



biodiversity

SOUTH COAST

BIODIVERSITY

NRM news

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MESSAGE FROM
CHAIRMAN

Welcome

Welcome to the first edition of the South Coast NRM Inc. Biodiversity newsletter.

This new initiative aims to provide readers with information about some of the biodiversity projects and activities being undertaken within in our Region.

Our Region has many outstanding natural attributes that make it a place of significance on a state, national and international scale.

South Coast NRM Inc. is involved in and supports a number of projects that are developing a better understanding of our natural biodiversity. We also employ a number of officers who are responsible for a variety of projects and initiatives.

Your feedback and comment about the articles are welcome. I hope you enjoy this newsletter.

Alex Campbell
Chairman
South Coast Natural Resource
Management Inc.

Good Reasons to Maintain the Balance of Biodiversity and Development

There are billions of species on our planet, interacting with one another in many ways. These interactions among and between species are what define ecosystems. Ecosystems in turn, provide many "services" from which all these species including humans benefit.

Ecosystem services are the transformation of a set of natural assets (soil, plants and animals, air and water) into things that we value. For example, when fungi, worms and bacteria transform the raw "products" of sunlight, carbon and nitrogen into fertile soil this transformation is an ecosystem service. However, if we allow natural assets to decline, so do the benefits. Conversely, if we look after and maintain our natural assets, we will benefit from greater returns.

Some other examples of ecosystem services include;

- Pollination
- Fulfillment of people's cultural spiritual and intellectual needs
- Regulation of climate
- Insect pest control
- Maintenance and provision of genetic resources
- Maintenance and regeneration of habitat
- Provision of shade and shelter
- Prevention of soil erosion
- Maintenance of soil fertility
- Maintenance of soil health
- Maintenance of healthy waterways
- Water filtration
- Regulation of river flows and groundwater levels
- Waste absorption and breakdown

Ecosystem services are little understood and too sophisticated for us to reproduce even with the most advanced technology. Yet the important roles of these natural services are often not being recognised adequately in economic markets, government policies or land management practices.

BIODIVERSITY is the variety of all living things; the different plants, animals and micro-organisms, the genetic information they contain and the ecosystems they form. It is all the living things and the processes and interactions that connect and enable them to exist.



Biodiversity and resilience go hand-in-hand – Let’s build and protect it for the future of our land.

(W. Bradshaw)



Dieback DVD produced for Fitzgerald Biosphere Reserve

The Fitzgerald Biosphere Reserve became the centre of attention in May this year as team of enthusiastic filmmakers scrambled to take in all the beauty of the area. Their purpose was to make locals and tourists to the area more aware of one word - Dieback.

Phytophthora Dieback poses a major threat to the amazing biodiversity of the Biosphere, a rare place which is relatively free of the microscopic pathogen.

South Coast Natural Resource Management Inc. commissioned the film in response to calls from passionate local community members who have long known about the threats of the plant disease but realise the majority the community and visitors to the area don't have the full picture about Dieback.

Through footage of rolling landscapes, rivers and coastal dunes, the 11- minute production

takes in the significant environmental aspects of the area, interviews key locals and informs people about the risks of spreading dieback and what to do to stop it. The key message is “mud sticks – don't spread it”.

The film has already received an Honourable Mention at this year's Australian Video Producers Association Video Awards in Melbourne and was shown at an International Conference on Protected Area Management (MMV4) in Montecatini Terme, Italy in October 2008.

For further information about the DVD contact Paul Donovan, Phytophthora Dieback Implementation Officer at South Coast NRM Inc. on (08) 9845 8526, or email pauld@southcoastnrm.com.au, or visit www.dieback.net.au.

WHERE HAVE OUR WOODLANDS GONE?

Grassy woodlands once occurred right throughout inland Australia.

Since 1750, the extent of Yate, Wandoo and Salmon Gum woodlands in south-west Western Australia has decreased by more than half.

The woodlands were home to thousands of plants and animals, all having particular roles in capturing solar energy, water and in recycling nutrients. The woodlands supported a diversity of grazing and browsing mammals including bettongs, wallabies, native rodents and bandicoots. Aboriginal people influenced the functioning of woodlands through food gathering and the use of fire.

The main reduction in the woodlands

commenced in the mid-1800s, with sheep and cattle being introduced as the main grazing animals. With the increase in livestock numbers has come the introduction of fencing, tree clearing, predator control, permanent water supplies and fire suppression. Invasive species such as rabbits have also had a significant impact. The woodlands have continued to be modified by intensive management including phosphorus fertilisation, cultivation and plant introductions.

Now much of what remains in uncultivated areas is 'native pasture' where some perennial native species persist alongside introduced grasses, legumes and broad-leaved weeds. Trees are often absent or

present as scattered paddock trees.

However many of the original woodland species have not tolerated or been able to adapt to these changes.

Habitat loss, soil erosion, secondary salinisation and exacerbated soil acidity are outcomes of both changes in management and the ensuing loss of native species.

If we fail to accommodate the needs of remaining native plant and animal species, we risk further loss of the eco-services they provide.

To find out more contact the Woodland Watch group www.wwf.org.au/ourwork/land/woodlandwatch or contact your local Land Care Office.

The Diverse Fungi of the South Coast

During 2006 and 2007 local mycologist Katrina Syme conducted a survey of the fungi in the South Coast Region, as part of the South Coast NRM Inc. funded Biodiversity Inventory Program.

The number of species of fungi that occur in the Region is unknown, though it is estimated that less than 50 per cent of macrofungi species have been discovered or named.

Fungi are an essential, though undervalued, part of healthy functioning ecosystems. It plays a significant roles in the decomposition of organic matter and distribution of nutrients. Fungi are also an important food source for many native animals and invertebrates, including the critically endangered Gilbert's Potoroo (*Potorous gilbertii*).

During the survey, Katrina has recorded at least 622 distinguishable fungal species across the South Coast region, over 70 per cent of which have not been formally named. This has increased the number of species known for the region by more than 40 per cent.

However, as so little is known about fungi and their ecological importance, Katrina's survey is just a start. There is still an urgent need for more, on-going surveys in order to increase our understanding of the distribution, diversity and ecological significance of fungi in the South Coast.

If you want to know more about fungi or the Biodiversity Inventory Program contact South Coast NRM Inc. Biodiversity Theme Facilitator.



Healthy Landscape Challenges

By Wendy Bradshaw, Greening Australia WA

A recent three year study on the value of paddock trees and small remnants of native vegetation has shown that they play a critical role in maintaining the viability of native seeds. They do this by allowing gene flow across the landscape and acting as stepping stones for the movement of pollinators. This highlights the importance of the need to maximising connectivity between remnants of bushland.

Inadequate gene flow – together with other landscape stresses such as exposure to weather extremes, weed invasion, soil and spray drift and fire, threatens the long term survival of even common plant species in small remnants.

Studies of two common species of south-western Australia – Wandoo (*Eucalyptus wandoo*) and One-sided bottlebrush (*Calothamnus quadrifidus*) were undertaken by geneticists to determine the impacts of isolation on their genetic viability. Wandoo is predominantly pollinated by insects, and One-sided bottlebrushes by honeyeaters.

In all populations of Wandoo observed, its pollen was found up to 1km and further from its parent. This is comparable with historical estimations prior to land clearing which calculate that up to 65% of wandoo pollen came from trees further than 1km away.

Long distance pollen dispersal was observed in all One-sided bottlebrush remnants, with up to 43% of pollen sourced from plants up to 5 km away (demonstrating the high mobility of honeyeaters!).

The results also showed a significant decrease in seed set in plants as the population size for both species decreased. They also showed that of pollen from other remnants is maintaining the genetic fitness of native plant seeds produced in small remnants.

The upshot of this is that reduced seed set indicates an increase of in-breeding in small populations and declines in seed production that may reduce the ability of populations to replace themselves.

This work highlights the high conservation value of isolated paddock trees and our remaining patches of native remnant vegetation. It shows that they are critical as stepping stones for wildlife as well as pollen sources for their own species, and that there is a strong argument for the prioritisation of revegetation programs to re-establish and protect vegetation linkages.

Broad recommendations applicable to maintaining the ecological and genetic viability of remnant vegetation based on this and other related studies are:

1. Maintain populations larger than 100-200 reproductive plants where possible
2. Minimise isolation between populations
3. Populations should be managed on the landscape level rather than as a series of populations independent of other vegetation in the area
4. High quality seed sources for restoration work should be collected from large populations as these will provide genetically diverse seed that will generate higher quality revegetation sites. When this is not possible, smaller populations should be combined to ensure that the newly restored populations have high genetic diversity to limit inbreeding effects as plants become reproductive.

For more information about this study, contact Wendy Bradshaw at Greening Australia WA on (08) 9825 3092.

References: Byrne, M, Yates, C, Elliott, C, Sampson, J & Coates, D 2007, 'Impact of fragmentation on reproductive biology, mating system and pollen dispersal in two plant species from Mediterranean south-western Australia' in MedEcos X1 Conference Proceedings, Ed. by D. Rokich, G. Wardell-Johnson, C. Yates, J. Stevens, K. Dixon, R. McLellan & G. Moss, Perth, Western Australia, 2-5 September, 2007.

Broadhurst, L 2007, Managing genetic diversity in remnant vegetation, Australian Government, Land & Water Australia, Canberra, Technical Note 01/2007. More detail on research project available online: <http://www.lwa.gov.au/nativevegetation/>



Paddock trees are vital stepping stones for the movement of pollen and pollinators



One-sided bottlebrush blossom, which is predominantly pollinated by honeyeaters and sometimes by honey possums



RESILIENCE is the ability of the landscape to recover or bounce back from disturbance such as drought, flood, disease, plague and frosts.



Students launch new Dieback awareness strategy

Students from Our Lady Star of the Sea and Esperance Primary School helped launch a new dieback awareness raising program being run by South Coast Natural Resource Management Inc.

The students gave rousing presentations on dieback and global warming at the beautiful Lake Monjingup Reserve.

Their performances came after months of educational sessions with South Coast NRM Inc. project officer, Robyn Cail. In a project funded by South Coast NRM Inc., officers have been visiting the schools and taking the students on excursions to iconic biodiversity rich locations in the Esperance region.

The signage launch was held to raise awareness of dieback which is seen as one of nature's biggest threats to biodiversity. It is hoped that the signs will help people to understand where dieback is so they can protect areas that aren't infested.

South Coast NRM Inc. Dieback officer, Annabelle Bushell said the signs will be rolled out through the region as data is collected to understand the status of the disease in different locations. The integrated system has been endorsed for all lands.

The signs will state that an area is either: dieback free; dieback infested; or dieback unknown.

In launching the project, Garry English (former South Coast NRM Inc. Chairman) told the children that humans are the greatest culprit for spreading Phytophthora Dieback. He said it was up to them – the next generation – to be aware of the disease and help to continue to ensure it didn't spread any further.

He said many people were unaware that they could be carrying the soil-borne pathogen into dieback free places.

The disease can be transported in many ways, often by mud on shoes or vehicles, shifting infested soil or gravel, and vehicular grading of roads or moving infected plant material.

Management includes thorough cleaning of vehicles before visiting uninfested or unknown areas as well as seasonal restriction on access to areas.

For more information you can phone Robyn Cail or Annabelle Bushell on (08) 90717685

Breeding season for Carnaby's Black Cockatoo

It's that time of year, the birds and the bees are doing their thing and Carnaby's Black-Cockatoo are no exception.

The Carnaby's Black-Cockatoo Recovery Project is well into its second year on the South Coast and this breeding season, we are busy monitoring nesting sites that were identified last year and exploring for un-recorded sites.

Currently we have a good spread of nesting sites across most of the Region, and this is important, as each site is unique and faces subtly different pressures.

The three most common pressures are;

- competition for hollows by species such as Pink and Grey Galahs and Feral Bees, both of which will displace a nesting cockatoo and kill its chick.
- Degradation of Wandoo and Salmon Gum woodlands, especially a problem as nesting trees take 200 years to develop a suitably sized hollow.
- The reduction of foraging sites within close proximity to nest sites – these are crucial as the male is the sole food provider for the hen and chick. If food supply is limited, chicks will leave the hollow underweight and survival is unlikely.

It may sound like a pretty grim situation but we can help these beautiful birds that are unique to the south west of Western Australia. If you see Carnaby's Black-Cockatoo, would like more information on the species or find out how you can help, please contact Raana Scott, 0427 707 047 or r.scott@birdsaustralia.com.au



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