part of an official exploration party prior to settlement, and he too commented on the luxuriant growth of magnificent cypress along the Swan estuary, the islands and Cockburn Sound. He records trees along the Swan from Point Heathcote to what is now the causeway exceeding 80' (30m) in height. The existence of these huge mature trees at the time of first settlement casts strong doubt on the theory that Nyoongar people burnt all the country frequently, as all cypresses are fire-sensitive and simply could not survive such a burning regime, let alone grow into 30m trees. In fact, since European settlement, too frequent fires have decimated these populations and there is now very little left on Rottnest or, indeed, anywhere around Perth. The Nyoongar name is Marro and, although it must have had many uses, none have been recorded.

continued on page 13

FLORA

continued from page 8

Arnhem Cyrpress-pine (C. columellaris)*, Anjo Peninsula, Kimberley. (Photo: K Kenneally)*

Across the north of Australia, including the Kimberley, Arnhem Cypress-pine (*C. columellaris,* formerly *C. intratropica*) grows on sandstones and well-drained country, where it is protected from fire. This northern cypress-pine forms a tall stately tree to 18m high, providing good timber and excellent firewood. Aboriginal people used the wood for various items such as paddles, woomeras and fighting sticks; belts were made from the bark; the gum was used to fasten woomera pegs and spear heads; the wood and rolled bark was used to make fire torches; the bark and leaves were burned as a mosquito repellent and the ashes used to treat body pain; and an infusion from the inner bark was used to treat diarrhoea. Truly a valuable plant! But it is killed by fire and recent changes in fire regimes are eliminating it from many areas.

Swamp Cypress (C. pyramidalis) *planted in winter-wet revegetation north of Muchea. Note attractive and, for WA, strikingly unusual shape. (Photo: P Hussey)*

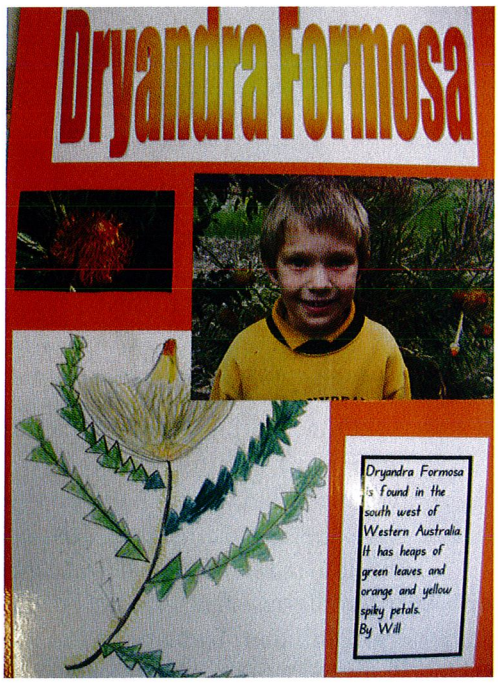
Inland Cypress-pine (C. columellaris)*, Mt Gibson. (Photo: P Hussey)*

From the Pilbara southwards this tree is called Inland Cypress-pine (formerly known as *C. glaucophylla*) growing in most habitats from gorge walls to red soil flats to salt lake dunes. The timber is very termite-resistant, and has been used in the Goldfields for furniture, fence posts (including on the Rabbit Proof Fences), railway sleepers and firewood. Other inland species are Warted Cypress-pine (*C. verrucosa*) and *C. canescens*, while Drummond's Cypress-pine (*C. drummondii*), and Roe's Cypress-pine (*C. roei*) are found in the south-west.

The three species that were in the separate genus *Actinostrobus* are confined to WA. They have cones with six valves that are all equal in length. Swamp Cypress (*C. pyramidalis*) grows in winter-wet sandy soil and is somewhat salt tolerant, being often seen on the flood plains along wheatbelt watercourses. It would be a great plant to use in clumps for shelter and shade in saline land revegetation projects, though it would be necessary to protect the seedlings from grazing (including by rabbits) for the first few years. The species grows naturally from Kalbarri to Ravensthorpe on the coastal plain and the western half of the wheatbelt. On sandy soils the Sandplain Cypress (*C. arenaria*) occurs. This sprawling, often untidy-looking tree up to 6m in height, is widespread across the south-west and up into the Murchison. Like the Swamp Cypress, its seeds are an important food source for Carnaby's Black Cockatoos. Much less common is the low shrub Dwarf Cypress (*C. acuminatus*) which grows to around 50cm tall and has much longer leaves (15mm long) than the other two, which are about 2mm long. It is found in winter-wet grey sand from Three Springs to Donnybrook.

Illustrations by Sue Patrick and Margaret Pieroni from the DEC publications Leaf and Branch : Trees and Tall Shrubs of Perth *and* Flora of the Kimberley Region

SOUTH COAST *LFW* CELEBRATING THE INTERNATIONAL YEAR OF BIODIVERSITY



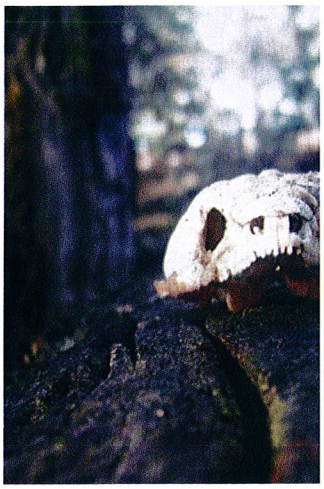
Will Smith (aged 6) of Mt Manypeaks Primary School for his Dryandra formosa poster.

Steven Plant (aged 11) of Flinders Park Primary School for his beautiful caterpillar photo. The caption said: "The metamorphosis that occurs from a caterpillar to a butterfly is very unique. These interesting creatures, even though they are often brightly coloured, can blend with the plants they live on. They often have tiny hairs to help protect them from predators."

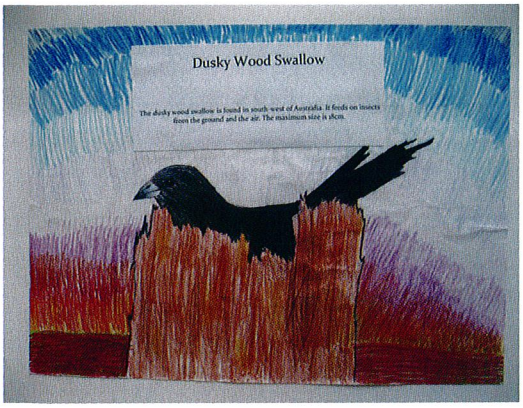
We invited all school children from across our region to create a drawing or to take a photo of one of our unique organisms which are part of our special south coast biodiversity of WA. We also requested that they accompany the entry with 20 to 50 words explaining something about the organism and why it is important to our unique ecology.

We had 42 entries from primary school children of all ages and were able to allocate 12 prizes. The entries were displayed for two weeks in a window gallery on the main street of Albany. There was lots of positive feedback. Shown are some of the prize winners.

2010 International Year of Biodiversity



India Campbell (aged 10) of Gairdner Primary School drew this Dusky Wood Swallow picture. The caption says: "The dusky wood swallow is found in the south west of Western Australia. It feeds on insects from the ground and the air. Its maximum size is 18 centimetres."



Siobhan Smith (aged 12) of Cranbrook Primary School took this photo of a bobtail skelton on a log. The whole class went on an excursion to one of their local wetlands called Lake Nunijup to capture their biodiversity celebration photos.

MEMBERS' PAGE

WHAT PLANT IS THIS?

Mary Woodward found these leaves under Jarrah on her block at Quininup and, not ever having noted a flower, wondered what they were. They are the Slipper Orchid (*Cryptostylis ovata*), which is found in higher rainfall or swamp edges from Perth around to Mid Mt Barren. It produces tall (up to 70cm) flower stalks carrying inconspicuous red and green flowers. It doesn't need a smoke signal, and so has flowers in most years, but in summer, when people tend not to be fossicking in the bush. (If you think you may have seen the leaves, go out and look for the flowers now!) This plant's main claim to fame is its extraordinary method of pollination – the male Ichneumon Wasp actually mates with it, leaving a packet of semen behind! See WW 12/2, April 2008 (or any good orchid book) for more detail.

BUSH DETECTIVE

Who made these droppings?

Sylvia Leighton photographed these scats close to a wetland and thought they were definitely a bird's, but which species? What do you think?

The answer, from Saul Cowen, DEC Conservation Field Officer, Albany:

"The large quantity of fibrous material in these scats is indicative of ground-foraging birds, possibly an Australian Magpie or a species of waterfowl. The mixture of undigested fibrous material and uric acid is often characteristic of waterfowl scats but could also be due to an accumulation of uric acid overnight in the lower gut of a generalist species such as a magpie.

Additionally, the large deposits in the photograph are possibly suggestive of a roosting individual, most likely on the ground. Many species of waterfowl will roost on the ground and these photographs were taken close to water bodies.

In summary, these scats are most likely early morning scats from a ground-foraging species such as the magpie, or from a small-medium waterfowl species (e.g. Pacific Black Duck, Australian Wood Duck or Australian Shelduck) which has been roosting on the ground."

So now you know!

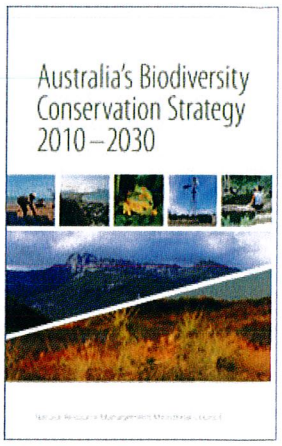
Fauna

"These spotted-thighed frogs (*Litoria cyclorhyncha*) are found along the south coast from Albany hinterland to Israelite Bay. They are a tree frog, able to climb very well - note the suction pad on the female's toes. The call is said to be 'like the distant sound of wood being sawn'."

Photo: Eddy Wajon, 'Mondurup View', Tenterden.

NEW BOOKS

Australia's Biodiversity Conservation Strategy 2010-2030



This national policy (which replaces the 1996 version) will guide actions for biodiversity conservation into the future. It has been prepared under the auspices of the Natural Resource Management Ministerial Council, which consists of Australian, state, territory and New Zealand government ministers.

It is, of necessity in a document of this type, generalist in its statements, nevertheless it does suggest commitments for cooperation and action in many areas. Well worth downloading and reading, if only to ascertain what our governments - national, state and local - have committed the nation to.

http://www.environment.gov.au/biodiversity/publications/strategy-2010-30/pubs/biodiversity-strategy-2010.pdf

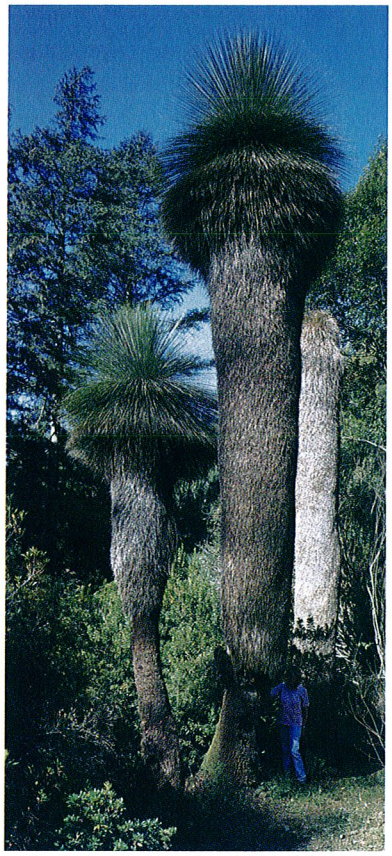
REMARKABLE TREES

We have a winner!

Beat this folks - and it is not even in Australia!

Elizabeth Rippey drew our attention to this remarkable plant, which is shown in a photo in the book *In search of remarkable trees: on safari in Southern Africa*, by Thomas Pakenham (published Weidenfeld & Nicolson, 2002). It is growing in the Benvie Arboretum in the hills near Pietermaritzburg in South Africa, and was planted by a Scottish immigrant in the 1880s. The species is probably *Xanthorrhoea australis*, from the eastern states. We've done a rough calculation, and reckon it has reached 8 metres tall in some 120 years of growth. It just shows you what plenty of rain and good soil will do! (And no fires?)

So, can we find a taller Australian grass tree?



This newsletter is a compendium of articles written by many different people. The views expressed are those of the authors, not necessarily those of the Department of Environment and Conservation.
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