



# For the times they are a-changin'

Andrew Burbidge looks back over 33 years of working for State government on biodiversity conservation, describes some of the significant changes he has seen and comments on future needs.



by Andrew Burbidge

**I**n 1968, when I started work as a research scientist in the Department of Fisheries and Fauna, conservation in all its forms was an almost-unheard-of formal activity in Western Australia. There were only two research scientists working on nature conservation issues in the department. My job was to develop a scientific basis for the management of nature reserves, while my colleague Tom Riggert was developing waterfowl management programs.

In this article, I will look at some of the changes I have seen and comment on the future. I don't want to imply that nothing had happened in nature conservation before 1968—far from it. For decades, scientists and conservationists had been influencing



**Previous page**

**Main:** Western swamp tortoise: still a critically endangered species, but now on the road to recovery.

Photo – Jiri Lochman

**Insets:** The type specimen of Stimson's python collected in the Great Sandy Desert in 1979; fieldwork in the Great Sandy Desert, 1975.

Photos – Andrew Burbidge

**Left:** Andrew Burbidge.

Photo – Ernie McLintock

the State government and its departments through advisory committees, authorities and other mechanisms. Already, the basis of a conservation reserve system had been developed via a report by the Academy of Science, augmented by work by the

Fauna Protection Advisory Committee and the National Parks Board. The State's *Fauna Conservation Act 1950* was probably the most advanced conservation legislation in the country. Rachel Carson's seminal *Silent Spring*, published in 1962, had woken many to the perils of environmental pollution and everyone was starting to hear a new word—ecology.

**THE CONSERVATION RESERVES SYSTEM**

In 1970, there were 27 national parks and 156 nature reserves vested in the National Parks Board and WA Wildlife Authority, with a total area of 2,283,895 hectares, only 0.9 per cent of the State. Although I had been employed mainly to develop management systems for nature reserves, I quickly realised that opportunities existed to expand the very inadequate reserve system. Norm McKenzie, employed in 1970 to carry out biological surveys, and I started surveying areas to improve knowledge of the State's biodiversity, and to obtain evidence to support additions to the reserve system. In those days, we concentrated on the deserts and the Kimberley, places where there were very few conservation reserves and limited information.

In 1972, the newly-created Environmental Protection Authority appointed the Conservation Through Reserves Committee (CTRC) to make recommendations for a better reserve system. My appointment to the CTRC's



**Above left:** Dunes and a salt lake in the Great Sandy Desert.

**Left:** Tall mulla mulla (*Ptilotus exaltatus*) in the Great Sandy Desert.

Photos – Andrew Burbidge



Technical Subcommittee allowed me to interact with other knowledgeable people and input biological information collected by the department. CTRC's reports of 1974, 1977 and 1981 led to the declaration of many national parks and nature reserves. As well, with others I worked to ensure that numerous remnant areas of bushland in agricultural areas were added to the conservation reserve system.

Much work has been done to build on the CTRC reports. These days, many reserve proposals are based on comprehensive, detailed regional surveys lasting several years and involving a range of experts and using computer-aided analyses. Many new species of plants and animals have been discovered as a result of this work, and we now have a much better idea of the conservation status of major segments of the State's biota. Today, the Department of Conservation and Land Management manages 23.6 million hectares of terrestrial and marine reserves, the terrestrial portion being 8.9 per cent of the land area of the State. Not yet enough, but a vast improvement on 30 years ago.

## THE WA WILDLIFE RESEARCH CENTRE

I started work in 1968 in an old house in Adelaide Terrace, Perth, sharing quarters with some of the State's wildlife officers, and was soon transferred to another old house in Hay Street, East Perth. Being next to a well-known hotel, it was frequently burgled by people looking for beer money! In



1973, the Wildlife Research Centre was constructed, and the growing group of wildlife scientists and technical support staff moved to what is now part of Woodvale. The 1970s was a period of rapid growth in the State's economy, based on a resources boom. Fortunately, there was corresponding growth in staff working on conservation. New staff arrived at the Wildlife Research Centre to develop greater knowledge about a wider range of conservation issues, and I was fortunate enough to lead the group of scientists and other staff at the centre for many years. It has been a marvellous working environment that has produced much excellent research and led a lot of the major steps forward in nature conservation in Western Australia (see 'A centre of diversity', *LANDSCOPE*, Autumn 1999). Later,

**Top left:** Biological survey expedition on South West Osborne Island, Kimberley, in 1971.

**Top:** Long-time colleague Phil Fuller at a boab carved by the crew of the *Mermaid*, commanded by Phillip Parker King, rediscovered at the Prince Regent Nature Reserve during fieldwork in 1971.

**Above:** Saltwater crocodile surveys in the 1970s and 1980s showed that the species was slowly recovering after over-exploitation.

Photos – Andrew Burbidge

after the creation of the Department of Conservation and Land Management, I was able to use some of the lessons I learned at the Wildlife Research Centre when I was appointed Director of Research for the new department.



**Left:** The monjon (*Petrogale burbidgei*), discovered during surveys in the Kimberley in the 1970s.  
Photo – Jiri Lochman

**Below:** The Barrow Island euro. Islands are valuable repositories of biodiversity and need careful management.  
Photo – Andrew Burbidge

### THREATENED SPECIES

My zoology PhD studies were aimed at providing a sound scientific basis for the conservation of the western swamp tortoise. This led to a continuing interest in the conservation of threatened species and, over the years, I have been involved in the conservation of 'icon' species such as the noisy scrub-bird, numbat, bilby and chuditch, as well as many lesser-known species of

threatened animals and plants. The Department of Fisheries and Fauna became the Department of Fisheries and Wildlife in 1980, when the *Fauna Conservation Act* embraced flora conservation and became the *Wildlife Conservation Act* (before this, the Forests Department had administered the dated *Native Flora Protection Act 1935*, but had focused its attention primarily on native forests and

plantations). At this time, Stephen Hopper joined the Wildlife Research Centre team to develop what has become a comprehensive State-wide threatened flora conservation endeavour.

The western swamp tortoise looked in reasonable shape when I completed my PhD in 1967, but numbers declined seriously in the late 1970s and 1980s, due mainly to a series of dry years and fox predation. In 1987, Gerald Kuchling, an Austrian expert on turtles and tortoises, offered his services, and detailed studies and management recommenced. Captive breeding became a vital component of the conservation program and so began a collaboration with Perth Zoo, managed through a committee. This committee was the forerunner of the recovery teams set up later to coordinate threatened species recovery, and of other collaborations (see 'What the tortoise taught us', *LANDSCOPE*, Winter 1991).





I recently chaired the 27th meeting of the Western Swamp Tortoise Recovery Team, and we reviewed progress over the last ten years. Almost all the targets we had set had been met, many of them ahead of time. While the swamp tortoise is still listed as 'critically endangered', and much conservation work still needs to be done, it is clearly on-track to better days.

In 1992, I was appointed Director of the WA Threatened Species and Communities Unit, to lead and coordinate threatened species and ecological communities' conservation in WA. The amount of work directed towards conserving threatened species and ecological communities has increased significantly since then (see 'Recovering from the brink', *LANDSCOPE*, Autumn 1995).

### MAMMAL CONSERVATION

Much of my work has been associated with mammal conservation. In Australia, mammals are the group of organisms that have been most affected by the changes wrought on the environment since European settlement—recent research conducted with Norm McKenzie and other mammalogists has shown that 22 species of mammals have become extinct in Australia since 1800. Research I carried out at Dryandra in the early 1970s showed that the woylie, then a threatened species, was restricted to dense stands of shrubs. When Jack Kinnear joined the Wildlife

Research Centre in 1978, I asked him to look at the reasons why rock-wallabies, woylies and some other mammals were threatened, even where large areas of habitat remained. Jack's work clarified the role of the European red fox as a predator of Australian native mammals, and showed that fox control led to a resurgence in remnant mammal populations. This allowed the development of 'Western Shield', which has led to three mammal species being removed from the State's threatened fauna list and many other animals becoming much more abundant. Western Shield is one of the world's largest and most effective fauna conservation programs. Ongoing research into the control of feral cats should result in a similarly-dramatic recovery, once it bears fruit.

Our 1970s desert surveys failed to locate many mammal species that once occurred there. To try to find out when and why they disappeared, long-time colleague Phil Fuller and I started an oral history project, visiting Aboriginal settlements in the western deserts. We were amazed at the detailed knowledge the older people had about mammals that inhabited or recently inhabited their land (see 'Vanishing desert dwellers', *LANDSCOPE*, Winter 1987). Unfortunately, the research did not find any mammals thought to be extinct, but it did record valuable information, much of which is now disappearing as the older Aboriginal people die.

An Australian sealion (*Neophoca cinerea*) and a Recherche rock-wallaby (*Petrogale lateralis hacketti*) on Wilson Island, in the Archipelago of the Recherche Nature Reserve.  
Photo – Andrew Burbidge

### LAND CLEARING

Agriculture was the main endeavour in the State for many decades, and resulted in the clearing of vast tracts of native vegetation. After World War II, land clearing accelerated, with little being done to conserve the incredibly diverse Wheatbelt flora and fauna. In 1978, the Environmental Protection Authority set up a Working Group on Land Releases, of which I was a member. For the next few years, we were able to influence the creation of several significant nature conservation reserves.

In 1983, the government set up a committee to report on broadscale land releases and appointed a working party (with almost the same membership as the working group) to assist its deliberations. After reading hundreds of public submissions, we recommended that there be no further broadscale land releases, which was accepted by government. Now that we are fully aware of the environmental damage that broadscale clearing has caused—not to mention the massive amounts of money needed to try to redress problems such as increasing salinity—this was, I believe, a landmark decision.



It is almost unbelievable that some other States are still allowing massive land clearing.

## ISLANDS

Ever since I visited the Houtman Abrolhos Islands in 1964, to help Jack Kinnear with his research on tamar wallabies, I have been fascinated by islands. Western Australia is fortunate to have many islands—there are 3,424 features above the high water mark on 1:100,000 maps. While only a small proportion of these are large, collectively they conserve many species and ecosystems. Without islands, a further nine species of Australia's native mammals would be extinct.

Islands are valuable seabird breeding sites. Most of our seabirds nest only on islands—nesting on the mainland would be unsuccessful as seabird nests are usually on or under the ground, and predators would have a field day. Phil Fuller and I developed a database (originally on a card index; now on a computer) that collated what was known of seabird breeding islands. Our seabird research concentrated on the lesser noddy (see 'Endangered! The Lesser Noddy', *LANDSCOPE*, Autumn 1989) and the Houtman Abrolhos Islands—the most important seabird breeding site in the eastern Indian Ocean (see 'A million seabirds', *LANDSCOPE*, Autumn 1991). Currently, we have 4,355 records of 42 bird species breeding on 558 islands. These data have been used to justify the reservation of islands, to measure the effects of changes in island condition and to assist in oil-spill planning. They will be valuable in assessing future climate change and the impacts of fishing.



**Top left:** Montebello Islands Conservation Park. This is the site of much work to rid the archipelago of introduced rats and cats.

**Centre left:** Masked boobies on Bedout Island Nature Reserve. Bedout Island was the first island on which black rats were eradicated.

**Left:** Crested terns nesting on Pelsaert Island.  
Photos – Andrew Burbidge

I have also spent much time ridding islands of feral animals, particularly rats. My first such project, in 1969, was removing rabbits from Carnac Island, while the most recent has been to eradicate rats and cats from Montebello Islands (see 'Montebello Renewal', *LANDSCOPE*, Summer 1996-97 and 'Isle of cats. The scourging of Hermite Island.' *LANDSCOPE*, Autumn 2000). Already, some threatened species have been established there (see 'Moving mala', *LANDSCOPE*, Autumn 1999). The State's islands are an important natural resource and need protection and careful management.

## PUBLIC OPINION AND POLITICS

We are all familiar with the long-running controversy over logging in native forests. But this has not been the first such controversy. When the first biologically-based waterfowl and kangaroo management plans were developed there was much opposition—some people thought the allowable take was too restrictive, while others thought it should be more restrictive. Public opinion about exploitation of wildlife has changed enormously over the last 30 years. Thirty years ago, whaling was a legitimate enterprise at Albany; nowadays, most Australians oppose whaling, mainly because peoples' attitudes to such large and wonderful animals have changed.

I have seen a similar transformation of attitudes to conservation in general. Environmental issues have changed from being a minor sideline to mainstream. We now have a Minister for the Environment and a department focused on biodiversity conservation, whereas in the past nature conservation was tacked on to fisheries, agriculture or forestry. Probably the most significant change in attitude has been among farmers, who have embraced Landcare and Bushcare programs with enthusiasm.

The change in public opinion has driven changes in Canberra, too. Until quite recently, the Commonwealth dealt only with matters relating to trade and treaties. Then, as the environment became a mainstream issue affecting voting patterns, the Commonwealth passed increasingly powerful biodiversity conservation legislation.



## THE FUTURE

In Australian terrestrial ecosystems, loss of biodiversity can be attributed to three main factors: land clearance, invasive species and poor land management. To be effective, biodiversity conservation must be broad-based. Important facets include good legislation; a comprehensive, adequate, representative and well-managed conservation reserve system; high-quality off-reserve conservation partnerships; effective, implemented threatened species and ecological community recovery plans; and first-rate programs to mitigate the effects of invasive species.

Government departments involved in conservation must be allocated resources sufficient to manage the land, water, and plants and animals entrusted to them. Conservation planning, and a proportion of conservation research, must be long-term, as we are dealing with ecosystems that naturally change over long periods. Importantly, biodiversity conservation must have broad public and political support. Public participation and public information programs are vital, as

The lesser noddy breeds only on three islands in the Houtman Abrolhos.  
Photo – Andrew Burbidge

are partnerships with Aboriginal communities throughout the State.

How close are we to a world-class biodiversity conservation program? Still a good way off. Intractable nature conservation issues remain, such as combating *Phytophthora* dieback, and there are other problems that we understand but don't have enough resources to do much about. Biodiversity is being assailed by new threats, such as climate change. Our society has the people, skills and resources to fix these problems; it just needs to get its priorities right.

I have been fortunate to be able to make modest contributions to nature conservation during my career—now it is time to hand over to a younger generation, a generation that has better information and technology and that can make a real difference, so long as the public and governments ensure that there are sufficient resources and well-educated, motivated people to continue to improve biodiversity conservation work.

Andrew Burbidge retired as Deputy Director, Biodiversity Conservation in July 2002. He joined the Department of Fisheries and Fauna (later Fisheries and Wildlife) in 1968 and, when the wildlife section was amalgamated with the Forests Department and National Parks Authority in 1985, became a senior principal research scientist in the Department of Conservation and Land Management. He was Director of Research from 1987 to 1992, and Director, Threatened Species and Communities, from 1992 to 2001. Andrew has written many *LANDSCOPE* articles over the past 15 years and has also been the magazine's main scientific adviser. Andrew is maintaining an association with the department as a part-time Research Fellow.





Winner of the Alex Harris Medal for excellence in science and environment reporting.

# LANDSCOPE

VOLUME EIGHTEEN, NUMBER 1, SPRING 2002



Discover some amazing lifestyles of the little-known fungi of our south-west forests. See 'Forest fungi' on page 10.



One of WA's longest serving wildlife researchers looks at changes to nature conservation in the State. See 'For the times they are a-changin' on page 20.



Two unusual beetles are attracted to large bushfires. But why, and how do they find the fires and avoid getting burnt? See 'Australian fire-beetles' on page 36.



Two wildlife rescuers recently received Queen's birthday honours. See 'Kanyana to the rescue' on page 42.



What do wildlife officers do when a large whale weighing up to 80 tonnes becomes entangled? Turn to 'When nature calls...for help' on page 42.

## FEATURES

<b>FOREST FUNGI: LIFESTYLES OF THE LITTLE-KNOWN</b> RICHARD ROBINSON.....	10
<b>FOR THE TIMES THEY ARE A-CHANGIN'</b> ANDREW BURBIDGE.....	20
<b>TRACKING DUGONGS</b> DAVID HOLLEY AND DARREN CAPEWELL.....	28
<b>AUSTRALIAN FIRE-BEETLES</b> HELMUT AND ANKE SCHMITZ.....	36
<b>KANYANA TO THE RESCUE</b> MITZI VANCE.....	42
<b>WHEN NATURE CALLS ... FOR HELP</b> VERNA COSTELLO AND DOUG COUGHRAN.....	49

## REGULARS

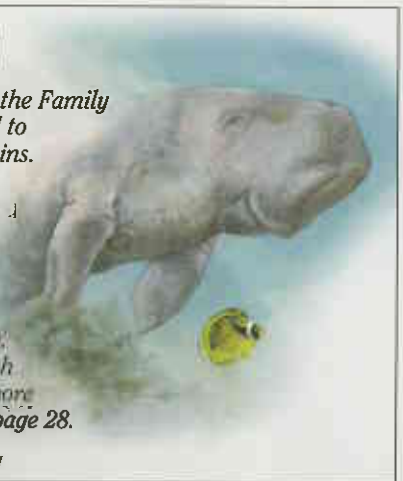
<b>BUSH TELEGRAPH</b> .....	4
<b>ENDANGERED</b> NET-VEINED GYROSTEMON.....	19
<b>URBAN ANTICS</b> A SPRING THING.....	54

**Executive editor:** Ron Kawalifak  
**Editors:** David Gough, Carolyn Thomson-Dans.  
**Bush Telegraph editor:** Verna Costello.  
**Scientific/technical advice:** Andrew Burbidge, Keith Morris, Kevin Kenneally, Paul Jones, Chris Simpson.  
**Design and production:** Tiffany Aberin, Maria Duthie, Gooitzen van der Meer.  
**Illustration:** Gooitzen van der Meer.  
**Marketing:** Estelle de San Miguel ☎ (08) 9334 0296 Fax: (08) 9334 0498.  
**Subscription enquiries:** ☎ (08) 9334 0481 or (08) 9334 0437.  
 Colour Separation by Colourbox Digital  
 Printed in Western Australia by Lamb Print  
 © ISSN 0815-4465. All material copyright. No part of the contents of the publication may be reproduced without the consent of the publishers.  
 Please do not send unsolicited material to LANDSCOPE, but feel free to telephone the editors.  
 Visit NatureBase at [www.naturebase.net](http://www.naturebase.net)

## COVER

The dugong is the only living species in the Family Dugongidae, and is more closely related to elephants than it is to whales and dolphins. One of the largest and most secure populations of dugong grazes on the extensive beds of seagrass in the shallow marine environment of Shark Bay. An estimated 10,000 dugongs, representing 10 per cent of the world's population, live in the bay. A new study, involving collaboration with local Aboriginal people, is discovering more about their movements in the bay. See page 28.

Cover illustration by Phillipa Nikulinsky



Published by the Department of Conservation and Land Management, Dick Perry Avenue, Kensington, Western Australia.

