AUSTRALIAN Wildlife

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Nyirripi Easter bilby trip

Urgent need for river red gum national parks

The Natural History Society of South Australia

Saving the Northern hairy-nosed wombat

Cover photo: Adult diamond python (morelia spilota spilota)
Photo supplied by Nick Edards

The forests and wetlands along the Murray River and its tributaries need to be managed for conservation by creating national parks to protect these iconic wetland forests

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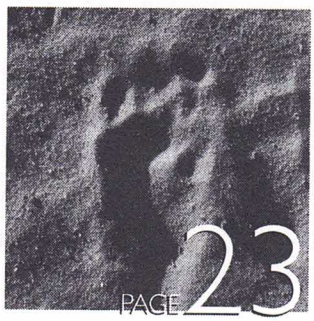

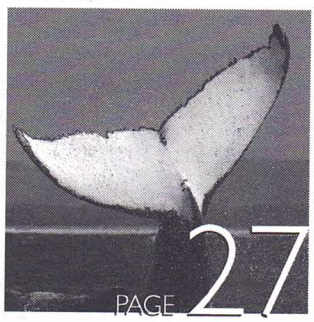

WILDLIFE PRESERVATION SOCIETY AUSTRALIA

Celebrating our centenary
1909 - 2009

'AUSTRALIAN WILDLIFE'

is the official journal of the
Wildlife Preservation Society of Australia Limited

Founded in 1909, the Society is dedicated to the conservation of our unique Australian Wildlife in all its forms.

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COUNCILLORS 2008

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All articles are written by Suzanne Medway unless stated otherwise. Articles and comments expressed in this magazine do not necessarily reflect the opinions of the Editor, Society or members. Articles contributed from outside sources are included for the reading enjoyment of members and to encourage discussion on different points of view.

From the President's Desk...

Progress on ECOWORLD Gardens

The Executive Committee of the Society has now taken over the important work of processing this major conservation project through to completion in time for our Centenary in 2009. We will be publishing an overview shortly in the Spring edition of our magazine for members to read about the project and the progress being made to establish a new wetland environmental education and climate change centre in the Rockdale wetlands in Sydney.

National Goals for Conservation by 2020

Following the recent 2020 Summit in Canberra, our Vice President Dr Clive Williams has given some serious thought to a submission from the Society to this forum. Clive has suggested.... "Given that Australia is a land where environmental health and land use is governed by water supply, the aims of wildlife conservation cannot be separated from and must be integrated with plans for land management generally."

The Wildlife Preservation Society of Australia is willing to participate in any committees or panels set up by the government in order to achieve the conservation of Australia's precious fauna and flora. It is also willing to make specific submissions on request and offer advice from its scientific panel.

Centenary program

The Centenary Committee is now finalising the details of the 2009 Century program for submission to the Council for final approval. We hope to involve every member of the Society across Australia in the 2009 Centenary celebrations. There is still an opportunity for any member who has an idea they would like the Committee to consider to submit the details to the National Office for consideration.

National Vertebrate Pests Conference

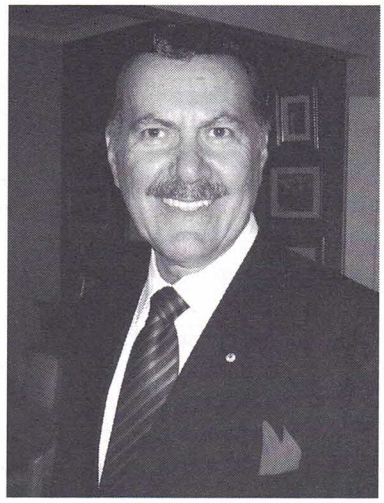
I recently attended the 14th National Conference in Darwin and was very impressed with what is being done to remove feral pests from the country. The damage being done to our native wildlife by feral pigs, goats, cats, wild dogs and a host of other introduced pests over the last two hundred years is really very tragic and horrifying to see. Much work is being done and large sums of money being spent to reduce the impact of feral animals on our wildlife but much more still needs to be done.

Our Society had a display table at the Conference to show our range of publications and literature on wildlife preservation and to answer questions about the conservation work of the Society.

Several members from across Australia attended this conference and gave papers relevant to their studies associated with feral animals.

Cane Toads and Feral Cat Seminar

A special cane toad and feral cat seminar was also held in Darwin in conjunction with the major pests conference and experts outlined much of the scientific work currently being undertaken to remove and reduce the impact of the feral cat on our environment. Our Society is fully committed to the preservation of native wildlife and its vital habitat and the removal of feral animals is of major concern to our members. Hopefully more funds will continue to be allocated to reduce the threat of feral animals on native wildlife and we can move to save those vulnerable species that suffer from predation by feral animals.



Patrick W Medway AM
NATIONAL PRESIDENT

Nyirripi Easter bilby trip

by Rachel Paltridge, Desert Wildlife Services

In 2007 the Wildlife Preservation Society of Australia in partnership with "Bilby and Friends Enterprises" donated $1,000 to Desert Wildlife Services for the purpose of bilby conservation in central Australia. It was agreed that this first instalment of funding would be used to conduct a bilby survey to identify a suitable bilby population to focus recovery efforts upon. The study area selected for the survey was an area of the Great Sandy Desert around Nyirripi Community which is located about four hundred kilometres west-north-west of Alice Springs. Previously, a number of active bilby burrows were found in this area between 2001 and 2003. At that time the Nyirripi area was perceived to be the southern edge of bilby distribution within the Northern Territory.

The WPSA-funded bilby survey commenced on 22 March 2008, Easter Saturday. We were hoping to find a real Easter bilby, or at least its tracks. Mitjili Gibson, a highly experienced bilby tracker, her daughter Cindy, grand-daughter and Land Management student Jessie Bartlett and four of Mitjili's other granddaughters accompanied me and my two children on the expedition.

We decided to camp at Ninyirripilangu Outstation, a further one hundred kilometres north of Nyirripi as several of the recent bilby records (in 2002) were in close proximity to this outstation, owned by Alice Henwood. Approximately fifty people from Nyirripi were also camped at Nyinyirripilangu over Easter for a special weekend of bush church. The ladies were happy to help us look for bilbies during the day, spending the evenings singing Warlpiri gospel songs.

The survey method involved searching plots approximately one hundred metres by two hundred metres for tracks, scats, diggings and burrows. Plots were generally separated by a minimum of four kilometres and included both randomly selected sites and sites where Traditional Owners had previously observed bilby sign. A total of sixteen sites were surveyed in the vicinity of Ninyirripilangu over the Easter weekend, and a further fourteen sites were surveyed by the Central Land Council and other Traditional Owners closer to Nyirripi during the following week.

Unfortunately, the results were very disappointing. No recent bilby sign was observed, and all four areas where old bilby sign was detected dated back to the 2002-03 period. Despite local people regularly hunting and travelling through the area between Nyirripi and Nyinyirripilangu, since that time it appears that no-one has observed active bilby sign in this region for a number of years. Previous field work between Nyinyirripilangu and Lake Mackay in recent years also failed to detect any sign of bilbies. We are now considering the possibility that the bilby has gone extinct in this region and the southern edge of bilby distribution within the Northern Territory may now be at the Sangsters Bore latitude, a contraction to the north of as much as two hundred kilometres in the past five years. Of course we have not thoroughly searched this entire area but, when habitat type and fire history are taken into account, it seems unlikely that there would be any refuge areas for bilbies between Nyirripi and Sangsters Bore.

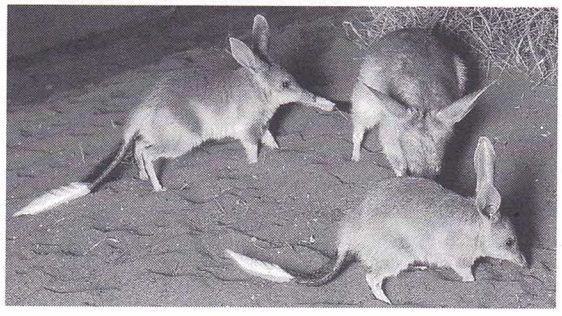
Cindy (Mitjili's daughter) and Rachel Paltridge with a bilby captured (and subsequently released) in Western Australia in 2000

Bilbies had been sparse in the Nyirripi area for a number of years but what changes have occurred in the past decade that may have caused their disappearance altogether? We are unsure of the exact reason for their demise, but it is possible that exceptionally good seasonal conditions between 2000 and 2002 actually disadvantaged the bilby. Extremely high rainfall in central Australia in the early 2000s produced a population explosion of small mammals that led to increased densities of cats and foxes. When the small mammal populations crashed there would have been an abundance of hungry predators seeking alternative prey (including bilbies). The other consequence of significant rainfall events in the spinifex deserts is a massive increase in fuel loads leading to a prevalence of wildfires that burn vast areas of country, making animals like the bilby even more vulnerable to predation. In today's modified landscape of introduced predators and reduced

patch-burning activities by Aboriginal people, it may be that the "boom" times following good rainfall are actually the most dangerous periods for threatened species such as the bilby.

The aim of the Nyirripi Easter bilby survey was to locate a population of bilbies at the southern extent of their range, to protect from the impacts of fire and predation. Unfortunately it appears that we were several years too late to initiate a bilby conservation project in the Nyirripi region. One day we may be able to assist in the reintroduction of bilbies to this area if we can develop appropriate methods of predator control and broadscale fire management, but at this stage we will have to look elsewhere for an existing population of bilbies to direct our conservation efforts. Although the desired result of this survey was not achieved, the donation of funds from the Wildlife Preservation Society of Australia and Bilby and Friends Enterprises has contributed to an important finding for the conservation of the greater bilby: that bilby distribution in the Northern Territory is continuing to shrink from the south at a significant rate.

Stop press: Since the bilby survey was conducted in March, Aboriginal tracking experts from the Nyirripi area have continued to search for bilby sign in the area. We are happy to report that on 8 May we were informed that fresh footprints of a pair of bilbies had been located north of the Nyinyirripilangu Outstation. We are hoping that the local people will be able to keep monitoring this site to determine whether the animals remain in the area or were just passing through.



Conserving wild populations of the greater bilby

At the National Bilby Recovery Team meeting held in Alice Springs on 3 April 2008, it became apparent that while there are currently considerable resources being directed towards the reintroduction of bilbies to predator-proof exclosures within areas of former habitat, there is little effort going into halting the demise of extant wild populations.

Prior to European settlement the greater bilby occurred across seventy percent of the Australian continent. It is now patchily distributed across less than one fifth of its former range. Most of its current distribution occurs in the least favourable and productive parts of its former range, in areas too arid or infertile for agricultural and pastoral development to have taken place. However the small area of bilby distribution that occurs in south-west Queensland includes areas of pastoral land. Fortunately a significant area of the bilby's habitat in the Channel Country is now protected within Astrebla Downs National Park.

Although impacts of introduced herbivores (including both habitat degradation and competition for food and burrows) have undoubtedly contributed to the disappearance of bilbies from many parts of Australia, the major threat to currently existing wild bilby populations is believed to be predation. The fox is probably their most significant predator, but predation by feral cats and dingoes can also be an issue in some areas. In the Northern Territory the presence of stable dingo packs is thought to be more of an advantage than a threat to bilby colonies, as dingoes are a significant predator of cats and can also play a role in excluding foxes from areas. The dingo is also a species of cultural importance to many Aboriginal people. The challenge is thus to develop a predator control program that does not affect dingo populations.

To address this issue the Northern Territory Department of Natural Resources, Environment and The Arts have developed a fox specific baiting device which is currently being trialled around a core population of bilbies in the Tanami Desert by the Central Land Council's Warlpiri Ranger Program. An expansion of the trials to include a second bilby population is planned for the winter of 2008.

Rachel Paltridge holding a bilby captured for a radio-tracking exercise near a gold mine in the Northern Territory in 2002

Indigenous Rangers have also commenced a bilby monitoring program in the Northern Territory revisiting sites known to have been occupied by bilbies five to ten years ago, as well as some new areas that have not been previously formally surveyed.

Funds donated by the Wildlife Preservation Society of Australia have supported one of these surveys, contributing to the finding that the distribution of the bilby within the Northern Territory is continuing to shrink, with a range contraction from the south of up to two hundred kilometres in the past five years. Fortunately there have been increased reports of bilby sign from the eastern edge of their distribution within the Northern Territory. A survey will be conducted later this year to determine the status of the bilby along the northern edge of its distribution. It is difficult to ascertain what's happening in remote and largely inaccessible central parts of its Northern Territory distribution, but the situation is not looking good given the vast wildfires that occurred across the Tanami Desert in September-October 2007. Over forty percent of the Tanami region burnt last year, encompassing 75,000 square kilometres of potential bilby habitat.

At an appropriate scale, fire is beneficial to bilbies as it promotes the germination of seed-producing plants that provide important food for bilbies. But large hot fires that remove all standing vegetation across vast areas of country dramatically increase the vulnerability of bilbies to predation by cats, foxes and dingoes. This highlights the importance of patch-burning to create a mosaic of vegetation in various stages of recovery from fire – freshly burnt patches will not only have increased food resources for a range of species (including the bilby), but will also function as fire breaks that stop the passage of wildfires, leaving other older patches of vegetation that can provide refuge from predators. Patch-burning is still successfully implemented around many Aboriginal communities and appears to be contributing to the persistence of bilby colonies close to a number of communities in Western Australia but broadscale fire management in more remote regions is also critically important in the preservation of wild bilby populations.

Monitoring programs in the Northern Territory and Queensland are now giving us some idea about the status of wild bilby populations in these areas, but there is still little information on the trends in abundance and distribution in Western Australia. Bilbies are believed to occur across a large area of inland Western Australia, but populations are likely to be extremely fragmented within the overall range. There is every chance that the decline from the south that has been witnessed in the Northern Territory is also occurring in adjacent parts of Western Australia.

Establishing a monitoring program in Western Australia, particularly at the southern edge of the range of the bilby was identified as a priority at the 2008 Bilby Recovery Team Meeting. Development of a national standardised track-based monitoring system was also considered a priority at the meeting, which could be rolled out across the sandy deserts of inland Australia to obtain a snapshot of the current status of a range of arid zone species.

A robust monitoring program is clearly the first step towards the recovery of the greater bilby; however we must do more than just document their continued decline. Innovative solutions that integrate traditional Indigenous land management techniques with contemporary scientific knowledge and technology are required to manage predators and fire at the landscape scale. While fenced exclosures are an important safeguard against the extinction of the bilby, there is still so much more that can be done to protect wild populations of this iconic species.

The only bilby found by expert bilby tracker Mitjili Gibson (pictured with her daughter Cindy) during a recent survey four hundred kilometres north-west of Alice Springs was a chocolate bilby

The Australian Network for Plant Conservation Conference

by Dr David Murray, Vice President

This Conference was held at the Winbourne Retreat and Conference Centre at Mulgoa, near Penrith. The title was: "Our Declining Flora – Tackling the Threats". More than fifty papers were presented as talks; in addition there were posters and field trips.

Some of the major threats that were addressed were climate change, weeds, fire and the soil disease *Phytophthora cinnamomi* (cinnamon fungus). I should say at once that many speakers were at pains to point out the link between plants as habitat and fauna. Without suitable habitat, fauna will also fail to survive, and that is why WPSA continues to support the ANPC.

Considering climate change first, the keynote speaker Professor Lesley Hughes pointed out the difficulties for flora and fauna migrating as climate changed. As average temperatures increase in Australia, many species will be driven to move southwards or upwards in elevation. Some of the more mobile species such as birds and some marine taxa will be able to adapt in this way. However, those without good dispersal mechanisms, or that are in very restricted habitats such as the alpine zone will be very vulnerable. Climate change poses a serious threat to our already threatened biodiversity and has the potential to change Australia's natural ecosystems profoundly.

Professor Hughes also pointed out the effects of elevated atmospheric carbon dioxide concentration on plants, stating clearly that the extra carbon dioxide would not necessarily result in increased productivity, because of other limiting factors, such as nutrient or water availability. She noted the decreased ratio of nitrogen to carbon in leaves, with its obvious implications for the nutrition and reproductive success of herbivores. It is refreshing to find someone talking about these problems other than myself (see Dr Murray, *Carbon Dioxide and Plant Responses*, Research Studies Press, 1996).

Professor Hughes instanced the decreased ratio of nitrogen to carbon in leaves that results from extra fixation of carbon dioxide. It is well known that plant-eating insects already select the more nutritious parts of plants to ensure reproductive success. How will this general reduction in leaf nitrogen content affect the abundance of the native insects that serve as pollinators for plants, and food sources for birds? Further to changes in leaf composition, there will also be changes in seed composition.

In 1992 I predicted that terrestrial cereals would behave like seagrasses, which photosynthesize normally with an internal leaf atmosphere containing 1,000 ppm carbon dioxide. As a consequence, their seed protein stores are very low. Not only will the seed protein content of cereal grains decline as atmospheric carbon dioxide increases, but the high quality proteins will be sacrificed. This comes about because the assimilation of sulfur from sulfate ions requires large inputs of photosynthetic reducing potential and energy. As more of these resources are devoted to extra carbon dioxide, less are available for sulfur and nitrogen assimilation.

Cereal grains like wheat will lose the high quality sulfur-rich gliadin proteins first. Apart from this nutritional deficiency, doughs will lose their elasticity, so that breads will not rise. Similarly, legume seeds will replace their sulfur-rich albumins and legumin proteins with types of protein that lack sulfur-amino acids. We know this because when deprived of sulfur, pea plants produce seeds with increased contents of a form of vicilin that is totally devoid of sulfur-amino acids. This was shown by members of CSIRO Plant Industry in 1990.

Professor Hughes also mentioned changes in plant 'architecture', which as far as trees are concerned, means a decreased contribution of assimilates to the root system, with more to the trunk and branches. This weakening of the root system means that it will be more difficult for trees to survive to maturity in future, as they succumb to more frequent extreme weather events. Leaves may alter their distribution of tissues in favour of fibrous or hard cell types, again making some grasses problematic as food sources for herbivores. Dr Claudia Tipping demonstrated this for several species of *Panicum* in 1997. She also observed increased wax deposition on leaf surfaces as a response to 900 ppm carbon dioxide.

Further details of the consequences of elevated carbon dioxide for plants, animals and humans are discussed in my book *Carbon Dioxide and Plant Responses* (Research Studies Press, 1996) and also in the feature article *Growth of Weeds under Elevated Atmospheric Carbon Dioxide Concentrations*, by Claudia Tipping and David Murray, in the newsletter of The Weed Society, *A Good Weed*, issue 11, pages 4-6, October 1997.

One of the major threats against biodiversity in Australia is the cinnamon fungus, *Phytophthora cinnamomi*. Infection of native plants by this organism has been listed as a Key Threatening Process on Schedule 3 of the NSW Government's Threatened Species Act 1995 and under the Australian Government's Environmental Protection and Biodiversity Conservation Act 1999.

This 'dieback' disease was first recognised in Australia in 1920, and probably originated in south-east Asia, as it has also been identified in Malaysia and Papua New Guinea. The first affected tree species was jarrah (*Eucalytus marginata*). I well remember being shown the devastation of the dieback in a jarrah forest south of Perth in January 1982, by Professor John Pate, whom I was visiting. *Banksia marginata* is particularly at risk, but according to David Coates, so are forty percent (approximately) of all native plant species in the south west of Western Australia. Already some of these species are critically endangered; with *ex situ* seed storage and "translocation" to establish populations elsewhere the only options preventing extinction. Tom North explained how seed collection and storage had received an enormous boost thanks to the support of the Millennium Seed Bank Project at Kew.

Phytophthora spreads with groundwater. Mobile 'zoospores' infect the roots of susceptible plants. The fungus then penetrates the vascular (food conducting) tissues, and promotes root rot. Death of the upper parts of the plant follows. Yes, there are new chemical remedies, such as phosphite and phosphonate, but hygiene is extremely important as a precautionary measure (details below). Phosphite is selective in its action, and does not kill mycorrhizal fungi that normally associate with plant roots.

Chris Dunne presented two papers on the occurrence of *Phytophthora* in Western Australia. Complementing David Coates' presentation, he argued that this disease was 'the greatest threat' to biodiversity in Western Australia. Clearly if forty percent of species are susceptible, then surviving plants represent only sixty percent of the original species list, and the loss of so many species from an infected area will have a serious impact on fauna. One of Chris Dunne's papers dealt with the occurrence of a 185-hectare infestation within a national park, the Fitzgerald River National Park. Confinement of the infected area involves the use of root impermeable membranes as a boundary, use of the chemical phosphite, and revegetation with resistant plant species.

One peculiarity of the disease is that its severity is less in the eastern states of Australia compared to Western Australia. It is not yet clear whether there are distinct strains of the fungus, or whether eastern Australian plants are intrinsically more resistant. Linda Bell presented a paper on plans for tackling *Phytophthora* in NSW. In this she observed that *Phytophthora* will move southwards with anticipated climate change. Everything is related to everything else! Therese Suddaby noted that *Phytophthora* is 'widespread in highly visited areas' within the Sydney and Hawkesbury-Nepean catchments. Tony Auld advised us that it has even been brought to the habitat of the Wollemi pine! Dianne Brown described a very small outbreak on Lord Howe Island, which can hopefully be contained and even exterminated.

Clearly basic hygiene, preventing the transfer of infected soil on shoes, boots or tyres, has not been enforced early enough, despite what we knew in the 1980s (see The Biology of *Phytophthora cinnamomi* in Australasian Forests, by Gretna Weste and GC Marks, *Annual Review of Phytopathology* Vol. 25, pages 207-229, 1987). Individuals should adopt the following precautions after walking or working in bushland: remove soil or mud from footwear, trowels, spades, or secateurs by physical methods (eg a brush), then spray with eighty percent methylated spirits or absolute ethanol and wipe clean. After changing clothes, isolate those removed and wash them thoroughly. For further advice, contact the Plant Pathology Unit at the Royal Botanic Gardens, Sydney – telephone (02) 9231 8186 or e-mail pddu@rbgsyd.nsw.gov.au

Without exception, the speakers on this topic were optimistic about prospects for containment of *Phytophthora*. As with everything worthwhile, it will take hard work, intelligence, and financial resources. Death to dieback!

Central North Wildlife Care & Rescue Inc.

Central North Wildlife Care & Rescue Inc is a group of self-funded volunteers who work to rescue, raise and rehabilitate injured and orphaned Tasmanian native wildlife in accordance with government regulations as set out under the Nature Conservation Act 2002. The group is committed to raising awareness in both local and global communities about Tasmania's very special wildlife and the problems that are threatening their existence.

Australia is home to many animal species that are completely unique in the world. Since the introduction of rabbits, cats, dogs and foxes by early European settlers, many indigenous species that were once common have been driven close to extinction.

However, because of its isolation from the Australian mainland, the state of Tasmania with its surrounding islands has provided a safe haven for these species until relatively recently. Now, their

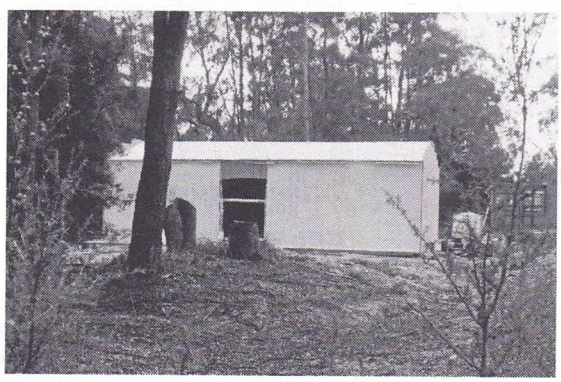
survival is under serious threat, not only from introduced exotic species such as cats and foxes, but also from the clearing of natural habitat and human activity.

Many people consider the care of native wildlife to be mostly carried out by dedicated volunteers who take injured and orphaned animals into their own homes and rehabilitate them back to the wild. Whilst this is certainly true, Central North Wildlife Care & Rescue also believes that the wider community has a very significant role to play in caring for the wildlife that they find in their own backyards and local reserves.

Whilst there is great satisfaction in caring for an animal and getting it back to the wild, each one of us should be asking how that animal came to be in care in the first place. Most animals get into trouble because they have come (sometimes literally) into contact with humans and their activities, which include predation by domestic pets, shooting, car accidents, hung up on barbed wire, electrocuted, poisoned and loss of habitat, etc.

Australia has the dubious distinction of being one of the top four countries that is losing unprecedented numbers of species. Our unique and marvellous plants, insects and animals are part of our heritage, but are also our legacy to future generations. Sadly, many of them will silently disappear before anyone has barely had a chance to know they even existed.

If each of us made a commitment to support wildlife by maintaining bushland, growing indigenous plants in our gardens, keeping weeds under control, and not allowing pets to roam, many species would be able to live happily alongside us, and bring much joy to our lives.



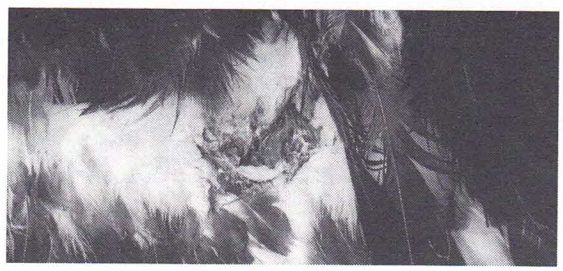
Rescue Centre, Forthside – doors and windows to be added

Donation by our Society

Fund raising is a time consuming exercise and takes valuable resources and effort away from the core business of saving wildlife. To help Central North Wildlife Care and Rescue continue in their rescue work, our Society donated funds towards the cost of materials to build a rescue centre.

The proposed Wildlife Rescue Centre is being built at Forthside, on a ninety acre Land for Wildlife property only ten minutes from Devonport. Threatened species live on the property including devils, quolls, masked owls, and white goshawks. Wedge-tailed eagles and sea eagles regularly overfly the area which is part of an extensive bush corridor running from Kelcie Tier, through the Devonport Arboretum and an adjoining Crown Forest Reserve. The community based Wildlife Rescue Centre will be a first for the northwest, (and possibly for Tasmania) and will do much to raise awareness about our unique wildlife, as well as provide an effective response to the suffering of native animals from human impact such as roadkill, shooting, domestic pet attack and poisoning. The Centre will also be available as a field centre for conservation based groups who will be welcome to explore the property and study their particular interest. Hopefully, with its disabled access and close proximity to Devonport, groups will come to visit, learn and assist in the work to save and care for native flora and fauna.

Wedge-tailed eagle with electrocution burns. He improved very quickly. Three wild eagles would fly in every day to look at him. The wedge-tailed eagle is Australia's largest living bird of prey and one of the largest eagles in the world



The burn on the wedge-tailed eagle's wing healed very quickly after being treated in "care"

Urgent need for River Red Gum National Parks

by Carmel Flint and Bev Smiles, Western Program Manager, National Parks Association

The river red gum wetlands of south-west NSW and north-west Victoria are the largest remnants of vegetation in some of the most heavily cleared and degraded landscapes in Australia.

They have international conservation significance due to the outstanding wetland habitats they provide and their importance to the healthy functioning of the largest and most heavily utilised river system in Australia – the Murray-Darling. They include the largest river red gum forest left in the world, the Barmah-Millewa forest, which covers an area of approximately 60,000 hectares on either side of the Murray River south-east of Deniliquin.

Unfortunately, the Murray River is a state border with different institutional and management arrangements on either bank. While the ecosystems and traditional owners recognise these significant areas as a single entity, state governance separates them.

The Victorian Government has conducted an assessment of the river red gum wetland forests on the southern side of the Murray through the independent Victorian Environmental Assessment Council.

The Council has recommended that 100,000 hectares of wetland forest be protected in new reserves. The Victorian Government decision on this recommendation is expected to be announced before the end of the year.
Meanwhile the NSW Government has refused to conduct an assessment of the river red gum wetland forests on the northern side of the Murray River.

The Riverina bioregion has been recognised by both the National Land and Water Resources Audit and the National Reserve System report as one of the highest priority bioregions for consolidating the protected area system in Australia (NHT 2002, NRS 2005).

National Parks Association of NSW has presented a proposal to the NSW Government and lobbied for a rapid assessment of the areas so that a consistent decision can be made to protect the wetland forests that span the Murray.

Conservation values

Forests in south-western NSW include 172,000 hectares of high conservation value river red gum forests. This includes:

- The NSW portion of the two largest stands of river red gum left in the world
- 84,000 hectares of internationally significant wetlands
- Known or likely habitat for ten endangered and thirty six vulnerable fauna species
- Known or likely habitat for twelve endangered and eleven vulnerable flora species
- Nineteen migratory birds listed for protection under international agreements
- Numerous sites of cultural heritage significance and social importance to indigenous nations.

Wetlands of national and international significance

- Forty four percent of red gum state forests in the region are listed as wetlands of international significance under the RAMSAR convention, and nationally important wetlands on the Directory of Important Wetlands of Australia
- Red gum state forests provide major and important breeding sites for waterbirds
- Nineteen migratory birds listed for protection under international agreements with Japan and China have been recorded in or adjacent to these forests
- It is estimated that fifty percent of wetlands in Australia have been destroyed in the last two hundred years, many more are severely modified, and fifty percent of Australia's inland waterbirds are listed under various legislation as threatened (NHT 2002).

The Federal Government has legal responsibilities under the Environment Protection and Biodiversity Conservation Act 1999 to protect these significant values.

Conservation values of the red gum wetland forests

The river red gum forests of south-western NSW are located largely on the mid-Murray, between Deniliquin and Swan Hill, but also extend west along the Murray to Lake Victoria and include important areas along the Murrumbidgee near Narrandera and scattered areas north along the Lachlan to Lake Cargelligo.

Millewa Group

The Millewa Group consists of 42,340 hectares situated on the broad floodplain of the Murray River that forms part of the Riverina plains. Some 33,636 hectares are listed on the Register of the National Estate, the RAMSAR list of wetlands of international importance and the Directory of Important Wetlands of Australia. The area is contiguous with Victoria's Barmah Forest (23,500 hectares) and together they represent the largest river red gum forest left in the world.

This group supports three plant communities which are considered vulnerable and poorly reserved in NSW (grey box, yellow box and river red gum communities) and three communities which are considered poorly reserved (black box, common reed and spiny mudgrass).

A large old red gum in Moira State Forest Flora Reserve (part of Millewa SF). Taken in Feb 2008 by Georgina Woods NPA

Millewa is an area of outstanding cultural significance and contains a very high number of Aboriginal sites including occupation sites, burial grounds, scar trees where canoes or shields have been cut, shell middens and mound sites on most sand ridges within the area (Australian Heritage Commission, 1998).

Four endangered and twenty-four vulnerable fauna species have been recorded in or adjacent to these forests – the endangered plains wanderer, bush stone-curlew, regent honeyeater and swift parrot and the vulnerable Australasian bittern, barking owl, black-chinned honeyeater, blue-billed duck, brolga, brush-tailed phascogale, chestnut quail-thrush, diamond firetail, freckled duck, Gilbert's whistler, greater long-eared bat, grey-crowned babbler, hooded robin, koala, Major Mitchell's cockatoo, painted honeyeater, painted snipe, speckled warbler, square-tailed kite, squirrel glider, superb parrot and turquoise parrot. There are also historical records of the endangered kultarr and now extinct Northern hairy-nosed wombat and brush-tailed rock wallaby in the vicinity. Notable fish species include the declining Murray cod and the threatened Macquarie perch.

The outstanding importance of these wetlands to waterbirds is highlighted by the fact that a total of thirteen migratory birds listed for protection on international agreements have also been recorded - Caspian tern, cattle egret, common greenshank, fork-tailed swift, glossy ibis, great egret, Latham's snipe, marsh sandpiper, painted snipe, sharp-tailed sandpiper, whimbrel, white-bellied sea-eagle and white-throated needletail. When flooded, the forests provide breeding habitat for a large number of waterbirds of many species.

One endangered plant, three vulnerable and eight regionally significant plants have also been recorded – the endangered sclerolaena napiformis and the vulnerable amphibromus fluitans, slender darling pea and swainsona sericea.

Other river red gum wetland forest groups in NSW with similar high conservation values include:

Barking owl

Werai Group

The group consists of 12,062 hectares on the floodplain of the Edward River, an anabranch of the Murray River, near Deniliquin. Some 11,234 hectares are listed as a RAMSAR wetland of international significance and a nationally important wetland on the Directory of Important Wetlands of Australia.

The higher areas of the floodplain are forested with river red, while the low-lying marshes are typically dominated by giant rush with a dense emergent growth of water milfoil, spike rush and mud grass. When flooded, large number of waterbird species breed and the forests support large numbers of waterbirds.

Eight vulnerable fauna species have been recorded in the Werai Group and surrounding areas including the black-chinned honeyeater, brolga, diamond firetail, grey-crowned babbler, hooded robin, Major Mitchell's cockatoo, painted honeyeater, and the speckled warbler. Five migratory birds listed for protection on international agreements have also been recorded in the area and its surrounds - great egret, sharp-tailed sandpiper, white-bellied sea-eagle, white-throated needletail and cattle egret. Two vulnerable plant species and one ROTAP species have also been recorded in the vicinity – the vulnerable plants *maireana cheelii* and *swainsona murrayana*, and the poorly known *goodenia pusilliflora*.

The area is of outstanding social and cultural importance to the Wamba Wamba nation. Evidence of Aboriginal occupation of the area includes middens, burial sites and canoe trees (RAMSAR nomination).

Koondrook Group

The Group consists of 35,465 hectares of state forest on the floodplain of the central Murray River, near Barham. Some 31,150 hectares are listed as a RAMSAR wetland of international significance and a nationally important wetland on the Directory of Important Wetlands of Australia. This group of forests has been recognised as a Significant Ecological Asset by the Living Murray Program.

The higher areas of the floodplain are forested with river red gum while the low-lying marshes are typically dominated by giant spike rush, with a dense emergent growth of water milfoil, spike rush and mud grass. Black box and grey box are concentrated in the Koondrook Forests. Reed beds also occur in the Koondrook Forests and include species such as Cumbungi with a ground cover of grasses and water plants.

Eastern Australian barking owl

Three endangered species and eleven vulnerable species have been recorded in the Forest or surrounding areas – the endangered bush stone-curlew, regent honeyeater and southern bell frog, and the vulnerable Australasian bittern, barking owl, black-chinned honeyeater, blue-billed duck, diamond firetail, freckled duck, Gilberts whistler, grey-crowned babbler, hooded robin, magpie goose and speckled warbler. Nine migratory birds listed for protection on international agreements have also been recorded in the area and its surrounds - Caspian tern, cattle egret, fork-tailed swift, glossy ibis, great egret, Latham's snipe, sharp-tailed sandpiper, white-bellied sea-eagle, white-throated needletail and cattle egret. When flooded, forests support large numbers of waterbirds.

One endangered plant and one vulnerable plant have also been recorded in nearby areas – the endangered *Wilsonia rotundifolia* and the vulnerable *Maireana cheelii*.

Evidence of Aboriginal occupation of the area includes middens, burial sites and canoe trees. The earliest dating of Aboriginal occupation of the area (13,000 years) within close proximity of the Koondrook and Perricoota Forests is at Kow Swamp.

Niemur Group

The Niemur Group covers 4,265 hectares of state forest located on the Edwards and Wakool Rivers south of Moulamein.

Threatened fauna species likely to occur in the forest include three vulnerable bird species which have been recorded in close vicinity - diamond firetail, grey-crowned babbler and Australasian bittern. The migratory great egret, which is listed for protection on international agreements, has also been recorded in the vicinity. One endangered and one vulnerable plant species are also known to occur in adjoining areas – *Austrostipa wakoolica* and *Austrostipa metatoris* respectively.

Leiwa Group

The Leiwa Group covers 1,484 hectares of state forest located on the Wakool River north of Tooleybuc.

Three endangered and four vulnerable fauna species are known to occur within or in close proximity to these forests – the endangered Australian bustard, bush stone-curlew and regent honeyeater, and vulnerable diamond firetail, grey-crowned babbler, Major Mitchell's cockatoo and speckled warbler. The migratory great egret, which is listed for protection on international agreements, has been recorded in the vicinity. The vulnerable plant *Austrostipa metatoris* has also been recorded in the forests.

Mallee Cliffs Group

The Mallee Cliffs Group covers 19,583 hectares of state forests on alluvial floodplain located adjacent to the Murray River, south-east of Mildura. The Hattah-Kulkyne National Park adjoins the Mallee Cliffs group across the Murray in Victoria. There is a very small reserve of only 1,000 hectares adjoining Mallee Cliffs State Forest on the NSW side of the River, Kemendok Nature Reserve, which is the only national parks reserve on the entire Murray River in NSW.

Five endangered and eleven vulnerable fauna species have been recorded within or in close proximity to these forests – the endangered bush stone-curlew, mallee fowl, southern bell frog, regent parrot and swift parrot and the vulnerable black-breasted buzzard, brown treecreeper, chestnut quail thrush, gilberts whistler, hooded robin and inland forest bat, Major Mitchell's cockatoo, purple-gaped honeyeater, shy heathwren, southern scrub-robin and speckled warbler. There are historical records for the now extinct Mitchell's hopping mouse and pig-footed bandicoot in the vicinity.

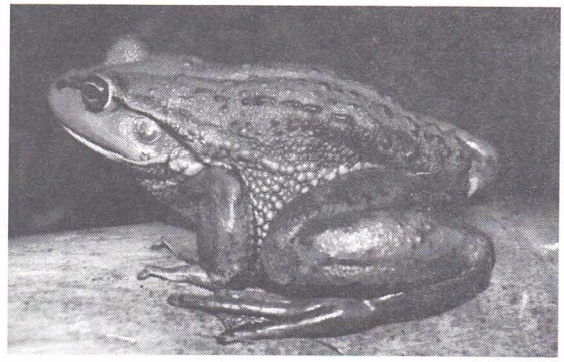
Four migratory birds listed for protection on international agreements have also been recorded in or adjacent to these forests – the Caspian tern, fork-tailed swift, great egret and white-bellied sea-eagle.

Five endangered plants have also been recorded within or adjacent to the Mallee Cliffs Group - *Austrostipa wakoolica,* bitter quandong, *Casuarina obesa, Eriocaulon australasicum* and *Pimelea serpyllifolia ssp serpyllifolia.* The poorly known ROTAP species *Goodenia pusilliflora* has also been recorded.

Lake Victoria Group

This group covers 8,930 hectares of alluvial floodplain adjacent to the Murray River, and includes Lake Victoria State Forest and other state forests to the south-east, towards the town of Wentworth.

Two endangered and five vulnerable fauna species have been recorded within or adjacent to the Lake Victoria Group – the endangered regent parrot and southern bell frog, and the vulnerable gilberts whistler, greater long-eared bat, hooded robin, inland forest bat and red throat. This area is a historical site for the now extinct crescent nailtail wallaby. Four migratory birds listed for protection on international agreements have also been recorded – great egret, Caspian tern, common sandpiper, and white-bellied sea-eagle. One endangered plant, *Austrostipa wakoolica*, has been recorded in adjacent areas.



Southern bell frog

Lachlan Group

The Lachlan Group covers 6,163 hectares of state forests scattered widely along the Lachlan River from Balranald north to Lake Cargelligo.

One endangered and eight vulnerable species have been recorded within or adjacent to these forests – the endangered black-necked stork and the vulnerable barking owl, blue-billed duck, brolga, diamond firetail, freckled duck, grey-crowned babbler, Major Mitchell's cockatoo and turquoise parrot. Seven migratory birds listed for protection on international agreements have also been recorded - fork-tailed swift, glossy ibis, great egret, Latham's snipe, marsh sandpiper, sharp-tailed sandpiper, wood sandpiper.

Three vulnerable plant species have been recorded within or adjacent to forests in the Group - slender darling pea, *Solanum karsense* and *Dodonaea sinuolata subsp acrodentata*.

Murrumbidgee Group

The Murrumbidgee Group covers 16,240 hectares of state forests scattered along the Murray River from Hay east to Narrandera, but concentrated in a large swathe along the River just west of Narrandera.

Three endangered and eighteen vulnerable species have been recorded within or adjacent to these forests – the endangered plains wanderer, bush stone-curlew southern bell frog, and the vulnerable Australasian bittern, black-chinned honeyeater, blue-billed duck, brolga, diamond firetail, freckled duck, Gilberts whistler, grey falcon, grey-crowned babbler, hooded robin, koala, magpie goose, Major Mitchell's cockatoo, painted honeyeater, painted snipe, speckled warbler, superb parrot and turquoise parrot.

The importance of this Group and their surrounds to migratory waterbirds is highlighted by the fact that a total of thirteen migratory species listed for protection on international agreements have been recorded - cattle egret, common greenshank, common sandpiper, glossy ibis, great egret, Latham's snipe, marsh sandpiper, painted snipe, pectoral sandpiper, sharp-tailed sandpiper, white-bellied sea-eagle, white-throated needletail and wood sandpiper.

Superb parrot

Four vulnerable plant species and two ROTAP species have also been recorded within or adjacent to these forests – the vulnerable *Diuris tricolor, Maireana cheelii*, mossgiel daisy and slender darling pea, the rare *Lomandra patens* and poorly known *Goodenia pusilliflora*.

Mulwala Group

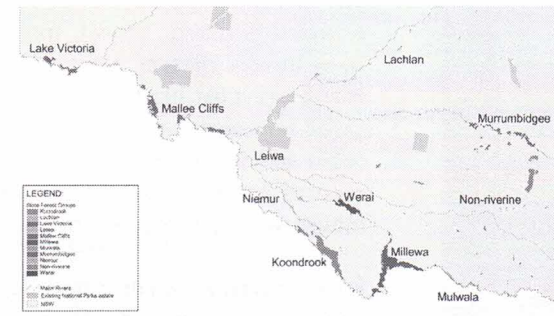
The Mulwala Group covers 4,749 hectares of state forests along the Murray River from Tocumwal east to Albury.

Three endangered and eighteen vulnerable fauna species have been recorded within or adjacent to these forests – the endangered regent honeyeater, southern bell frog, swift parrot, and the vulnerable Australasian bittern, barking owl, black-chinned honeyeater, brolga, brown treecreeper, diamond firetail, eastern bent-wing bat, freckled duck, grey-crowned babbler, hooded robin, large-footed myotis, magpie goose, masked owl, osprey, purple-gaped honeyeater, speckled warbler, squirrel glider and superb parrot.

A total of eight migratory birds listed for protection on international agreements have also been recorded - cattle egret, fork-tailed swift, glossy ibis, great egret, Latham's snipe, white-bellied sea-eagle, white-throated needletail and wood sandpiper.

Cultural heritage significance

The conservation importance of these wetlands is matched by their exceptional cultural heritage significance. Traditional Indigenous Nations are the original owners of all lands and waters along the Murray and have never relinquished their custodial right to protect and preserve their country. The rivers and forests are rich in relics and artefacts, contain numerous places of cultural significance such as ceremony grounds and meeting places, and are integral to the song-lines and creation stories of the ten Indigenous Nations in the area.



Location of state forest groups along the Murray and associated rivers

Timber industry

The history of the timber industry in the region is one of dramatic reductions in the number of mills and employment as a result of increased mechanisation, much increased intensity of logging, and heavy subsidies from the NSW Government.

Forests NSW themselves admit that the river red gum timber industry is extremely marginal and its markets fickle. Their own documents show that it is used predominantly for low value products such as sleepers and firewood. The characteristics of red gum are such that it simply cannot produce large amounts of high value timber – it never has and it never will. It is already being replaced by superior, often far more environmentally friendly, materials across a range of products.

Logging, patch-clearfelling and grazing are having a severe environmental impact in the red gum forests. Even though recent studies have shown that seventy five percent of trees along the Murray are already showing signs of stress, decline or death, these forests are currently being subject to intensive patch-clearfelling that is located mostly in the highest conservation value areas along the major rivers. Furthermore, stressed stands are actually being targeted by Forests NSW for so-called 'salvage' logging, which is worsening an already drastic environmental situation.

However, whilst the environmental impacts of these practices will be felt for generations to come in NSW, the benefits are all going out of state. The volume of red gum timber logged in NSW is three times as much as that logged in Victoria, but most of the timber produced goes to Victoria or South Australia. These states can choose to ignore readily available alternatives and turn a blind eye to the environmental consequences because it is outside their jurisdiction. NSW is in effect destroying its precious red gum wetlands to meet the short-sighted and unsustainable demands of other states.

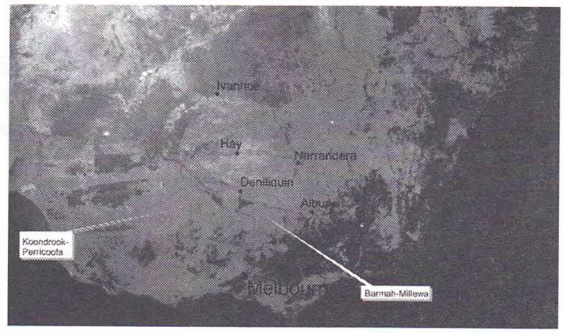
Patch-clearfelling

River red gum state forests are subject to intensive patch-clearfelling operations that have a severe environmental impact. Patch-clearfells can be up to eighty metres in diameter, although the National Parks Association has found much larger gaps being applied. A previous scientific report prepared for the NSW Government on the impact of this type of patch-clearfelling in northern NSW found that:

"Clearfelling of gaps greater than approximately forty metre diameter is incompatible with optimal habitat tree protection and recruitment. Any creation of gaps of a larger size must be undertaken with the expectation that hollow dependant fauna will decline." Attiwill et. al. (1996)

"Declines in average species richness ... vary from near zero in a lightly selectively logged forest (eg zero to thirty five percent canopy removal) to around twenty eight percent in forests which have been clearfelled in the past." Attiwill et. al. (1996)

Furthermore, in the Riverina, patch-clearfells are being targeted towards the highest conservation value areas adjacent to the major rivers because these are also the most productive for timber. Therefore, the patch-clearfelling being undertaken is undoubtedly having a major detrimental impact on a number of fauna species, including many threatened species.



Satellite image showing the landscape importance of river red gum forests: The largest remnants in a heavily cleared landscape

Tree Hollows

Large river red gum trees are one of the most important habitat resources in the region. They provide numerous hollows – both in the trunk and as holes that form over time when branches drop. Hollows usually only begin to form in trees when they are at least one hundred and fifty years old and often a lot older.

These hollows are used by many birds and animals for shelter, roosting and nesting. Threatened species which use these trees in the Riverina include superb and regent parrots, Major Mitchell's cockatoo, barking and masked owls, squirrel gliders, and numerous bat species.

Logging is resulting in major losses to large river red gum trees in the Riverina. Trees up to 1.5 metres diameter at breast height can be legally logged. However, most trees greater than one metre have outstanding habitat value and either provide hollows or will soon do so. The loss of these trees is having a major impact on the current and future availability of hollow-bearing trees, and therefore on the species which rely on them.

Squirrel glider

Red Gum Campaign

National Parks Association of NSW lodged a court case in September 2007 to show that Forest NSW has not conducted appropriate environmental impact assessments before timber harvesting commences. The case focused on eleven logging compartments in four forests as a test of the likely impacts across the region. Experts conducted surveys in these areas to add information to the known conservation values of these sites.

The case was settled out of court because Forest NSW was not prepared to contest it. The following negotiations were agreed to through court order:

- Forests NSW will immediately commence an environmental impact statement, to be placed on public exhibition by June 2009
- Logging will be phased out over two weeks in the eleven forest compartments under dispute in the NPA legal case
- Forests NSW will prepare a plan of operations while the EIS is in preparation that avoids logging areas of high conservation value while still maintaining timber supplies to the timber industry
- Logging rules will be strengthened to reduce by half the size of patch-clearfells and reduce the maximum diameter of red gum to be felled from 1.5 metres to 1.2 metres
- Forests NSW will consult with Traditional Owners in the preparation of the EIS.

The NSW Government has still not shifted on an agreement to conduct a rapid review of the region nor to consider protecting these significant red gum wetland forests in new national parks.

We need your help to send a strong message to NSW Premier, Morris Iemma, and to Federal Environment Minister, Peter Garrett, to protect these significant areas.

For more details go to www.redgum.org.au or contact our campaigners through redgum@npansw.org.au

The Natural History Society of South Australia Inc.

by Dr Peter Clements, President of The Natural History Society of South Australia Inc.

The Natural History Society of South Australia is dedicated to the preservation of Australia's native flora and fauna. The Society is comprised of a small band of enthusiastic members who dedicate their time and resources to actively promote, by example, the preservation of the native flora and fauna of Australia in their native habitat; promote the collection and dissemination of scientific knowledge; record and maintain the Australian natural and cultural heritage; promote the establishment of geological marine and wilderness reserves, national parks and conservation parks; organise, develop, stimulate and coordinate public demand for ecologically sustainable use of the environment; and promote non-destructive scientific research.

Cullen Reserve

The Natural History Society of South Australia acquired the Reserve in 1968 when local fisherman Dick Cullen wanted to sell some land for which he had no further use and it was Rick Cawthorne, a local land agent, who suggested he give it to the Natural History Society. Rick Cawthorne had previously enlisted the aid of the Society over local fishermen illegally using wallabies as bait for cray fishing. The Society had written to the appropriate Environment Minister and had the practice stopped.

Cullen Reserve consists of twenty nine hectares of recovered bushland, adjacent to Lake Fellmongery in Robe South Australia. There is an old well on

the Reserve close to Lake Fellmongery, which we understand from local historical information was used to water the horses that carted wool to the Lake for washing. Once title to the land had been handed over by Dick and Ida Cullen, the Society began to revegetate the land that had been used for trap shooting and as a dump.

The once degraded block now has a covering of local acacias, casuarinas and eucalypts all grown from seed collected from the site and replanted there. These seedlings originally had to be protected from rabbits with a wire mesh fence. There is an extensive ground covering of muntries (*Kunzea pomifera*) on the Reserve and we have recently become aware of a rare and endangered orchid, the Little Dip spider orchid (*Caladenia richardsiorum*), on the Reserve. Society members visit the Reserve annually to remove weeds and maintain fences with the guidance of the local Environment Officer from Mount Gambier. We have also had a "Trees for Life" group visit for weeding.

Our Society is in contact with the local council to put in walking tracks for tourism in the area. Many local birds visit the Reserve, including red capped robins, blue wrens and yellow robins. We encourage visits to the Reserve and welcome donations for its upkeep.

Wombat burrow at Cullen Reserve

Red capped robin

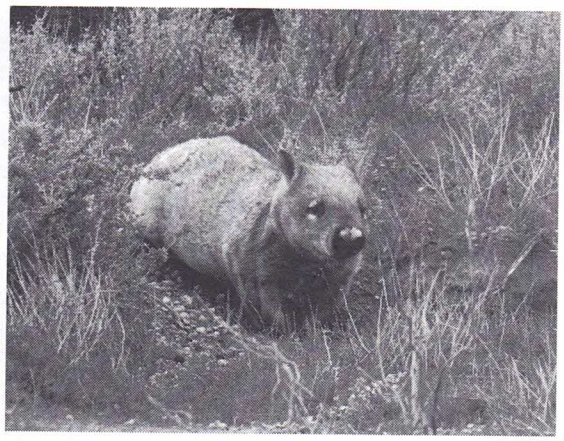
Moorunde Wildlife Reserve

In January 1967 the Society lobbied the Minister of Agriculture to take measures to protect Southern hairy-nosed wombats from extermination by setting up a wildlife reserve in the Nullarbor. This was not successful, but it made Jack Conquest aware of the Society's interest in native wildlife and he asked what the Society was going to do about the starving wombats in the Blanchetown area. Blanchetown is on the River Murray in the mallee area of South Australia. A number of our members went with Jack to a sheep station, which carried the largest concentration of wombats in the area, and during a two day expedition many unhealthy and dying wombats were seen. There were several carcasses of recently dead wombats. The paddocks of the station were almost completely denuded of ground-cover vegetation. In December of the same year we witnessed an air-borne dust storm as a result of a severe drought over much of this region of South Australia.

At this point it is worth noting that the Southern hairy-nosed wombat is different from the common wombat in that it prefers to live in the semi-arid areas, making its burrows under the hard limestone shelf found throughout many regions of the mallee. These burrows can reach up to one hundred metres under the ground and they are the wombats' temperature control system by keeping out of the sun during the day and coming out only at night or during cooler days. Our research has shown that it is humidity that most regulates wombats' emergence from their burrows. During drought conditions wombats appear above ground more often as they are hungry and need to warm up in the sun.

The Society decided that the owner of the sheep station should be asked if he would be willing to sell part of the station for the establishment of a reserve. It was hard times with the drought, so he agreed that he would be willing to sell 3,000 acres at a price of $4 per acre. It was decided that an appeal would be launched to raise the necessary money.

The Duke of Edinburgh supported the campaign through his message of congratulation to the Natural History Society. Much voluntary assistance was received for establishing the Reserve. Perhaps the most significant was clearance of vegetation for fencing around the Reserve. The naming of the Reserve was in recognition of the post of Moorunde established by Edward John Eyre to administer the area as resident magistrate, which he named after the meeting place of three aboriginal tribes in the area.



Wombat at Moorunde

Wombat burrow on Moorunde

Fencing and watering Moorunde

A five wire fence with strainers of railway irons and star droppers reaching five miles along the northern and eastern boundaries of the Reserve was built by contractors to separate the property from the rest of the sheep station, with much of the work done voluntarily by our members and friends. The eastern fence was in more difficult terrain and we added wire netting to deter sheep.

Instead of piping water from the nearby Murray-Adelaide pipeline, as agreed to at the inaugural public meeting, we decided to build water collection points with galvanised iron from which rainwater was collected and stored in several tanks. From these the water was piped to a ballcock-regulated cistern and from there to a small pond constructed of cement and limestone rocks to blend in with the surroundings. Rainfall gauges were also installed at the same time. As a result we have rainfall data on the Reserve going back to 1967. More gauges have since been installed making a total of five at widely spread locations on the Reserve and it is often surprising how much variation in rainfall there is over the 2,020 hectare area. The higher level is usually recorded amongst the more heavily wooded areas.

Management of the Reserve

From the outset the Society has adopted a poli of minimum human interference on Moorun In 1988 this was formally incorporated into o management plan for the Reserve. This has mea that any recovery of vegetation has been throu natural regeneration, rather than through huma assisted planting or seeding. A few attempts we made to plant seedlings in the early years b these failed. Natural seeding has met with great success and, since the fencing out of clove hoofed stock over the past forty years, we ha seen the re-establishment of many plants. Ma that were severely pruned to a mushroom shap by sheep, particularly sheep bush and native hop have returned to their former habit that exten to ground level thus providing cover for wrens an other small birds.

Over the forty years since the exclusion of shee we have observed the recovery process, recordi on film the gradual re-establishment of many plant Mosses and lichens were the first recoloniser since they can live on bare soil, deriving the nitrogen from the atmosphere and beginning th process of returning the soil to humus. Thes plants have not returned on the adjacent statio where sheep still graze. There are many specie of mosses and lichens on Moorunde and in aeri survey photos we can see that the Reserve visibly darkened compared with the neighbourin property and the fence line is clearly visible. W think this is due to the lichen and moss cover tha is largely absent on the adjacent property.

Many of the plant species indigenous to th Moorunde area may only re-establish after significant and sustained rainfall that may com only once every ten or eleven years. Some o these plants are eaten by rabbits, which are no excluded by the boundary fence. Hence ver few new native pines, whose tender shoots ar particularly attractive to rabbits, were establishe until poison baiting reduced the rabbit numbers The use of poison baits was against our policy o non-interference in natural processes, howeve in 1995, in response to a local council directive we had to bait with 1080 for the first time. We estimate that we killed over five thousand rabbits that year. Apart from the legal obligation, it was obvious that rabbits were causing a substantia stress to the native vegetation of Moorunde. We have continued the baiting program each year ever since. Calici virus has reduced, but not eliminated the need for baiting. Foxes, goats and cats also occur on Moorunde and further management dilemmas arise over the problems caused by these introduced pests.

Dragon lizard at Moorunde

The re-establishment of several other plant species such as sheep bush and native hops occurs after a wet year. Amongst the more remarkable recoveries has been two greenhood orchid species (*Pterostylis biseta and Pterostylis nutica*), which we first found on the Reserve in 1980, fourteen years after the sheep were removed. In 1995 over two thousand plants of these species were counted on the Reserve. They grow on the shady southern side of bushes where mosses and lichens keep the soil moist and there is some leaf litter. The mosses also provide a nitrogen source that sustains termites. Moorunde is now rich in such microfauna as termites and other insects that are in turn food for other species such as echidnas and birds. We have deliberately avoided removing fallen wood on the Reserve as it also provides food for termites. Wood can also provide scratching posts for wombats and protects seeds and seedlings of other plants that can then recolonise an area.

The water collection points described above are a source of dilemma for us. We think that wombats never use this water as no droppings or other evidence of their visits has ever been recorded. As this is the only surface water on the Reserve, it seems likely that these remarkable animals have evolved without the need for water and may be able to obtain all they need from their food. However, they have sometimes been seen licking dew from the rocks in the early morning. The water points are used by a variety of birds, red and grey kangaroos and emus that are attracted to them in such numbers that the areas immediately adjacent to the ponds become quite bare and dusty. National Parks officers have suggested that we should take the water points out. However, if we were to do this, kangaroos and emus would only be able to obtain access to free water in the hostile environment of local stock water troughs or from the River Murray several miles away. Moorunde is after all a wildlife sanctuary for the protection of all locally indigenous native species, not just for wombats.

The Society has conducted a long running wombat population study on the Reserve using a chart recorder wired up to flaps with micro switches at twenty one burrow entrances in a warren to record wombat activity. After the wombats stopped digging up the wires we were able to get data that allowed us to estimate wombat numbers across the whole Reserve. One of the immediate and unexpected effects of fencing the Reserve off was that we rarely see any wombats out during daylight hours on Moorunde, although we know from our observations that they are present in very good numbers. We must be the silliest Society to be looking after animals we hardly ever see. It is estimated that the number of wombats on Moorunde has increased from about two hundred in 1968 to about six to eight hundred by 2001. Rather ironically, wombats are more commonly seen during daylight hours on the adjacent sheep station, particularly during autumn and winter before the winter rains allow the grasses to regrow. Moorunde supports a greater standing crop of grasses than adjacent properties, thus it seems that the removal of sheep as the wombats' main niche competitor, other than rabbits, meant that the wombats on Moorunde were fed well enough that they no longer need to supplement the energy they obtain from food by basking in the sun.

The Society has taken the view that the Reserve is for the wombats. Hence it has been our approach that any activities, including research projects, should be totally non-invasive. Grazing exclosures are one example of an approach that has allowed us to monitor grazing pressures on the Reserve. Exclosures are fenced off areas that we use to exclude either rabbits, or kangaroos and wombats, or both.

Wombat at sunset on Moorunde

From these we have concluded that rabbits are a primary competitor for wombat food on Moorunde. We have also seen that kangaroos place considerable pressure on the feed available on the Reserve, particularly in seasons when feed is in short supply. The invasion of weeds such as horehound and stemless thistles is a continuing management problem. To keep these in check

regular monthly working bees are held and as a result the Reserve is one of the most weed free in the state.

The efforts made by the members of the Natural History Society of South Australia to publicly raise the funds needed to purchase a reserve to conserve the Southern hairy-nosed wombat was a landmark in Australian wildlife conservation. Plant recovery since the sheep were fenced out on Moorunde Wildlife Reserve thirty three years ago has been slow but spectacular. The slowness of recovery is not surprising given that the Reserve is located on an area of low rainfall. At the same time as the vegetation recovery there appears to have been an improvement in the numbers of the Southern hairy-nosed wombats.

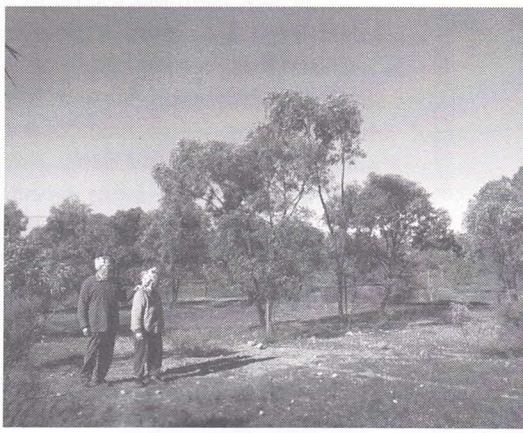
It is the fortieth anniversary of Moorunde Reserve this year.

Experimental warren recorder flaps

Lake Short

In recognition of the work done by the Society, another parcel of land near to Moorunde was given to us in 1992 by the South Australia Lands Department to be managed as a wildlife reserve. We have again watched the remarkable recovery of vegetation on this Reserve after the sheep were fenced out.

In 1993 the Natural History Society of South Australia Inc took over management of Lake Short as a sanctuary and wildlife reserve. This ephemeral lake is situated near Blanchetown in the mallee and being in an area of very low rainfall fills only infrequently. The Lake was originally designated as a water reserve by the government since it is sometimes a rare lake in an otherwise parched environment. However, a Lands Officer visiting such reserves discovered that the area he thought was a water reserve had sheep grazing on it. He arranged for the area to be given over to the Natural History Society based on our efforts on Moorunde Wildlife Reserve. Just as we becar aware of this arrangement, the lake flooded a rare November downpour in 1992. The la was filled to its edges covering over thirty fo hectares to a depth of several metres in t middle. It had water birds, including pelicans, a there were even fish in it for a while (put there locals). When the water finally dried out seve months later some Society members notic some seedlings of swamp box, the local eucaly sprouting. Since there were still sheep using t area, the few seedlings were protected with w netting surrounds. A larger area was fenced a few months later with the aid of a grant fro Bushcare and several other clusters of seedlir were noted and protected. After another ye more seedlings were noted and protected. T next year the Society fenced off the whc Reserve and we immediately began to see mo and more eucalypt seedlings. Now, eleven yea on, the Reserve is covered with over two thousa seedlings and those that were originally protect have already grown into trees of five metres more. This shows the importance of the ra flooding events to such areas in the mallee.



Alwin and Berna Clements at Lake Short

Glen Taylor by the new sign at Lake Short Reserve ca 1992

In 2006 we again added to the land for wombat protection by acquiring a further 4,900 hectares of land adjacent to Moorunde. This was again made possible by generous donations from our members and from like-minded societies, such as the Wildlife Preservation Society of Australia. The expanded Moorunde Reserve now encompasses 6,900 hectares and we estimate contains around two thousand wombats as well as many other native fauna and flora species.

The Natural History Society is proud of this regeneration feat due to the efforts of many members and volunteer helpers. We welcome visitors to the Reserves and any donations towards their upkeep.

The Natural History Society of South Australia can be contacted through their website at www.nathist.on.net

Saving the Northern hairy-nosed wombat The 2007 Hair Census

by Linda Dennis, Regional Councillor

Wombats have been a fascination for Carol Pullar and me for many years – one could even say an all consuming passion! We're both specialist carers for bare-nosed wombats needing rehabilitation and recuperation. Carol conducts her rehabilitation work at her Wildlife Shelter in Victoria and I own a Wildlife Refuge in the central west of NSW, known to many as Fourth Crossing Wildlife.

So, with wombats having a major appeal to both of us, when we heard that volunteers were needed to conduct a Hair Census on the critically endangered Northern hairy-nosed wombat in remote central Queensland, we jumped, stomped and danced at the chance to be involved.

The Northern hairy-nosed wombat is one of Australia's most endangered animals. In fact, they have the dubious honour of making it to the top ten in the worlds' most endangered animals list.

What makes the wombats' conservation status even more vulnerable is that there are only one hundred and fifteen individuals and all live in the one location - Epping Forest National Park, which is about one hundred and twenty kilometres north west of the small township of Clermont in Queensland. There are no Northern hairy-nosed wombats in captivity, nor are they found anywhere else in the wild.

Dr Alan Horsup and his project team from the Queensland Parks and Wildlife Service have been working tirelessly with the aim to save the species from extinction. In fact, Alan has been an integral part in the Northern Hairy-nosed Wombat Recovery Project for around twenty years and is considered a leading expert in the field. Every now and then however, there is a need for volunteers to help with the project – and that is where Carol and I come into this wombat story.

After being accepted as volunteers to the project Carol and I decided to approach the Australian Society for sponsorship. AusGeo had given generously to the project in previous years and we were unsure if our request for help would be answered. To our delight we were granted the much coveted sponsorship and our wombat story got even better!

Every two years or so a Hair Census is needed to ascertain just how many wombats there are, what their movements are over the Park and most importantly, if there are wombat joeys being born.

Linda Dennis and Therese Black at the entrance to Epping Forest National Park. Photo by Linda Dennis

The 2007 Census had even more significance as the findings would be the determining factor in any future translocation – moving individuals off the Park into a new location to further protect the species from decline.

The Hair Census Team consisted of ten individuals – all volunteers to the project. It was heartening to see that the plight of the Northern hairy-nosed wombat had reached an international audience as there were several countries in attendance; Todd Woody from the United States, Roberto Munguia from Mexico and Hilary MacDonald from Canada. Queensland also made a great show; there was

Helen Matthews and Caitlin Palmer-Bright from Brisbane, Therese Black from the Sunshine Coast and Hazel and Dennis Hanrahan from Hervey Bay, who were also the live-in caretakers for the month of October. Then, of course, there was Carol from Victoria and me from NSW, and we can't forget Alan - project master extraordinaire!

Our adventure started in Rockhampton where the project headquarters are located. Several of us met at the pub and spent an evening together full of excitement and nerves as we discussed our upcoming journey to what we knew as "the middle of nowhere". Only one of us, Helen, had been to Epping Forest before and she was plied with all kinds of questions as to what we could expect.

Epping Forest base camp. Photo by Linda Dennis

Early the next morning we started our long trip to Epping Forest. It would take us eight hours in a convoy of two four wheel drives to get there. At the township of Emerald we stopped to purchase two weeks worth of food, and after a quick lunch we were back on the road with one more stop at Clermont to buy wombat food and reaching Epping Forest just before dusk.

After an excitable dinner – we were finally here!! - we had our first briefing from Alan, a run down on what was expected of us during the eleven day Census. The work sounded quite challenging but definitely "do-able" and it was early to bed as we had to be up before dawn the next morning.

The first day was tough. Up at 4.30am for a quick breakfast and out in the field by 5.15am. There was a good reason for the early start – the heat! The day packed a punch – 37° Celsius in the shade but also incredibly humid as storms hovered over us.

We were buddied into teams of two and each team was given a set route through the Park, which we would then work every day during the census.

Day one was the most physically challenging for all of us. Armed with sets of heavy metal stakes we walked our allocated terrain, stopping at each burrow and setting the hair traps. Some burr had fences built around them and these v relatively easy to trap as we placed the do sided sticky tape (which collected the hair the Census) on the gates which were at inter around the fences. The burrows without fe had to be manually staked, so each of us ha also lug around a heavy mallet to hammer stakes into place.

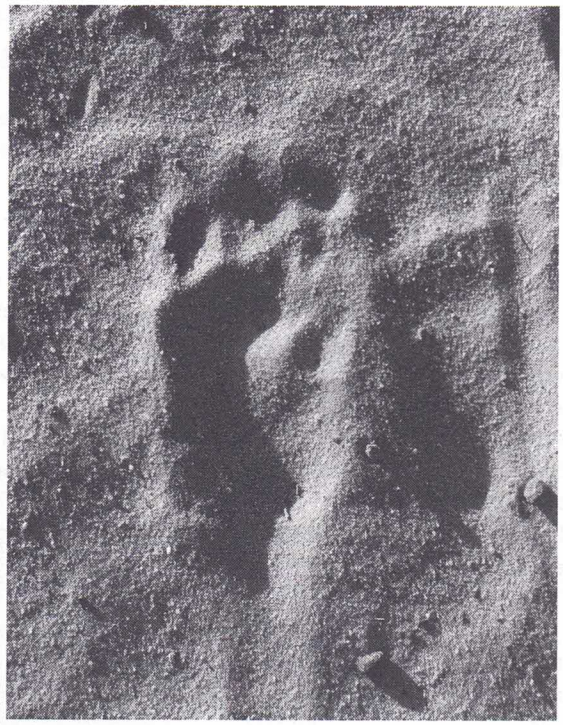
At lunch time we headed back to camp for two hottest hours of the day where we re under the shade of the kitchen verandah. afternoon we were back at work until dusk w we breathed a sigh of relief, pondered a g day's work and cooled off with a well earned beer.

After a mentally and physically draining day, A decided to give us some time out on day two. took the morning to rest and to compare no from the day before – who had seen a wom footprint, who had recognised wombat poo who had the hardest run of all! After lunch headed out again to finish trapping the burrow

The third day was the first day of hair collect although it was a trial day so we could get hang of recognising and collecting wombat before the official collection began. Much to annoyance many of the hair samples left on double sided sticky tape were from the m swamp wallabies that also call Epping Forest ho Wombat burrows also make a cool retreat for wallabies during the hottest times of the day.

It was back breaking work, especially for those us who had come from cooler southern clima into the full northern heat. At times in the f few days I didn't think I'd make it to the end of Census. As the days moved on however, work in the Queensland outback the heat became mo bearable. We all acclimatised, but thankfully temperature also fell to the milder lower 30s.

Carol Pullar and Linda Dennis work as a team cut off individual hairs for DNA sampling



Northern hairy-nosed wombat footprint in the sandy soils of Epping. Photo by Linda Dennis

Each afternoon we would make our way back to camp with a backpack full of hair. We had some friendly competitions going; who found the most swamp wallaby hairs; who found the most wombat hairs (the ultimate winner of course); and who found the most unusual sample. I believe I found that – I came across a tape that had obviously been chewed on. I could just picture a lazy wombat lying at the entrance of her burrow and chewing on the annoying white thing that kept ripping hair out of her rump! That piece of tape is now one of my prized possessions!

After lunch and a daily siesta during the hottest time of the day (making Roberto feel like he was back home in Mexico) the afternoons were for lab work, where teams of two processed the daily hair take.

One member of the team would hold the sticky tape out for the other team member - who with very good eyes carefully cut individual hairs off the tape – one hundred and eighty individual hairs a day! We had to ensure that the follicle was left intact, as it is the follicle that contains the precious wombat DNA.

The minute piece of hair (about two milimetres in length) would then be placed into a labelled Eppendorf (tiny plastic test tube) and then boiled in water for ten minutes. The boiling resulted in the DNA of the wombat being infused in the fluid called Chelex that was inside the Eppendorf – the Chelex would later be tested at Monash University to read the DNA and to ascertain the population count.

The trip wasn't all hard work. We had some great evenings full of lively chit chat about our home towns, our hobbies, our friends and family, etc, and we listened to music from the several MP3 players that also made the journey to Epping Forest. The late afternoons were also "our" time and we sometimes walked through the Park, taking the cooler temperatures to our advantage, viewing the rugged beauty of the area and breathing the clean, fresh air.

One very special afternoon, late in the trip, Therese, Hazel and I went for short walk up the Hairy-nosed Highway (the main dirt road that runs the length of the Park). Venturing back just on dusk we were rewarded with our first ever Northern hairy-nosed wombat sighting - a young wombat trotted across our path and back into its burrow. It was one of the most awesome events in all of our lives!! We rushed back to camp, did a happy dance around the camp fire, and excitedly told the others of our lucky find. In seconds we'd joined an elite group – we were three of only five hundred odd people in the entire world to have seen a Northern hairy-nosed wombat in the wild!

Burrow 172. Photo Dr Alan Horsup

Linda Dennis inside one of the huge burrows found on the park. Photo by Dr Alan Horsup

Night time walks were not allowed during the Census as human presence around the burrows could disturb the wombats' normal nightly activity and the Census results may have been skewed. However, on our very last night at Epping Forest, with the Hair Census complete and the samples catalogued and ready in the freezer, Alan rewarded us with a spotlight tour. After dinner we set out full of anticipation, excitement and nerves. We very slowly travelled the length of the park, three spotlights arching across the dark and still night. To our major delight we were honoured with the presence of three wombats during the couple of hours we were out. Every volunteer had the very special privilege of seeing a Northern hairy-nosed wombat in the wild – a fitting end to our trip and a wonderful reward for all our hard work. We returned to camp and opened a bottle or two of Champagne to celebrate.

The Northern hairy-nosed wombat needs your help. The project receives very little funding from government authorities and saving this species very much relies on the generous donations from the public.

Knowing that donations were desperately needed, Carol and I discussed how to use our AusGeo sponsorship to its best advantage – we very much wanted to donate to the project, to put the money where it was needed most.

Initially we had thought to provide the project with money to buy one or two monitoring collars. However, in the end, we decided to donate a major portion of our sponsorship to the project to help purchase a set of scales that will be installed at a feeding station. Once the scales are installed, when the wombats come in to feed they will be weighed at the same time ruling out the need for human contact. In the past wombats were captured to be weighed, which is very distressing to a wild wombat. With the help of AusGeo it was money very well spent.

The species is one of Australia's most vulnerable – one hundred and fifteen in one location.... make that one hundred and fourteen. Mid way through our trip Todd came across Saggy Baggy wombat, an old wombat near the end of her life. Out walking one afternoon Todd found Saggy Baggy at the entrance of her burrow, we think soaking up the sun's warmth on her skinny and boney body. We set up camera equipment at the entrance of her burrow so that she could be monitored and we also set up a feed and water station close by. During the subsequent days we watched on film the Old Girl of Epping shuffle around her burrow and eat and drink what we had offered. She was so skinny and much of her fur had fallen out and we felt good that she once again had a full tummy and we hoped that she was content.

Two days after returning home Hazel and D emailed us all to advise that Saggy Baggy wo had died. Her death well and truly brou home just how vulnerable the species are an how desperately they need our help to surv

Although very sad, we saw the death of Baggy wombat not as an end but as a cycle It is too soon to tell what kind of new nur we're looking at for the species, but base the increased activity of the 2007 Hair C compared to the last Census we're hoping there are lots wombat joeys running ar Epping Forest, and maybe one of them will into Saggy Baggy's now empty burrow.

Saggy Baggy wombat, the old girl of Epping. Photo Todd Woody

The two weeks I spent at Epping Forest were dirty and bloody hard work, but they were tw the best weeks of my life. Carol and I – and other volunteers - got to do our bit to help the Northern hairy-nosed wombats. I urge any of you who has read this story and now feels tingle of eagerness to be involved to jump rig there – you will be rewarded with an achiever that you will certainly feel proud of!

Donations can be sent to "EPA Wombat Sur Fund", Dr Alan Horsup, PO Box 3130, REDH QLD 4701.

2008 University Student Grants Scheme - winners

The WPSA University Research Grants are scholarships offered to honours or postgraduate students at Australian universities. Each year, ten *Initial Grants* of $1,000 are awarded. Commencing in 2009, previous recipients of the Initial Grants will be eligible to apply for a $5,000 Centenary Grant (follow-up grant). The two Centenary Grants of $5,000 each will be offered each year, and will be awarded based on each applicant's progress in the project for which the Initial Grant was awarded.

Applicants must be a member of the Society, and those wishing to join can do so at www.wpsa.org.au

Grants are available for research projects of direct relevance to the conservation of Australian wildlife - plant or animal. Grants may be used for the purchase of equipment and consumables, travel expenses related to field research, or attendance at conferences at which you are presenting your work.

The Wildlife Preservation Society of Australia is delighted to announce the winners of the ten annual grants of $1,000 each to honours or postgraduate students conducting research that will contribute to the conservation of Australian wildlife. The winners for 2008 are:

Alex Wyatt – School of Environmental Systems Engineering, University of Western Australia. Project – The influence of biological oceanography on coral reef biodiversity.

Romina Rader – School of Marine and Tropical Biology, James Cook University, Cairns. Project – The impact of human modification on insect pollinator assemblages.

Anja Skroblin – School of Botany and Zoology, The Australian National University. Project – Phylogeography and conservation biology of the purple-crowned fairy-wren (*Malurus Coronatus*).

Andrew Cole – ARC Centre of Excellence for Coral Reef Studies, James Cook University, Cairns. Project – The control of coral disease by coral feeding fish.

Danielle Shanahan – Spatial Ecology Lab and CSIRO Sustainable Ecosystems, University of Queensland. Project – Mitigating the effects of habitat fragmentation: Understanding dispersal patterns for improved conservation of forest birds.

Helen Waudby – School of Natural and Built Environments, University of South Australia. Project – The role of cracking clay soils in maintaining fauna and flora diodiversity in the rangelands.

Katherine Forsythe – Centre for Research on Ecological Impacts of Coastal Cities, University of Sydney. Project – Feeding behaviour of *Himantopous himantopus* in coastal soft-sediment lagoons.

Rebecca Lawton – ARC Centre of Excellence for Coral Reef Studies, James Cook University. Project – Ecological specialisation versus susceptibility to disturbance among coral-dependent butterfly fishes.

Christa Beckman – School of Biological Sciences, University of Sydney. Project – Conservation of native bird populations in a changing environment: does the continuing invasion of the cane toad pose a risk to avian biodiversity in Australia?

Arian Wallach – Faculty of Sciences, School of Earth and Environmental Sciences, University of Adelaide. Project – Persistence of endangered mammals: Is the dingo the key?

Wildside

by Marny Bonner, Australian Seabird Rescue

As time goes by

One of the pleasures of getting to know your local wildlife is recognising individuals. I have enjoyed some pelican characters over the years. There was Steptoe, the crotchety loner who limped, Rosy a sweet-natured female and Concord, a haughty male with a distinctive profile. Being able to recognise certain pelicans led to a deeper understanding of their habits but, more importantly, additional knowledge about the species generally.

In order to conserve and protect wild creatures we need to understand them. The main way that science builds knowledge about wildlife is through surveillance. Tracking individuals by reliable methods such as tagging and banding is essential but can take a long time to reap the rewards.

The Australian Bird and Bat Banding Scheme (ABBBS) has the sole authority to distribute bands. Each one is stamped with a number and ABBBS' address. Their database holds the details

and, as recoveries are reported, the layers of knowledge build. Reports from the public are vital to research outcomes.

What goes around

In the early 1980s, Ford Kristo was a local science graduate keen to learn more about coastal birds of prey. He undertook a banding project designed to collect life history information on the white-breasted sea eagles, whistling kites and brahminy kites of Bundjalung National Park. These days, many projects later, Ford is a ranger in the NSW Southern Highlands.

Lee Henderson of Goonellabah loves surf fishing. He has roamed the vast sweep of beaches south of Ballina for thirty years and is very familiar with the wildlife. One cold and rainy day, he went fishing at Ten Mile Beach in Bundjalung National Park. Soon he noticed a bedraggled bird just sitting on the rocks.

"There was a howling sou' easterly and I knew it was strange for a brahminy kite to be just sitting there," Lee said, "and then I saw the leg band."

With plenty of practice capturing crook seabirds over the years, Lee wrapped the bird in a towel and called Australian Seabird Rescue. Once made warm and comfortable, the kite was transferred to bird of prey specialist, Wendy Lawrence of Alstonville. Sadly it died overnight but its band had a story to tell. ABBBS records reveal that it was banded as an adult twenty four and a half years ago, on 12th October 1983, by Ford Kristo.

Since brahminy kites develop their adult plumage late in their second year, the bird was at least two years old when Ford banded it. Wendy completed the story. "It was quite thin and shabby and, at over twenty six years of age, I think it most probably died of old age."

According to previous ABBBS records, the longest period of time between banding and recovery of a brahminy kite was twelve years. Until now, there has been no proof that they lived any longer than that.

This week I had the pleasure of calling Ford Kristo with the amazing news.

"It's not that often that you get to change the record books," Ford quipped. "You've made my day!"

Brahminy kite

Lizard in a jacket

They grow faster, swim further and dive de
than any other turtle but only a handf
Australians have ever seen a leatherback sea t
When a large leatherback sea turtle washed u
Lighthouse Beach near Port Macquarie recer
was a rare chance for locals to have a close
at the ancient mariner. Although leatherback
nest occasionally along Australia's northern c
they are much less common than other tu
Several National Parks and Wildlife Service ra
attended the stranding.

If sea turtles can be described as a lizard in a
then a leatherback is a lizard in a jacket. Their
is not hard and fixed, but leathery and flexib
it can withstand the pressure of diving more
1,200 metres. It is also keeled with seven na
ridges for ultimate streamlining.
Out of all the world's reptiles only the saltw
crocodile is larger. Second to none, howev
the leatherback's unique ability to regulat
temperature. Other turtles cannot tolerate w
colder than fifteen degrees and have to mig
to warmer waters. Leatherbacks have no
restrictions, their large size, thick layers of fat
exceptional heat capacity enable them to r
further, into colder seas and at greater de
with no competition from other turtles.

Jellyfish make up over ninety five percent
leatherback's diet. Since they contain less
four percent protein, a five hundred kilog
leatherback has to eat a lot of them. It h
specially modified mouth to grip the slip
snacks whilst expanding its huge throat to suc
them down. Both the mouth and throat is l
with stiff, fleshy spines that project backward
guarantee the one way journey.

Marathon mariner

Biologists have long been aware that leatherbacks are the world's most widely distributed marine reptile. Only through satellite tracking technology, however, can the range of an individual be determined and understanding the movement of wildlife is vital to conservation measures.

Once turtles start laying eggs, they are oblivious to any disturbance. In the summer of 2006 an international team of sea turtle biologists chose an Indonesian beach to fit a transmitter onto a nesting female. The signal lasted for over twenty one months as she swam north-east across the Pacific Ocean all the way to Oregon on the north-west coast of the USA. In six hundred and forty seven days, she travelled 20,558 kilometres, an average of thirty kilometres per day. This distance set a new record for sea turtles, among the longest documented migrations between breeding and foraging areas by any marine animal.

Rare sight: a massive leatherback turtle that washed ashore on the mid north coast is removed by NPWS rangers. The turtle, a male, was not yet fully grown. Photo: Cathy Mardell, NPWS Hastings

On the move

The winter migration of whales has begun. Humpbacks have been spotted off the south coast and the northern migration will continue through to July. With the whales on the move, both the National Parks and Wildlife Service and Australian Seabird Rescue are getting prepared for possible entanglements or stranding.

The first whales to cruise past the north coast have been spotted and will continue for several months on their journey to warmer waters.

In the 1960s humpbacks were numbered in the hundreds, down to just five percent of the pre-whaling population. It was touch and go whether any of the Australian, New Zealand or South Pacific populations would collapse or recover. Fortunately, the number of East Australian humpbacks increases by ten percent each year and is now estimated to be about 10,000. Even so, this is less than a third of their original population and they remain a threatened species.

In order to monitor the gentle giants accurately, researchers have developed photo identification files. Fins and tail flukes are the key. The size, shape and profiles of tail flukes are especially distinctive in each individual, as are markings and scars. Photo ID provides information about abundance as well as each animal's range of movement. When a whale breaches or slaps its tail on the water, small pieces of old skin slough off. These are collected by researchers for DNA analysis to confirm additional information such as gender and family relationships. In time, a whale's tail tells its life story.

Daniel Burns is a postgraduate student at Southern Cross University's Whale Research Centre (SCUWRC) and has been focussing on humpbacks for the past decade. Dan is confident about the East coast population, although research on neighbouring populations is not so promising.

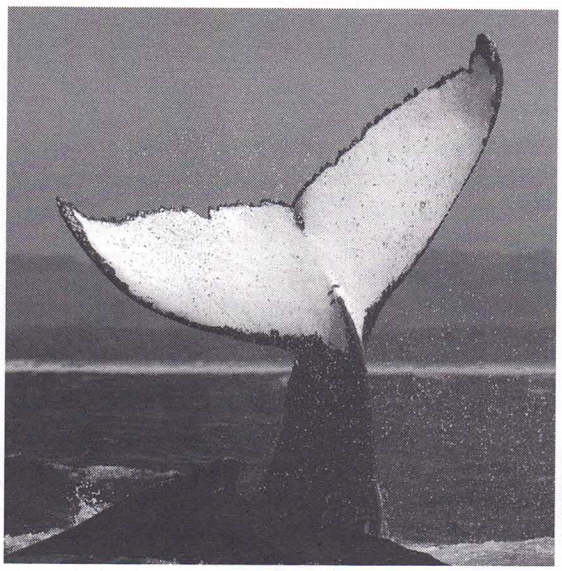
"We are very lucky to see that the humpbacks migrating along both sides of Australia are recovering well, but in New Zealand and many of the South Pacific islands the numbers are still very low," he said.

Dan also collaborates with the South Pacific Whale Research Consortium. When the teams compare photographic records they find that some Australian whales are travelling to New Caledonia and Tonga. It appears to be a two way exchange, with South Pacific whales also travelling to Australia.

The world's only white humpback, Migaloo, was first photographed by Dan in 2004 and his spectacular images can be seen on the SCUWRC website. Migaloo was seen off Coffs Harbour in mid-May. He's such a good example of why it's important to identify individuals since, if he disappeared, everyone would be acutely aware of it. Whereas, if any other "faceless" whales went missing, no one would notice unless it had already been identified.

Volunteers on standby

In the event of a whale or dolphin stranding on NSW north coast beaches, Australian Seabird Rescue (ASR) works closely and co-operatively with the Department of Environment by providing volunteer assistance and resources. ASR's stranding team is equipped and trained for rapid response to a stranding event anywhere between the Clarence and Tweed Rivers.



Tails and fins: the key to identifying individual humpback whales. Photo by Dan Burns, SCU Whale Research Centre (SCUWRC)

Marine mothers

Dolphin mothers are single mothers. They are rarely alone, however, because they stick together for mutual protection and cooperative fishing. They are renowned for their strong bonds with each other. A birthing mother is often attended by another female who helps get the newborn quickly to the surface for its first 'breath'. She remains close for ongoing support. The calves stay with their mother for at least three to four years and will be moved on by mum only after she becomes pregnant again.

Several years ago a newborn dolphin stranded at Ballina. Aerial searches found no pod or mother and he was transported to SeaWorld on the Gold Coast as the only option for survival. Dolphin calves depend entirely on mother's milk for the first six months and, with a specially prepared and suitably rich formula, staff worked around the clock to bottle-feed the bub. One of SeaWorld's adult female dolphins was put with him and to everyone's delight, immediately adopted the little fellow.

Hopes were raised but sadly the calf did not s
An autopsy revealed brain damage, suggest
may have been rejected because of the
defect. An examination of his dolphin bab
found that she had spontaneously comm
lactating; such is the powerful maternal b
these marine mothers.

Master of sea and sky

Along beaches and headlands people are l
intently out to sea. All eyes are peele
the tell-tale "blow" or spectacular splash
transforms the day from ordinary to aw
– the excitement of seeing a whale.

Meanwhile other subantarctic visitors may b
at this time of year, if only those binoculars
skyward. Coinciding with the whales'
escape is an equally impressive creature, a
of sea and sky. It is the black-browed albatr

Like its Antarctic neighbours the black-b
albatross migrates north for the winter, some
travelling quite close to the coast. They
unique combination of yellow beak and
underwings with black edges, giving a
zigzag appearance. With a wingspan of onl
only) 2-2.5 metres, they are one-third the
their better known larger cousin, the wan
albatross.

Smaller size has advantages however. Su
agility enables the black-browed albatross
closer to the ocean surface and manoeuvre
deftly than the larger species. It can plunge
flying under water up to five metres do
pursuit of small fish or squid. Tragically this
it the seabird most likely to go for baited
line hooks, the reason for its current endan
status. Flying close to the surface and
diving has other risks too. An inexperienced
seabird can get trapped by a sudden storm.

Change of fortune

When Brisbane retirees, David and Judy Sh
decided to spend a few days at Brooms He
the NSW far north coast, they had an unev
weekend in mind. It was too cold and win
fishing so they rugged up and went for a wa
the otherwise deserted beach.

"Suddenly we saw a large white bird tu
around in the surf," David said. "From my exper
fishing at sea, I knew that it was an albatros
it was in trouble."

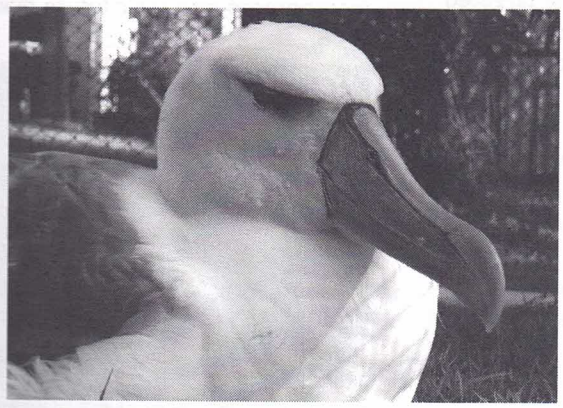
David didn't hesitate to ditch his shoes, sock
jeans and wade out to rescue it. Oceanic sea
almost never see humans so they have no

Usually they are very passive but the stressed albatross nipped at David as he picked it up, lightly grazing his arm.

"I reckon I'm the only bloke in Australia sporting a graze caused by an albatross!" David laughed.

The bird was shivering and David placed it in the warmth of the sand dunes before calling Clarence Valley WIRES. It was conveyed to the Australian Seabird Rescue (ASR) centre in Ballina where it was identified as a juvenile black-browed albatross. Following a check by Lennox Head vet Evan Kosack, the lucky bird is set to recover with the help of anti-inflammatory medication for injured joints. "Serendipity" is now resting comfortably whilst ASR rehabbers delight in the rare privilege of seeing an albatross up close and personal.

All seabirds floundering in the surf need to be rescued immediately. Most are threatened species. While albatross are said to bring luck to seamen, it seems that on this occasion it was the seaman who brought luck to the albatross.



Black browed albatross

Where there's a will

Loss of habitat is the single biggest impact on wildlife. Even the scattered remnants are a minefield. Every day native animals run the gauntlet of vehicles, barbed wire, dogs, cats and other introduced predators, to name just a few of the life threatening hazards. Wildlife rescuers are determined people, however, and understand that where there's a will there's a way to reduce the unnecessary suffering.

On the northern tablelands a weekend hobby farmer was granted a permit to shoot wombats because they had damaged several newly installed fences. A local wildlife rescuer pleaded for some time to solve the situation first. Recognising that the fences had cut across the wombat's routine walkabout, all it took was a piece of large pipe placed in a shallow trench under each fence. The wombats happily use it.

Another avoidable hazard is barbed wire fencing. As large properties are subdivided into smaller acreages, often the fencing is left because it's tedious and time consuming to remove. It then becomes covered with vegetation, attracting native animals who feed on it. Birds, bats, possums and young wallabies all get tangled and trapped. Again the solution is simple, merely splitting and fitting flexible polypipe over the top two or three strands. More information is available on the website, wildlifefriendlyfencing.com.

Friendly fencing

Possum magic

What started out as country road caution for a traveller ended up being a wonderful experience. Driving slowly through an area where wildlife is often seen, the traveller noticed a dark spot in the middle of the road. With a sugar cane field nearby, it was likely to be a dead rat. The traveler stopped to check out the animal and, if it was dead, move it to the side of the road. However, the headlights revealed a small, fluffy marsupial with black stripes on its face, a young squirrel glider. The tiny possum remained motionless despite being approached. Concerned that it was injured, the traveler decided to pick it up, and bent down with extended hands and was astonished by what followed. The possum looked up quizzically and then raced up the traveller's jeans, coming to a stop on the shoulder. Since the glider was obviously uninjured, it was decided to move it out of harm's way. As the traveller approached a large tree, the possum launched itself and scampered up the trunk. Slowing down made all the difference.

Travelling stock reserves and routes an essential ingredient in saving the squirrel glider (Petaurus norfolcensis)

by Mason Crane

The squirrel glider is a medium size gliding possum that was once commonly found throughout the woodlands of the sheep/wheat belt of the western slopes of NSW. The squirrel glider feeds mainly on insects and lerps, as well as nectar and acacia sap. Its preferred habitat coincides with the most productive parts of the landscape where its food resources are often more abundant. Today, the species is endangered in Victoria and threatened in NSW, largely as a result of land clearing. For instance, in the southwest slopes bioregion, more than eighty five percent of native vegetation has been cleared since European settlement. Land clearing was, and still is, not a random process, with the most productive areas of land being targeted first. Historical clearing has today resulted in a legacy of remaining remnant vegetation existing primarily on the poorer hill country.

Some places have managed to escape this extensive clearing. Today many landscaped areas such as travelling stock reserves and routes and other crown lands (eg town commons, roads and cemeteries) provide the only remaining examples of the local vegetation and act as some of the last 'strongholds' of squirrel gliders.

In 2005 I began a research project examining how squirrel gliders use woodland patches on travelling stock reserves, road reserves/stock routes and paddock trees in the southwest slopes of NSW. Almost all of the populations of squirrel gliders I identified were reliant on woodland patches occurring on either travelling stock reserves and/or on road reserve/stock routes. These areas were not only a boon for squirrel gliders but other threatened species as well, such as swift parrots, superb parrots, diamond firetails and black-chinned honeyeaters. Even the reserves that some would categorise as 'degraded' (eg contained little more than paddock trees) still had high numbers of key threatened species. What has become clear during the time I have spent carrying out this study and other research in the southwest slopes is that many of these species, such as the squirrel glider, would have disappeared long ago from some landscapes if it wasn't for the networks of travelling stock reserves and road reserve/stock routes.

These reserves often occur in the most hi productive parts of the landscape and thus coinc with some of the most important breeding feeding grounds for many threatened spec The general lack of such refugia on private l and in conservation reserves further emphas their importance. The role of these reserve facilitating movement across the landscape, eit as corridors or as stepping stones for migra and for dispersal of sedentary species, is equ important.

Travelling stock reserves, together with st routes and roads, are essentially the bones in conservation of not only threatened species overall biodiversity in the over-cleared landsca of the western slopes. While these reser are in public hands there is huge potential enhance their biodiversity values by regenerat cleared and degraded reserves and improv surrounding landscape connectivity. For the fut conservation of biodiversity in the western slo of NSW the value of travelling stock reserves a road reserve/stock routes must be better reali and considerations of biodiversity conservat incorporated into their future management.

Squirrel glider

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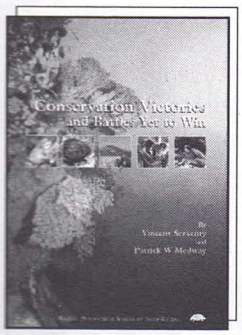

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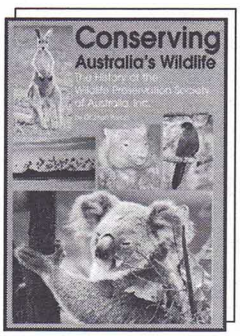

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"The challenge to the present adult generation is to reduce the increasing pressures the Earth and its resources - and to provide youth with an education that will prep them emotionally and intellectually for the task ahead."

PATRICK W MEDWAY AM
National President

Cover photo: Adult diamond python (morelia spilota spilota), a member of the carpet python family, is found in the southern half and mid-north coast of NSW and into Victoria (no other python lives further from the equator than this species). Diamond pythons have a distinctive pattern of a black background with cream or yellow spots and blotches. There is some variation between individuals ranging from snakes that are predominantly black with a few light spots, to others that have bright yellow scales edged in black plus yellow diamond-shaped patches surrounded by black. These beautiful snakes may reach three metres in length, but two metres is more usual. As with all pythons, this snake is non-venomous. Diamond pythons are fully protected in all parts of Australia.

Photo by Nick Edards

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