



### Comet McNaught: the sunset sensation



Comet McNaught over the Perth sky.  
Photo - Vic and Ben Levis

**WESTERN** Australians got the show of their lives when Comet McNaught – a 20 km nucleus with 10 million km tail – passed our skies last month.

The spectacular vision was the brightest comet in 40 years and keenly watched by the public during its January apparition.

Clear skies gave WA people one of the best views of the comet as it travelled westward towards the horizon just after sunset.

Perth Observatory Director Jamie Biggs said the comet was spectacular.

"It consisted of a coma made up of dust and water vapour cloud several thousands of kilometres across and curved tail over 10 million km long – all generated from the heating of its nucleus that is about 20 km wide.

"We usually get one bright one every decade but this was the brightest comet we've had in 40 years."



Perth Observatory Director Jamie Biggs gave a star showing for members of the public wanting to learn more about Comet McNaught. They met at Floreat Beach for the view. Photo courtesy of The West Australian

The Perth Observatory ran public viewing nights on Tuesday, Wednesday and Thursday at Floreat Beach, which attracted more than 1000 people.

"Staff and volunteers from the observatory helped people view the comet and collected gold coin donations for the use of binoculars," he said.

"These events raise the public profile of astronomy and of the Perth Observatory. This one in particular received a lot of attention in the media."

Jamie said the Perth Observatory's website had attracted a five-fold increase in 'hits' compared with the previous month.

"Everyone in the southern temperate latitudes around Perth (Australia, New Zealand, Southern Africa and South America) had the opportunity to view it.

"It was advantageous to see it in Perth because our summer skies are relatively cloud free," he said.

### DEC helps rural areas

**DEC STAFF** will be partners in a new cooperative research centre to improve the prospects of WA land affected by salinity, drought and climate change.

The new Future Farm Industries Cooperative Research Centre (FFI CRC) has received \$114 million in Commonwealth and State Government funding to improve more than 60 million hectares of land across Australia during the seven-year life of the CRC.

Developing new farming systems that combine profitability with adaptation to the climate and geography of Australia in the 21st century will be an important part of that work.

The aim of the research by DEC and others is to introduce new rural industries, combat a variable and changing climate, fight salinity and generate new regional industries and jobs. Potential new industries include bio-energy, timber products, charcoal for mineral processing, and seed and technology exports.

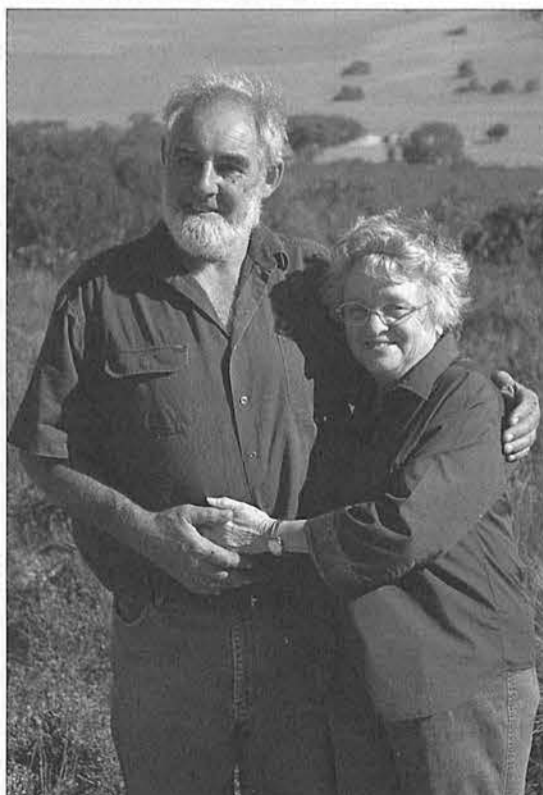
The integrated research aims to make land more productive, restore water quality and biodiversity, enhance mainstream industries and build new ones.

The CRC will use the skills of researchers from DEC and other partners – including The University of Western Australia and the Department of Agriculture and Food – to improve the condition of WA farms and agricultural businesses in the crop-livestock and high rainfall zones.

The CRC's CEO Designate, Kevin Goss, said if just 10 per cent of the land was converted to a new farming system

continued page 2

### Botanist farmers conserve their property



Don and Joy Williams... farmers and conservationists.  
Photo - Sue McKenna/DEC

**A BADGINGARRA farm with some of the richest and rarest native vegetation and wildlife in WA is now a portal for conservation.**

Don and Joy Williams have set aside 350 ha of remnant vegetation on their sheep farm – Hi Vallee – to be managed under DEC's new conservation biodiversity initiative project.

Their concern for the future welfare of the bush resulted in them forming a partnership with DEC to ensure the land is properly managed for conservation after the farm passes into new hands when they retire.

The bush will be cared for by the Williams, DEC's scientists, botanists and wildlife experts.

At least five threatened and 33 priority plant species are on the property.

The splendid wren, honey possum, western bearded dragon, fat tailed dunnart, crested pigeon, bobtail and other reptiles are also there.

"When I moved to the farm 40 years ago I was told to clear 10

per cent of the land each year as a condition of sale," Don said.

"You can't blame the farmers for all the clearing because we had an official order to clear it, but how times have changed."

Joy said she and Don had always had a love of plants and many on their property were still unnamed and uncollected.

"Over the years we learnt that valuing the land did not mean clearing it to make a paddock but conserving it for the future," she said.

Don is encouraged to see so many people in the conservation industry.

"We're out there trying to preserve what little we've got left of our environment. This area may be the richest area in the world for plant species."

DEC Conservation Officer Kathy Himbeck will create a management plan for the conserved block including assessments about extant flora and fauna, dieback, weed management, feral animals (rabbits, foxes and cats) and fire management prescriptions. Fire breaks and fencing will also be updated during the project.

# Working Together

After a very hectic 2006, including of course the establishment of the Department of Environment and Conservation, it was great to have four weeks off travelling around New Zealand, especially spending time in some of that country's outstanding national parks including Tongariro, Abel Tasman, Fiordland and Mt Cook. The landscapes are spectacular, the walking and adventure tourism opportunities are almost endless, the introduced pest animals prolific, and the Department of Conservation park visitor centres very well presented. It was great to be able to "recharge the batteries", in readiness for what will undoubtedly be an interesting year with lots of opportunities and challenges.

This year has already seen a build-up of momentum in key areas, particularly development of the Government's climate change agenda and initiatives, with a marked increase in media and public debate.

Many staff have also been dealing with numerous wildfires and, somewhat incongruously, flooding in areas where there had been fires only shortly beforehand.

Two of the key issues that Corporate Executive is focussing on at present are finalising DEC's corporate plan following staff feedback, and holding a two day strategic planning 'retreat' at the end of February to map out our directions and priorities over the next couple of years. I look forward to the enthusiasm and support of our staff and our many partners in delivering environment and conservation outcomes for the State as we roll out our corporate plan.

**Keiran McNamara,**  
Director General



# Competition shows public view of climate change

**A FRESH approach to climate change and what the public can do about it will be on show at a photographic exhibition from the end of March.**

The photographs are entries in DEC's Climate Change Photographic Competition run by the Greenhouse Policy Unit.

A total of 72 photographs and drawings are now being scrutinised by a selection panel to see which will be the winner.

"It was quite interesting to see the range," the competition's organiser, Dan Ellis-Jones, the unit's Research Officer, said.

"It reflected the public's perception about climate change, the views of ordinary people about what's happening to WA's landscape and their ideas about what will happen in the future.

"We received entries from across the State. Some showed parched agricultural lands while others covered more abstract ideas.

"One entry from a primary school student showed a drawing of a dinosaur lying on its side in the back garden, with a caption saying: 'Mummy says if we don't live more sustainably we'll be like the dinosaurs'.

"Another showed a photograph of a person in a kayak on a cliff edge waiting for the sea level to rise while others showed the impact of climate change on Aboriginal art. One depicted a person fixing a collection of bikes, encouraging people to ride their cycles more."

Dan said the competition followed an international photographic exhibition – the North



Dan Ellis-Jones and the bicycle repair photograph. Photo – DEC

South East West Photographic Exhibition – which has been on display in the eastern States.

"It was felt that there should be an exhibition that featured the Australian perspective, because this exhibition doesn't feature an Australian photograph," Dan said, adding that DEC was the only conservation agency in Australia to run a climate change photographic competition.

The WA exhibition will be held at the WA Museum for one month before going to Parliament House for two weeks, followed by a visit to The University of WA. It will then go on the road to six regional centres between Port Hedland and Albany.

## DEC helps rural areas from page 1

it would deliver more than a billion-dollar dividend into the rural economy.

Senior DEC researchers joining the CRC include Ken Wallace (Manager of DEC's Natural Resources Branch), Dr Margaret Byrne (a DEC Principal Research Scientist) and John Bartle, Manager of the Revegetation Systems Unit.

The FFI CRC will be up and running by 1 July with its headquarters at UWA's Natural and Agricultural Sciences Faculty.

The FFI CRC is a powerful alliance backed by the grains, wool and meat research corporations, the Landmark agribusiness company, the Kondinin Farm Improvement Group, six State Government departments including DEC, CSIRO, four universities and individual catchment management authorities. Together they bring \$80 million in resources, to go with the Australian Government's investment of \$34 million over seven years.

# Esperance ordeal

**DEC ESPERANCE District staff have dealt with fires, floods and dead birds falling from the sky in what has been described as a devastating couple of months.**

In November, staff experienced the worst start to the fire season they had ever had. Then flooding caused major infrastructure damage and birds began mysteriously dropping from the sky.

Parks and Visitor Services Leader Geoff Young said staff had gone from dealing with one emergency to another.

"Just as we were coming to terms with the fires and the flood, the mysterious deaths of more than 4000 birds around Esperance started to attract local, national and international media interest," he said.

"This put added pressure on DEC staff, who were already arranging for autopsies on some of the birds that died and were involved in collecting dead and dying birds.

"We do not know what has caused these

deaths, which have mainly occurred in wattle birds, yellow-throated miners, new Holland honeyeaters as well as seagulls."

The birds began dying three weeks before the storm, which caused significant damage to the area's three national parks from the flooding and extreme winds brought by remnants of Cyclone Isobel mixed with an intense low pressure system.

Stokes National Park received 250mm of rain, Cape Le Grand received 200mm and Cape Arid received 110mm in 24 hours.

"The beach entry station to Cape Le Grand was upturned in the nearby creek, there's significant erosion along the edges of many of the roads, campgrounds were flooded and facilities damaged, access was limited in many places and water damaged sheds containing electric tools," Geoff said.

"The ranger's house at Stokes National Park, which was only just cleared of the ash it received from the bushfires, also sustained major water damage."

He said the events of the past few months had taken its toll on many DEC staff.

"When the flood struck we were only just coming to terms with the effects of the fires," he said.

"We had three horrendous weeks where successive troughs came through and brought lightning that started fires in or near the area's three major parks – Cape Arid, Cape Le Grand and Stokes – simultaneously.

"We only had a day or two between the fires to gather ourselves and service our equipment before the next fire started.

"It went way beyond a joke."

Geoff said the district had worked with DEC's Risk Management Section to support staff.

"There are lots of human issues that go along with events like these, especially at busy times of the year like Christmas when lots of people camp at the parks," he said.

"You're not only worrying about the park, your house and infrastructure but park users as well."

DEC officers also helped the State Emergency Services in the town and along key roads in the region immediately after the storm and in flood mitigation works. Esperance, and its surrounds, was declared a natural disaster zone and Western Australian Natural Disaster Relief Arrangements (WANDRA) were made available to people in the area for assistance to those who suffered direct impact of the natural disaster.

Esperance district staff will carry out significant repairs in the coming months.

## DEC team efforts save seal pups

**IN a race against time, DEC officers in Esperance went on a rescue mission to return seal pups stranded by the January storm to seal colonies off the State's south coast.**

DEC South Coast Fauna Conservation Officer Peter Collins said previous experience had shown that it was imperative seal pups were returned within a week to increase their chances of 'mothering up' when reintegrating into seal colonies.

"DEC staff and Esperance locals picked up 17 New Zealand fur seal pups and one Australian sea lion pup along the coast of Esperance and east of Hopetoun," he said. "The pups were victims of the storm and it is believed that the strong south-west gales coupled with high seas and high swells probably dislodged the seals from their nursery sites that are on fairly exposed, low-lying rock island environments.

"The pups' best chance for survival was to return them to their original habitat, because their mothers might still be there, or possibly surrogate mothers, to provide the necessary food that these pups require."

The seal pups were being cared for by former DEC Wildlife Officer Bernie Haberley, who has had previous experience including being one of the original carers for the seals at the now-closed Atlantis Marine Park in Yancheep.

"Bernie fed the suckling seal pups, which were about six to eight weeks old, a specific lactose formula designed for marine mammals in these types of situations," Peter said. "A compound complete with water pool was also erected in his backyard."

## Park office has homely appeal

**THE previous ranger's residence at the entrance to William Bay National Park has taken on a new life as the DEC headquarters for six staff based at the park.**

The former house and a new depot next to it are just outside Denmark, close to Madfish Bay and Greens Pool in the William Bay National Park.

Changes to the house included rearranging the internal design to create offices and a meeting room. Freshly painted, the reconfigured areas provide daily office accommodation and good meeting areas for DEC staff as well as the William Bay National Park Association.

The adjacent depot is home to two new fire trucks bought with extra funding allocated for the department's fire management operations in the area and general national parks work around Denmark.

On a recent visit to Frankland District, DEC's Director of Regional Services Alan Walker inspected the site and noted that the local team kept the depot spotless and ready for immediate action if there was a fire.



(Left to right) District Nature Conservation Coordinator Karlene Bain, Acting Ranger Clive Burdon, DEC Director Regional Services Alan Walker, Frankland District Manager Peter Bidwell and Warren Regional Manager Peter Keppel at the new depot. Photo – Kaye Verboon /DEC

## Environment and Conservation News February 2007

Published by the Department of Environment and Conservation's Strategic Development and Corporate Affairs Division, Cygnet Hall, (cnr) Mounts Bay Road and Hackett Drive, CRAWLEY, Western Australia 6009

**Managing Editor:** Sue McKenna

**Contributing Editors:** Rhianna King, Nigel Higgs, Kaye Verboon

**Design and Production:** Natalie Jolakoski

**Telephone:** (08) 9389 8644

**Facsimile:** (08) 9389 8296

# Surprise! DEC audits Perth drycleaners

A TEAM of DEC staff travelled around Perth and audited drycleaning businesses to see which practices came up squeaky clean.

Members of the Controlled Waste Section conducted an unannounced controlled waste audit of drycleaners at the end of last year – with some pleasing results.

Three DEC Inspectors, two Environmental Officers and a Licensing Officer visited 85 drycleaners to examine the storage of perchlorethylene waste, a chemical drycleaners produce, and checked collection receipts to make sure they were disposing of waste correctly.

The audit showed the drycleaning industry had a high level of compliance. It also gave the Controlled Waste Section a valuable opportunity to provide the dry cleaners with information about the *Environmental Protection (Controlled Waste) Regulations 2004*.

Of those audited, 92 per cent were compliant. Environmental Field Notices were served when non-compliance issues were identified. The section expects there will be an even higher level of compliance in the industry in future as a result of the education provided during the audit.

Genevieve Hull of DEC's Controlled Waste Section said the audit showed most waste generators in the drycleaning industry had a genuine concern for protecting the environment and disposing of controlled waste at an approved location.

"This concern was demonstrated by the high level of compliance within the drycleaning industry and the pro-active nature of the Drycleaning Institute of Australia, which addresses difficulties encountered with the disposal of perchlorethylene waste by providing a perchlorethylene waste removal program for drycleaners," she said.



DEC inspectors Jim Davis (left) and Tony Paniciari were two of the officers who conducted the audit. Photo – DEC

"Individual drycleaners have displayed enterprise by seeking to reduce the volume of perchlorethyl-

ene waste they produce."

Genevieve said several drycleaners used a carbon filter system to remove perchlorethylene from contact water.

"A number of drycleaners have also researched and invested in methods of drycleaning which are an alternative to the commonly used perchlorethylene solvent process," she said.

"This indicates that compliance with the regulations is important to waste generators within the drycleaning industry and the likelihood of unauthorised discharge into the environment is low."

The most common drycleaning system in use generates perchlorethylene waste – a controlled waste under the *Environmental Protection (Controlled Waste) Regulations 2004*.

Generators of controlled waste are not licensed under the regulations, but play an important role in the safe transportation and

disposal of controlled waste.

Their obligations include segregating controlled wastes from other waste streams, ensuring waste is stored in containers that are fit for transportation and engaging a licensed controlled waste carrier to transport controlled waste for disposal.

The focus for the audit was to ensure drycleaners are using a licensed controlled waste carrier, are not stockpiling more than 200 litres of perchlorethylene waste and are storing it appropriately. The drycleaners who are producing perchlorethylene waste were advised of their obligations under the regulations. Each business was provided with an information sheet, a copy of their waste generator identification number and contact details for the waste collection service offered by the Drycleaning Institute of Australia.

## Cockburn licence

DEC HAS issued an amended licence for the desalination plant at Kwinana. The changes follow an application by the Water Corporation to amend the initial licence issued on 25 September last year.

The amended licence still requires monitoring for oxygen levels at the three locations in Cockburn Sound, set in the original licence, and the Water Corporation to reduce the discharge from the plant if oxygen levels fall below set levels.

The amended licence also requires the Water Corporation to begin additional monitoring between the discharge outlet and the entry of the Stirling Channel into the deep basin if low oxygen levels are detected at the southern monitoring site.

DEC Environmental Management Director Robert Atkins said additional research commissioned by the Water Corporation had shown that the discharge from the plant would be unlikely to have an adverse impact on oxygen levels in the sound.

The Centre for Water Research at The University of WA carried out further detailed computer modelling and field surveys to assess the movement of the brine discharge from the plant and its potential impacts on oxygen levels. The work included a tracer test where dye was injected into the discharge to track its movement.

"DEC considers that the licence conditions provide strong protection for Cockburn Sound," Robert said.

## Trapdoor opens on a rare find

PURE chance has resulted in a DEC Frankland District team finding and photographing a new population of a rare and ancient spider near Walpole.

Nature Conservation Overseer Jason Fletcher found the tiny endangered trapdoor spider species *Moggridgea tingle* in November in the yellow tingle forest near the Jack Rate Lookout, just west of Walpole.

The spider, which is known only from a handful of populations in the deep karri and tingle forests, has a lineage dating back more than 140 million years to the time of the dinosaurs.

It was identified after Jason noticed an interesting spider on some bark in the forest and took a specimen back to the local DEC office to show to Nature Conservation Coordinator Karlene Bain.

"I nearly threw the bark in the bin after I had determined that the spider Jason had collected was a common species," Karlene said. "The spider's trapdoor fell open just as my hand hovered over the bin."

"The burrow had a 7 mm diameter and a door constructed of silk, bark and moss. It was completely camouflaged with the surrounding bark and inside was a healthy *Moggridgea*."

"Even after I knew it was there, it still took some finding again! The trapdoor's seal with the bark was perfect, there is no way we would have ever found it if we had been looking for it!"



Jason Fletcher collected the endangered spider. Photo – Ariana Svenson/DEC

By Ariana Svenson and Karlene Bain

*Moggridgea tingle* are long-lived spiders (females may live up to 30 years) that are conservative in their adaptations to changing environmental conditions. They are extremely vulnerable to large disturbances impacting on their already reduced habitats.

Not only does *Moggridgea tingle* occur only in specific habitats around Walpole, the spiders are small and cannot move far from the place they hatched. The spiders also have a high requirement for moisture,

which confines them to wet forest habitats where they burrow in the soft bark of tingle and karri trees.

"Recently, there have been extensive surveys undertaken to find more populations to add to the existing museum records and improve our knowledge of the spider," Karlene said.

"Until now, these surveys have been relatively unsuccessful."

"I'm sure there are others out there – they're just so cryptic! Surveys of this population will be undertaken in winter this year, when the moisture in the habitat makes it more likely that burrow doors will be slightly ajar and so more easily spotted."

## Fire staff in Victoria

DEC STAFF were among 19 Western Australians sent to Victoria in the weeks leading up to Christmas to help their counterparts combat wildfires that burnt out more than 800,000 ha.

The deployment followed a visit to Victoria by DEC Fire Management Services Manager Rick Sneeuwagt to determine the most appropriate form of assistance WA could offer.

The first DEC contingent left on 13 December and returned on 21 December. They were Blackwood District Manager and team leader Greg Mair; Blackwood District Fire Co-ordinator Rob Round-Turner; Blackwood District Fire Operations Officer Mick Zwart; Bunbury Senior Silviculturalist Kathy Gosby; Fire Training Officer, Bunbury Alex Moylett; Geographic Information Systems Officer, Kensington Shane French; and Sustainable Forest Management Leader, Swan Region Steve Raper. They were joined by Fire and Emergency Services Authority officers Merv McNamara, Lynda Elms and Terry Sheehan.

The second contingent headed for Victoria on 17 December and returned on Christmas Eve. DEC staff were Team Leader, Fire Management Services, Bunbury Michelle Widmer; Swan Coastal District Fire Co-ordinator, Wanneroo Mike Cantelo; Wellington District Manager, Collie Drew Griffith; SFM Operations Officer, Collie Charlie Downes; and GIS Officer, Bunbury Paul Rampant. Other team members were Keith Low and Lisa Christie from the Forest Products Commission and Kevin Parsons and Paul Igglesden from FESA.

## Wedge the new hotspot

THE settlement of Wedge, 180 km north of Perth, is the public hotspot of Jurien Bay Marine Park.

"It is more popular than Cervantes, Lancelin and Jurien because it's only a couple of hours away from Perth and people can easily get up there for a weekend or holiday," Marine Park Coordinator Kevin Crane said.

The settlement is one of the places along the Coral Coast bordering Jurien Bay Marine Park, which was established in 2003.

It was the first WA marine park to have comprehensive data on its marine life and geology in use at the time of its establishment.

"It is also one of the few marine parks in the world to have done this," Kevin said.

Studies happening in the marine park include the investigation of Jurien's water quality based on the estimation that there will be 30,000 people living in the town by 2030.

Another study is of sea lions, especially since some were trapped in craypots and drowned while diving for food. As a result, fishers lock craypot doors so this no longer happens.

Seagrass, a key ecological driver, is also being studied, as are the populations of animals at nearby Boullanger and Fisherman's islands.

Kevin said the studies were part of a longer study of life forms and trends across temperate Australian waters, a project that will extend to the proposed Capes Marine Park in the south-west.



Kevin Crane carries out survey work in Jurien Bay Marine Park. Photo – DEC

The studies are backed by DEC providing public education, involving children in marine environmental programs and setting up signs to differentiate park zones. DEC has also been involved in three major whale entanglement and five sea lion situations in crayfish lines in the past three years.

"If you're out in any of the coastal towns on a holiday or long weekend, look for DEC staff out in their boats."

"They're always meeting people and giving advice," Kevin said.

### New Kimberley Regional Manager

Daryl Moncrieff will take up his new duties as DEC's Kimberley Regional Manager in February.

He replaces Keith Hockey, who acted as Regional Manager after Gae Mackay's departure. Keith Hockey is returning to his role as Moora District Manager.

Daryl was the Management Planning Unit's Coordinator before embarking on a year's exchange to Canada's parks and wildlife services agency last year.

### Posters show students' creativity

Collie students are helping formulate the town's air quality strategy through a poster competition organised by DEC.

The goal of the air quality strategy is to

develop a plan for the effective management of air emissions in Collie. As well as targeting air emissions from wood heaters and industry, the Air Quality Management Branch is working with schools. The poster designing competition at the end of last year was one of a number of strategies to raise public awareness – an important component of the project.

More than 50 students from Amaroo and St Brigid's primary schools used their talents to produce imaginative, colourful and eye-catching posters designed to encourage people to think about keeping our air clean.

Strategic Project Coordinator Farah Adeb and Environmental Officer Ray Tauss judged the posters, a task made difficult by the number of imaginative and colourful entries.

The winning entries will be professionally printed and displayed at DEC's office in Collie.

### Bush Ranger scholarship

Busselton Bush Ranger Unit Leader and high school teacher Bronwen Worthington will work with DEC under a Commonwealth Government scholarship to promote DEC employment pathways for people with disabilities.

Bronwen has been with the Busselton Bush Ranger Unit for four years and was a finalist in the Commonwealth Department of Education, Science and Training's excellence awards.

She has been involved in the restoration and revegetation of Busselton Beach reserves and worked with DEC to remove weeds at Margaret River.

Twenty Bush Rangers recently took part in the Fire Management Services reward camp at Dwellingup.

It was so successful that one school has

organised for all its Year 10 students to do the theory course in conjunction with the local fire brigade and two students will be chosen to attend the annual DEC fire reward camp.

The DEC's Bush Rangers Program is a voluntary program for young Western Australians under the Cadets WA scheme.

### Foxglove under threat

The Wyalkatchem foxglove is under extreme threat.

The species was declared as Rare Flora in 1990 and is found in the Shire of Wyalkatchem in the wheatbelt.

Only two populations, each containing five plants, exist in the wild while six cultivated plants are held by the Botanic Gardens and Parks Authority.

An interim recovery plan for the species has been drafted.

## Everything old is new again

**BUSINESSES, industries, local government, community groups and individuals have until 23 February to apply for funding through the Strategic Waste Initiatives Scheme.**

The broad waste initiative support scheme comes under the umbrella of the Waste Management Board, supported by DEC's Waste Management Branch. The scheme was established to help WA achieve the vision of 'Towards Zero Waste in WA'.

People seeking funding through the scheme have been asked to initially describe the issues, their ideas and proposals to address them.

Proposals that fall in line with the board's strategic direction for waste management have a good chance of being approved under the scheme.

Priorities are to:

- improve the marketing of worm farming and home composting,
- use recycled materials in secondary road construction,
- reuse building products,
- use recycled glass at a local level,
- reuse and recycle used paint and
- introduce schemes to improve the infrastructure in rural, regional and remote areas.

Final approvals are expected by mid June.

## Pilbara rich in wildlife

THE richness of the Pilbara is being revealed as work on DEC's multi-million dollar Pilbara Biological Survey reaches its final stages.

Project leader and DEC Zoologist Norm McKenzie said the five-year survey, which started in 2002, had revealed greater than expected complexity and richness in Pilbara biodiversity.

The survey results are expected to be published in a major report early next year.

"We've realised that the Pilbara is very diverse, but there's still a lot to discover if this survey is any indication," he said.

"Additional species are being recognised all the time as we work through our massive collections, particularly among lizards and invertebrates."

Norm said the field component of the survey had ended and scientists would be completing their species identifications and data compilations during the next six months.

He said the botanists had started identifying their plant collections, while zoologists had finished compiling the mammal and stygofauna data-sets.

"The bird data are now entered into the computer while biologists working on the wetland plants, reptiles, frogs, spiders, scorpions, beetles and aquatic invertebrates are well over half way through their sorting and identification processes," he said.

The survey is divided into four components – stygofauna (subterranean water creatures), surface aquatic creatures, terrestrial zoology and terrestrial botany.

The study has focused on more than 900 study sites across 180,000 sq km of the Pilbara's wetlands, rivers, grassland savannas, mountain ranges, gorges, tropical woodlands and subterranean aquifers.

Plants, birds, mammals, reptiles, frogs, spiders and other invertebrates have been sampled from more than 300 sites. Waterbirds and aquatic invertebrates have been surveyed in about 100 sites, and stygofauna has been collected from about 500 boreholes.

Norm praised people across the Department for helping with the survey.

"The project has proceeded like clockwork with staff carrying out their roles conscientiously and everyone getting behind the survey," he said.

## New books by DEC authors...



Pictured at the rare flora book launch were (back row, left to right) Lyn Phillips, Ian Smith, Sonya Thomas, Avon Catchment Council Executive Merrilyn Temby and DEC Avon Mortlock District Manager Alan Kietzmann, (front row, left to right) Shari Dougall, Wendy Johnston and Claire Hamersley. Photo – David Jolliffe

## Wongan-Ballidu rare flora

WONGAN-Ballidu locals and visitors can now access easy-to-understand information about the area's unique flora thanks to a new book *Threatened, poorly known and other flora of Wongan-Ballidu*.

The book is the product of a partnership between the Avon Catchment Council, the Wongan-Ballidu Bushcare Group, the Wongan-Ballidu Shire and DEC.

Wendy Johnston, DEC's Yilgarn Flora Conservation Officer and one of the book's authors, said the book aimed to provide information to the local community and the growing number of visitors to the area.

"The book explains the significance of the Wongan-

Ballidu flora and work that is being done to address the threats to these species and their very specific habitats," she said.

"It contains photos and descriptions about rare and priority or poorly known plants and some more common species that occur in the area."

World-renowned for its flora, the Wongan-Ballidu Shire has 1200 spectacular flora species including 22 declared rare flora species and 28 priority species.

*Threatened, poorly known and other flora of Wongan-Ballidu* can be purchased from the Wongan-Ballidu Visitors Centre (phone 9671 1973).

## Marine life washes into pages

TWO books compiled by DEC international seaweed expert John Huisman provide the most up-to-date information about Australia's algae.

John works at the WA Herbarium and is the principal author of the first volume of *Algae of Australia*. He has also written a Bush Book titled *Marine Plants of the Perth Region* with Marine Ecologist Julia Phillips and WA Herbarium curator Cheryl Parker.

The first book is published by the Canberra-based Australian Biological Resources Study and covers the Nematiales, one of the most diverse and significant orders of red algae in Australian waters.

*Algae of Australia* is a companion series to *Flora of Australia*, and will eventually document all species of marine and freshwater algae occurring in Australia, its ocean waters and island territories.

*Marine Plants of the Perth Region* covers the diverse flora found in

Perth's coastal waters.

It contains information and full-colour pictures of dozens of flora species that live in the waters of the Swan Coastal Plain – either in sandy seabeds or limestone fringing reefs.

The book is also a great tool in helping people to understand the enormous value of seaweeds in our ecosystem. Internationally, seaweeds also form the basis of multi-million dollar industries, for food, industrial and medicinal products. Similarly valuable seaweeds could also be found in WA.

The book has tips about how to collect and prepare the numerous edible species of seaweeds found in Perth's coastal waters and cast up on beaches and even includes a recipe for preparing jelly from the sea!

A sighting records table at the back of the book enables readers to keep track of the number, location and abundance of the marine flora species encountered on a beach outing—a great activity for



John Huisman. Photo – DEC

children during school holidays.

*Marine Plants of the Perth Region* is the 33rd volume to be published in DEC's award-winning Bush Book series. Other books in the series include *Birds in the Backyard*, *Bush Tucker Plants of the South-West* and *Animals of Shark Bay*.

The Bush Book series is available from DEC offices, leading bookstores, newsagents or from DEC's website <http://www.naturebase.net>. Each book's recommended retail price is \$6.50.