

# wildlife matters

australian



wildlife  
conservancy

APRIL 2006

## Saving Australia's Endangered Wildlife

The Newhaven Partnership



*The Night Parrot:  
Australia's most endangered species?*

# saving australia's threatened wildlife



## the awc mission

Australian Wildlife Conservancy (AWC) is dedicated to saving Australia's threatened wildlife and ecosystems. To achieve this mission, our actions are focused on:

- Establishing a network of sanctuaries which protect threatened wildlife and ecosystems: AWC now owns 14 sanctuaries covering 917,000 hectares (2.3 million acres).
- Implementing practical, on-ground conservation programs to protect the wildlife at our sanctuaries: these programs include feral animal control, fire management and the translocation of endangered species.
- Conducting (either alone or in collaboration with other organisations) scientific research that will help address the key threats to our native wildlife.
- Hosting visitor programs at our sanctuaries for the purpose of education and promoting awareness of the plight of Australia's wildlife.

## about awc

AWC is an independent, non-profit organisation based in Perth, Western Australia. Donations to AWC are tax deductible.

During 2004-2005, over 90% of AWC's total expenditure was spent on conservation programs, including land acquisition. Less than 10% was on development (fundraising) and administration.

*Front Cover:* The front cover of this issue of *Wildlife Matters* features a painting of a Night Parrot by internationally renowned wildlife artist William T. Cooper from the book *Australian Parrots* (J.M. Forshaw and W.T. Cooper, 1981, Lansdowne Editions). There are no photographs of living Night Parrots. AWC would like to thank Bill and his wife Wendy for their generous support in allowing AWC to use this beautiful painting.

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Welcome to the April 2006 edition of *Wildlife Matters*. A feature of this edition is an article on the finalisation of our Newhaven partnership with Birds Australia, an exciting development for both organizations and for private sector conservation in Australia.

As you will read on pages 4-5, the ownership of Newhaven has now been transferred to AWC. From 1 April, AWC has been responsible for the day-to-day management of Newhaven. Birds Australia and its members will remain intimately involved at Newhaven, through the property management committee, the ongoing volunteer and visitor programs and through the implementation of specific bird conservation projects.

AWC is proud to be associated with Birds Australia. Most importantly, the partnership sets a precedent that we hope will inspire further collaboration within the conservation sector in Australia.

With the addition of Newhaven, AWC now manages 14 properties for conservation around Australia. These properties cover 917,000 hectares (2.3 million acres). However, the number of properties and the overall number of hectares are not as important as two other key indicators:

- AWC sanctuaries protect more than 250 threatened species.
- AWC sanctuaries protect more than 250 ecosystems, including at least 100 threatened ecosystems.

Your generous support has made it possible to deliver this outcome in a relatively brief period of time. It is heartening progress, which provides new hope for the future of Australia's many threatened species and ecosystems.

To put our contribution in further context, AWC sanctuaries now protect 150 of Australia's approximately 270 native mammal species. (This figure is more than the number of mammal species found in some States!)

AWC sanctuaries also protect more than 60% of Australia's bird species.

I hope these statistics demonstrate that your donations are making a difference where it really counts – *in the field*. AWC has focused its involvement in properties that have exceptional conservation values. Even more importantly, our sanctuaries are being actively managed by dedicated field staff who are implementing programs to remove feral animals and weeds, reintroduce threatened wildlife and deliver appropriate fire regimes.

AWC is now developing a strategy to extend our programs to ensure the effective conservation of every species of mammal, bird, reptile and amphibian, and every threatened ecosystem, in Australia. Developing innovative partnerships with organizations such as Birds Australia, as well as government agencies and private landholders, will be critical to the realization of this ambitious goal.

We are determined to help save even the most endangered species and ecosystems. Perhaps the Night Parrot (see our cover and pages 4-5) is closer to extinction than any other animal in Australia. Or perhaps that title belongs to one of the many other species that continue to decline rapidly under the pressure of habitat loss, feral predators and altered fire regimes.

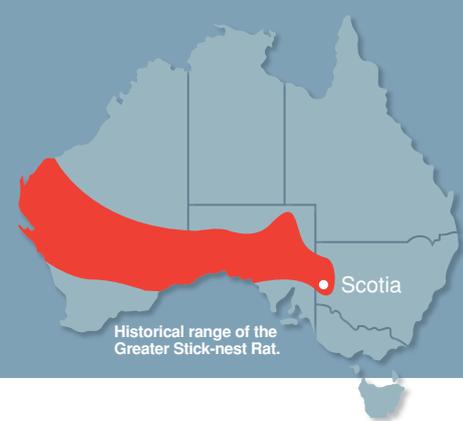
AWC is committed to turning back this tide of extinctions. With your continued support, we will ensure a more secure future for the Night Parrot, the Greater Stick-nest Rat (page 3) and the many other threatened species around Australia.

I hope you enjoy this edition of *Wildlife Matters*.

Atticus Fleming  
Chief Executive

# Scotia Wildlife Sanctuary

## Stick-nest Rats fight for survival at Scotia



In early April 2006, over 100 Greater Stick-nest Rats were released into the wild within the 4,000 hectare feral predator-free area at Scotia Wildlife Sanctuary. At the time this newsletter was going to print, the new population of Stick-nest Rats was fighting for its survival, with predation by raptors and the stress of translocation being the major obstacles to success.

The Greater Stick-nest Rat was once widespread across southern Australia. However, by the 1930's it was extinct on the mainland, surviving only on one island off the coast of South Australia. The impact of introduced herbivores (destroying habitat) has been identified as the key factor in the mainland extinction of the Stick-nest Rat. The species has since been successfully reintroduced to three other offshore islands. In addition, four translocations to mainland sites have been attempted – sadly, only one has been successful (at Roxby Downs).

If the new Scotia population survives, it will be one of only two mainland populations of the Greater Stick-nest Rat. The establishment of a new population at Scotia is therefore a vital step in ensuring the survival of the species, providing insurance against catastrophic events (such as drought or disease) that could

wipe out the other populations.

Approximately one-third of the 100 rats released at Scotia were obtained from Reevesby Island. This was a joint exercise with the South Australian National Parks and Wildlife Service. AWC staff and National Parks staff camped on Reevesby Island for several days to conduct annual monitoring of the Stick-nest Rat population, avoiding a plague of Tiger Snakes before capturing 29 Stick-nest Rats for release at Scotia. Transferring the rats to Scotia was a major logistical challenge involving a trip by boat to the mainland, followed by a special charter flight to Scotia. The remaining Stick-nest Rats released at Scotia were captive bred animals, previously held in small enclosures at Scotia and Yookamurra.

Upon arrival at Scotia, the AWC team of Dr Joss Bentley, Jamie Rockliff and Natasha Schedvin worked long hours

to 'process' the rats (radio-collaring, weighing etc) before they were released during the early evening into the fox and cat-free wilderness of Scotia. Many long hours of monitoring lies ahead before it will be clear whether this translocation is successful. Already, several of the rats have been lost including at least one to a raptor and others to unknown causes. At this stage, although we are cautiously optimistic, the fate of the new population hangs in the balance.

The translocation of an endangered species always carries a very high risk of failure. Despite this, AWC has conducted more than 30 successful translocations (at a success rate of more than 90%). Bilbies, Bettongs and Bridled Nailtail Wallabies have been successfully released at Scotia, and we are determined to ensure they are joined by a viable population of Stick-nest Rats.

## We need your help to expand the size of the feral predator-free area at Scotia

Sir David Attenborough has described the Scotia project as 'a vitally important project for Australia and the planet'.

With your support, AWC has established a 4,000 hectare fox and cat free area at Scotia. We are now aiming to increase the size of the feral-free area to over 12,000 hectares. **This will be the largest fox and cat free area on mainland Australia.**

AWC needs to build another 38 kilometres of fence at approximately \$15,000 per kilometre. The additional feral-free area will enable the population of endangered mammals, such as the Bilby and the Burrowing Bettong, to increase by at least 1500 animals.

- **Your donation of \$1000 will build 65 metres of fence.**
- **A donation of \$30 per month will increase the population of endangered mammals by one animal.**

Please, help us save Australia's endangered mammals. All donations are tax deductible. Your support will make a difference where it really counts – in the field!



# Newhaven Wildlife Sanctuary

AWC and Birds Australia: a new partnership to protect Newhaven

*In late 2005, AWC and Birds Australia entered into an historic partnership to provide for the conservation and management of Newhaven Reserve, a 2,600 square kilometre property in central Australia. Newhaven is a property of exceptional conservation values, being home to a diversity of threatened wildlife and ecosystems. However, the wildlife of Newhaven faces a range of significant threats – extensive, hot wildfires; a rapidly increasing population of feral camels; the expansion of weeds such as Buffel grass; and the impact of introduced predators such as feral cats. We need your help to provide a secure future for Newhaven and its threatened wildlife.*

## The conservation values of Newhaven

Newhaven is located approximately 360 kilometres (4 hours drive) north-west of Alice Springs. The property covers 262,000 hectares of the Great Sandy Desert Bioregion. Significantly, the property is located in a 'transition zone', with the Burt Plain Bioregion and the MacDonnell Ranges Bioregion occurring within a few kilometres of the property boundary. Its location near three Bioregions is one factor contributing to the diversity of the property.

The landscapes of Newhaven are impressive. Extensive desert woodlands and dunefields are interrupted by a series of isolated escarpments and rugged hills and ranges. Some of these ranges rise

800 metres above the plains of Newhaven. A network of ephemeral wetlands also extends through the property, filling with water only after good rains.

The conservation values of Newhaven may be summarised as follows:

- Covering 262,000 hectares, Newhaven is the second-largest non-government nature reserve in Australia (after AWC's Mornington Wildlife Sanctuary).
- Newhaven contains at least 23 different ecosystems, all of which are either threatened or completely unreserved, or poorly reserved, within the government national park system.
- Newhaven is home to at least 160 bird species, including 10 species that are listed as threatened or of conservation significance. These species include the Princess Parrot, the Grey Falcon and the Grey Honeyeater.
- Newhaven is home to a diversity of mammal species (exact number unknown), including 4 nationally threatened species – the Bilby, the Black-flanked Rock-wallaby, the Marsupial Mole and the Mulgara. In addition, Newhaven is within the former range of at least 2 other endangered mammals - the Burrowing Bettong and the Mala - which could be reintroduced to Newhaven.
- Over 600 species of plants have been recorded on Newhaven.
- Newhaven is likely to contain a rich reptile fauna. One nationally threatened reptile species has been confirmed – the Great Desert Skink.

## Implementing the AWC - Birds Australia partnership

Birds Australia originally acquired Newhaven in 2000, with assistance from the Federal Government's National Reserve System program. In late 2005, Birds Australia entered into a partnership agreement with AWC to provide for the ongoing conservation of Newhaven. Under this partnership agreement:

- The ownership of Newhaven has been transferred to AWC at no cost.
- AWC is now responsible for the day-to-day management of Newhaven. That is, AWC must fund and implement the management and conservation strategies at Newhaven.
- Birds Australia will continue its involvement at Newhaven as follows:
  - AWC and Birds Australia will establish a Newhaven management committee to advise on the conservation and management of Newhaven. Birds Australia will have an ongoing role in, for example, the development of management strategies and annual operational plans for Newhaven.
  - Birds Australia will conduct specific bird research projects at Newhaven.
  - Birds Australia members will be given preference as part of the ongoing volunteer program at Newhaven.
  - Birds Australia members will continue to enjoy access to the property.



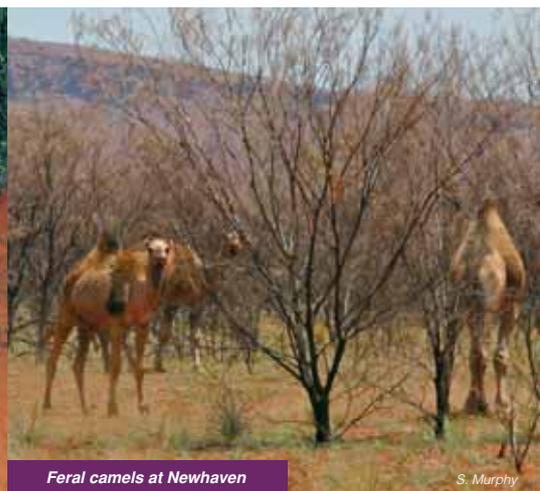
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The Black-flanked Rock-wallaby

J. Lochman



The Greater Bilby



Feral camels at Newhaven

S. Murphy



▲ Newhaven



Female

Male

*The Princess Parrot*  
(M. Morcombe)

as the birds and reptiles, of Newhaven.

We urgently need your support to complete the establishment of sanctuary infrastructure at Newhaven and to implement key land management actions. Priority actions include:

- Implementing a fire management plan that will re-establish a mosaic of burnt and unburnt areas.
- Culling feral camels.
- Conducting detailed baseline surveys to describe the mammal and reptile fauna of Newhaven, and to identify the location and needs of priority species such as Bilbies.
- Implementing a weed control program.

Please make a donation to AWC to assist in the conservation of Newhaven, and help protect the threatened wildlife of central Australia. We cannot save species like the Bilby and the Black-flanked Rock-wallaby without your help.

**A donation of \$300 will protect 500 hectares of Newhaven for one year.**

(A separate donation form is included with this newsletter, or you can use the form on page 16.)



Newhaven is the second largest non-government nature reserve in Australia

S. Murphy

The significance of the partnership is that it will enhance the conservation of Newhaven by combining the relative strengths and capacities of both Birds Australia and AWC. The partnership will enable Birds Australia to focus its activities at Newhaven on bird conservation and research, while harnessing AWC's skills and experience in relation to the management of large, remote properties for conservation.

AWC and Birds Australia have recognized that, by working together, we can achieve a better outcome for conservation at Newhaven. There is always lots of talk about 'collaboration' and 'partnerships' – AWC and Birds Australia are now putting it into practice!

In this spirit, AWC looks forward to developing a closer relationship with Birds Australia at our other properties, including Mornington and Brooklyn. The advice and assistance of Birds Australia can play a vital role in helping promote the survival and recovery of threatened bird species at these properties.

## We need your help

As the land manager of Newhaven, AWC must develop and implement practical, on-ground programs to address the key threats to the wildlife of Newhaven. Sadly, these threats are significant. Altered fire regimes throughout central Australia mean that extensive wildfires have had a severe impact on Newhaven in recent years. Camel numbers in the region have expanded dramatically, damaging vegetation and destroying habitat for native animals. Feral cats prey on the small to medium sized mammals, as well

## The Night Parrot

The Night Parrot, featured on the cover of this edition of *Wildlife Matters*, is perhaps Australia's most endangered animal, and is certainly one of our most elusive. Only two specimens of the Night Parrot have been recorded in the last 100 years. In 1996, a sighting of the Night Parrot was made at Newhaven. However, while sightings continue to be reported from various parts of central Australia, it is not possible to conclude with any certainty that the Night Parrot survives at Newhaven or anywhere else. Nevertheless, there is still hope that this mysterious bird has escaped extinction and is out there somewhere, clinging to survival. Suitable habitat exists on Newhaven. With your support - to ensure appropriate fire management and a reduction in feral animals - we may just rediscover the Night Parrot in time to prevent it being lost forever.

# Brooklyn Wildlife Sanctuary

## Controlling weeds to save wildlife



The gallery forests of the Mitchell River are important wildlife habitat on Brooklyn

Brooklyn Wildlife Sanctuary was acquired by AWC in late 2004. The acquisition of Brooklyn, and its establishment as a wildlife sanctuary, was an historic moment for non-government (private sector) conservation in Australia. This single property is home to approximately 40% of all Australian bird species and 30% of all Australian mammals. In short – Brooklyn is probably the most diverse and wildlife-rich parcel of privately owned land in Australia.

However, until acquired by AWC, the future for Brooklyn looked bleak. The property was threatened by weeds, overgrazing, feral animals, altered fire regimes and a proposal to clear land and divert water for sugar cane. The wildlife on Brooklyn was in serious trouble.

AWC has acted quickly to establish an active land management program at Brooklyn to address the key threats to its wildlife. This demonstrates our

commitment to practical, on-ground action. AWC's philosophy recognises that the mere purchase of a property is not enough to save its wildlife – it is essential to have dedicated, professional staff who are 'on site' implementing an active program of fire management, weed control and feral animal eradication.

There are other key elements to managing a property like Brooklyn including access to the best available science and a willingness to be innovative. All of these factors have come together in AWC's strategy to remove rubber vine (*Cryptostegia grandiflora*) from Brooklyn. Rubber Vine has been listed by the Federal Government as a Weed of National Significance. It is officially described as 'a severe threat to biodiversity', and has been estimated to cost the beef industry in Queensland more than \$18 million per annum in lost production. At Brooklyn, AWC inherited

a significant infestation of rubber vine along the Mitchell River and its tributaries. The rubber vine in these areas threatens the integrity of an endangered ecological community and may, if not controlled, soon begin to displace the animals that utilise vegetation along the Mitchell River. The control of rubber vine has therefore been identified as a high priority for AWC management. Our strategy to remove rubber vine has focused on destocking, the use of fire and taking advantage of a specific biological control agent.

In the following article, Dr John Hopkinson describes the progress made to date on the control of rubber vine at Brooklyn. Dr Hopkinson is an eminent agricultural scientist, now retired, who has generously donated his time and expertise to AWC to assist in addressing threats such as rubber vine. John's long experience with land management issues in north Queensland is highly valued by AWC.



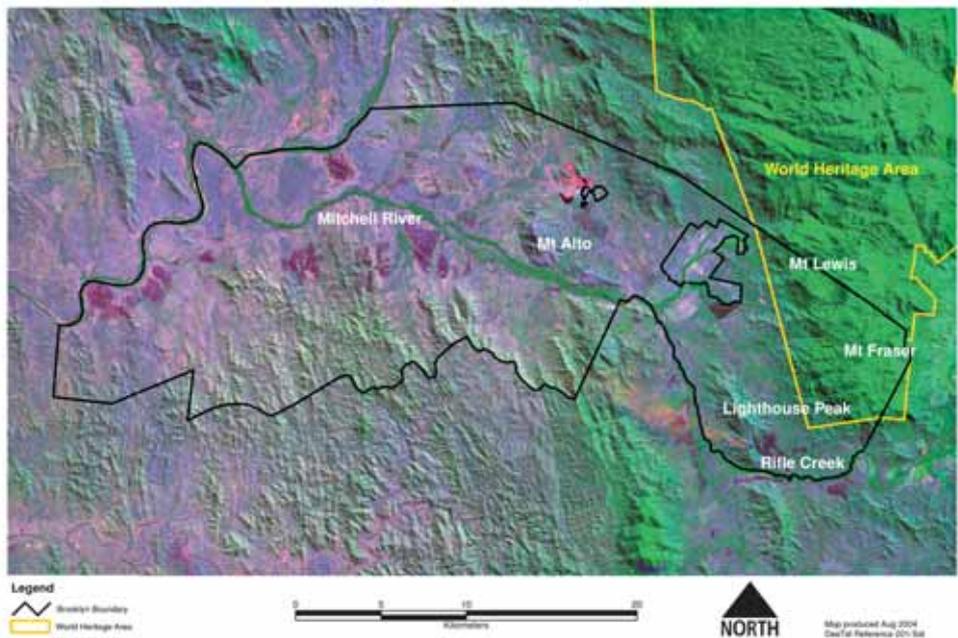
Brooklyn



R. Waldendorp

## The emergence of rubber vine as a serious weed

Along the rivers that intersect the savanna woodlands of north-east Queensland, rubber vine (*Cryptostegia grandiflora*) is by far the most serious woody weed. It seems to have been introduced to the mining towns in the early days of white settlement, and to have spread from them down the rivers. In the past, in these ancient fire-adapted ecosystems, rubber vine was probably kept in check by occasional hot fires. However, in about the last forty years rubber vine has undergone an explosion. This is generally attributed to the reduction in fires and fire intensities that have resulted from progressive changes in cattle management – in particular, increased grazing pressure



The Mitchell River runs through the heart of Brooklyn

and hence reduced fuel loads have altered fire regimes across the pastoral landscape, allowing rubber vine to spread substantially.

In the old days, stock numbers fell drastically in runs of bad years and took many years to build up again, during which time the pasture had time to recover during the wet seasons and accumulate dry-season fuel. Nowadays, the use of hardier zebu cattle, drought feeding, availability of motorised transport to and from distant agistment, and much else, have combined to ensure consistently high stocking levels and so prevent the accumulation of significant fuel loads. So fires are generally less intense than they used to be.

As a result, rubber vine, well adapted in the first place to the river beds, has spread unchecked. It forms ribbons of thicket along the watercourses and in the worst cases has spread out to cover vast areas of frontage country. Its thickets may be impenetrable, a haven for both feral cattle and station cattle with feral ambitions. The vines may sprawl 20 metres or more into the treetops. Sadly, rubber vine continues to spread throughout north-eastern Australia, imposing significant costs on cattle producers and displacing wildlife from key habitats.

## Developing a rubber vine strategy at Brooklyn

The change in land use from cattle production to wildlife conservation that accompanied our purchase of Brooklyn provided an opportunity for rubber vine control that is rarely available to the

grazier. The key to this has been de-stocking. After one wet season unstocked (2004-05), Brooklyn accumulated enough fuel to allow a fire management plan to be implemented effectively over substantial areas of the property.

The strategy adopted by Mick and Clare Blackman, managers of Brooklyn under the general supervision of Peter Stanton, is (to use Mick's words) "the maintenance of biodiversity, as much as is possible through emulating aboriginal burning practices of burning constantly throughout the year in a mosaic pattern". The team members are no strangers to the purposeful use of fire. The Blackmans have long experience of park and reserve management in northern Queensland savannas, where fire is an essential element in the maintenance of the ecosystem. Peter, for his part, was for many years the prophet of fire use for biodiversity retention in the national



J. Hopkinson

Rubber vine invading the Mitchell River frontage country



J. Hopkinson

Mick Blackman, Brooklyn Sanctuary Manager, assesses the success of his burning practices

parks of north-east Queensland where rainforest encroachment on precious pockets of wet sclerophyll woodland is a perennial threat.

Over the period that Brooklyn was run as a cattle station it would, as with most local properties, have been consistently heavily grazed. Burning would have been undertaken only when there was enough fuel and only in the late dry season (to provide green pick for the station cattle after the first storms). Unsurprisingly, because this approach allowed very few hot fires, Brooklyn therefore became widely infested with rubber vine, although to a lesser extent than many other properties in the Mitchell catchment.

A number of methods are available to contribute to the control of rubber vine – a parasitic insect, a rust fungus, herbicides, and fire. Our observations at

Brooklyn confirmed that the rust fungus, a biological control agent introduced to Queensland specifically to deal with rubber vine, is certainly helpful in weakening the plant. However, given the scale and the circumstances of the Brooklyn infestations, fire was identified as the only realistic option for widespread control of rubber vine along the Mitchell River and its frontage country.

AWC was already developing and implementing an active fire management strategy to address a number of different objectives including protective burning of boundaries and around infrastructure and burning for habitat management. Now, our fire management strategy had to also address the control of rubber vine in key areas.

The most important single factor in fire management is the fuel load, and dry grass is its greatest component. It is well known that a hot, high fire gives the best control of rubber vine. Only a thick body of dry grass can support such a fire. Grass grows rapidly during the 3 to 4 month summer wet season, after which it dries rapidly off to become fuel. The amount of fuel depends on the time

since the last fire, the general fertility, and particularly the grazing pressure in both the recent and long-term past. It was the progressive destocking of Brooklyn after purchase by AWC that, by removing the grazing pressure, allowed dramatic increases in the grass fuel load and so a real chance to attack the rubber vine with a hot fire.

## Putting the plan into action ...

The removal of most stock before the 2004-05 wet season, coupled with a reasonable season for grass growth, set the scene for Mick to put his plans into action. He began burning early, as soon as he could get a fire to run, which in 2005 was early April. His first task was the protective burns. The Peninsula Development Road runs right through Brooklyn, and there are small communities at both Maryfarms and Mt Carbine. Accidentally and maliciously lit fires are always to be anticipated, and precautions must be taken to limit them if controlled burning is to succeed. As Brooklyn covers about 600 square kilometres with boundaries of 110km, and the length of the public road through it is 40 kilometres, undertaking protective burns was a major task. However, once he had established these 'breaks', Mick was able to direct all his attention to the rubber vine.

The policy of mosaic burning required him to light numerous fires planned to burn limited areas, and here too an early start provided the best opportunity to control where the fires stopped, as well as where they started. Mick observed that he achieved the best control of rubber vine with the fire running downwind. Conventional protective back-burns were of only limited value. He estimates that the hot, high, fast fires killed probably about 50% of rubber vine plants outright and weakened many others. Certainly,



J. Hopkinson

An example of successful control of rubber vine by fire, followed by excellent recovery of both trees and grass during the subsequent wet season

there are areas completely missed, areas where there was not enough fuel, plants only partially burnt, and plants burnt but still, after recent rain, able to shoot from the base. Even so, the level of destruction of rubber vine is spectacular. Given another good growth of grass, it is anticipated that one more season's fires will drastically reduce the infestations.

The Brooklyn experience represents a valuable contribution to the knowledge of rubber vine control in Australia. Each burn is carefully documented, and Mick can take a visitor back to any of numerous sites, give him or her the details of the fire, and show him or her the consequences in as much detail as the brain can absorb. The knowledge that derives from such a combination of good records and careful observations is invaluable. For example, Mick can demonstrate convincingly that the time at which a burn was carried out was immaterial to its success. It was the type of fire that counted, and a good burn killed rubber vine whether it happened in April or December. Mick also believes that actively growing plants are more susceptible than dormant plants, and that plants are more easily killed by fire if they have been weakened already by chronic rust (both possibilities for which sound physiological explanations could be advanced).

## Implications for management of Brooklyn

While the results of our first year's burning are very encouraging, it is only a beginning. The question of how future fire management will further reduce rubber vine is just one question in the overall management

conundrum. How, for example, would the native grasses fare in the long term under a protracted, single-minded rubber vine control strategy? The health of the herbaceous ground-cover, of which the perennial tufted grasses are the most important component, is crucial to soil conservation and rehabilitation, wildlife habitat, and exotic weed control. In short, it is central to the core objectives of AWC.

Experience of the more astute graziers is that an interval of at least 18 months - 2 years between hot fires is necessary to allow the grass stools to strengthen and the seed banks to be replenished. Will this apply equally after destocking? Will a conflict of interest arise between the welfare of the grasses (eg, which may require at least a two year interval between hot fires) and the strategy to remove rubber vine (perhaps requiring an interval of less than 2 years between hot fires)? These are questions that will need to be constantly examined. To assist in answering these questions, AWC has established a program of rigorous, long-term vegetation monitoring at Brooklyn. The combination of this monitoring, with our ever-growing experience of fire use and good observation, should ensure progressively more skilled and fine-tuned management of fire in the property's new role as a wildlife sanctuary.

*Thank you to all of our donors who have helped establish Brooklyn Wildlife Sanctuary. We are making great progress overcoming the key threats to wildlife on Brooklyn. In the medium term, we hope to establish a camping site which will allow our supporters, and others with an interest in wildlife conservation, to enjoy this spectacular location.*



Yellow-bellied Sunbird

M. Morcombe



D. Morris

The Brolga inhabits the lagoons of the Mitchell River valley on Brooklyn



J. Lochman

The Rufous Bettong, one of Brooklyn's nearly 90 mammal species

# Mornington Wildlife Sanctuary



A rain squall over Mornington

*Mornington Wildlife Sanctuary is the largest non-government nature reserve in Australia. For AWC's dedicated field staff, a wet season in the Kimberley is an adventure and a challenge. However, it also presents the wildlife of the Kimberley in a spectacular new light. Our fieldwork during the wet season is therefore a critical part of our conservation program at Mornington. In the article below, AWC's Sarah Legge describes the frenzied pace of life during the Kimberley wet.*

## A wet season in the Kimberley

The Central Kimberley has a tropical monsoonal climate, where the long months of the dry season are punctuated by a

sudden and relatively short wet season from December to March. The “build-up” period before the wet season is a lesson in endurance. The clouds expand and tumble through the sky as though the rainbow serpent is cooking giant reels of fairy-floss, and each day the promise of rain grows to a new pitch, but without delivering. For week after week the temperature and humidity soar, until nerves and tempers are stretched taut, birds spend their days wilting in the shade of soporific trees, flies are too sedated to bother clustering around your eyes, and even time seems to melt in the expectant heat.

But every year, when the hope of relief has given way to a dogged determination simply to keep breathing, the rains do finally break with spectacular

thunderstorms that unleash the magic of the tropical savannas, where all manner of plants and animals have three to four months to get the business of life happening – daring exploration (dispersal), composing love sonnets (finding a mate), and then sacrificing both these things for the fuzzy fulfilment of raising a family (passing on their genes).

## Daring exploration

During the dry months, the freshwater crocodiles in the creeks of Mornington keep a low profile - persistent searching at croc-filled waterholes is only rewarded by occasional glimpses of snouts and goggly eyes. All this changes in the early



The Hann River

Ecopix

where crimson finches have moved over 15km, through enemy territories and hostile terrain to find their new pad. One remarkable individual made an arduous journey of this nature, but evidently didn't like what he found, because two weeks later we found him back where he started – in the territory next-door to mum, after a 30km round trip.

It's not just the young who explore – sometimes older animals use the circumstances of the wet (widespread water and plentiful food) to travel to places that are uninviting in the dry season. The bird fauna of Mornington swells in the wet to include many migrants like the sacred kingfisher and the raucous channel-billed cuckoo. Black honeyeaters are one of the more romantic nomads – they turn up from the south like liting shadows amongst the grevilleas on the sandstone ridges, gorge themselves on a haze of red and yellow nectar, and then vanish again, back to the mysterious desert.

The wet season movements of some animals remain a fascinating mystery – the long-tailed planigale is Australia's smallest mammal. Following the destocking program on Mornington, it is now caught regularly during the annual trapping surveys in black soil plains, where it squeezes through the network of deep cracks formed by contracting clay soil. During the wet, however, these cracks disappear in the saturated and swollen mud, and the planigale's normal haunt is lost. Somehow, by the next dry season the planigales are back in their cracking clay home, but where have they been during the wet?

## Love sonnets

Some say it with flowers, like the red-backed fairy-wren, one of Mornington's common bird species. Just before the rains begin, hopeful male suitors can be seen presenting red-coloured seeds and petals (setting off the crimson mantle

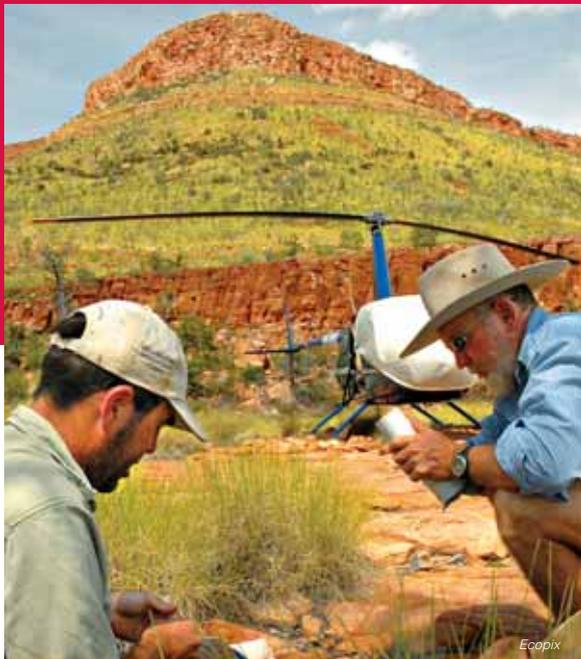
wet, because young crocodiles, recently hatched from their nests in sandy banks, have a home to find. It is not unusual to have to give way on the road to a baby croc waddling down the rain-soaked wheel ruts.

The young of many species use this time to move away from their natal home. We have been able to watch the endeavours of a few individuals in great detail. As part of the research program on seed-eating birds at Mornington, we have banded over two thousand finches. In the early wet, the youngsters go through a massive diaspora, and many of these are never seen again – explorations are not daring unless they incur some risk! But we have picked up some daring and successful dispersals, for example



A. Dudley

The freshwater crocodiles come out to play ...



AWC staff conduct a wet season biological survey, using a helicopter to access sites on the 3,000 square kms of Mornington



J. Heathcote

The caterpillar of the common Australian crow (*Euploea core corinna*)



Ecopix

Annie Creek, near the Mornington Wilderness Camp

on their back and shoulders) to their beloveds. Male wrens get to practice their display often, as like every fairy-wren species studied to date, females are fickle lovers and go to great lengths to mate with males other than their social mate. Females choose their beaux partly on the male's stunning appearance, set off by his provocative petal-display. Dr Mike Webster from Washington State University is visiting Mornington later this year to study red-backed wrens in detail, in order to find out how these amazing sexual displays could contribute to speciation – the engine house of our biodiversity.

Not all animals rely on drop-dead gorgeous looks to woo the opposite sex. Take the toadlets (*Uperoleia* spp.) – all the species in this genus are uniformly squat and splotchy grey-brown. It is hard to imagine a female toadlet being very impressed by the visual spectacle presented by an amorous male toadlet. Moreover, it is almost impossible to distinguish one warty species of toadlet from another, so given there are at least four species of toadlet on Mornington alone, how does a gal tell whether she is even consorting with the right species? The gimpy male toadlets transcend their appearance by lifting the night skies during the early wet with enchanting species-specific arias, ranging from rasping noises, to explosive ticks, to drawn-out creaks. Female toadlets (of the right species) swoon at their melodies.

This nocturnal anuran symphony is one of the most special treats of the wet. Frogs of all species that have been hiding silently in rock crevices and burrows (and toilets) through the dry months emerge en masse to find suitable

watery birthing centres and mates, and then lay thousands upon thousands of eggs. They do this early in the wet season, to give the eggs time to hatch into tadpoles, and for the tadpoles to develop into frogs, before the following dry season shrivels up their short-lived watery habitat.

As well as sounding terribly sexy to female frogs, the frog chorus is also irresistible to human frog fanatics, because they make each species identifiable, as well as 'find-able'. Dr Paul Doughty from the WA Museum visited Mornington in January to catalogue the calls, looks (for what they're worth) and genetics of the frog species present on the property. He found six species that had not been recorded here before, including five that represent range extensions.

Birds flaunt their appearance in the search for love, and frogs use melodies. In contrast, termites use dance. At the first rains, alates (termites that are able to reproduce) swarm out of the colonies and throng together in swirling mating flights. Males and females quickly pair up, drop their wings, and with the help of the first cohort of workers they produce, they start building a colony of their own. These nascent colonies spring up very quickly, with miniature termite mounds peppering the roads seemingly overnight. The termite dance is incredibly alluring to many animals other than termites – as well as marking the welcome transition into the wet season, these mating swarms are a convenient smorgasbord for any animal with a hankering for a fat and protein-rich snack. Indeed, many bird species time their breeding to coincide with this protein glut, because nestlings thrive on the termite delicacies.



A remote waterfall on Cowendyne Creek, Mornington

Ecopix

## Raising a family

The water of the wet is the turbine of a massive resource boom that allows plants to turn the nutrients in the soil and the energy of the sun into leaves, flowers and seed. This propels animals that eat plant parts, from insects to wallabies, into a feeding frenzy, and then a breeding frenzy. Animals that eat animal parts are then not far behind!

The exact timing of the breeding frenzy for any species depends primarily on what they eat. For example, insectivorous birds usually start their clutches just before the big rains, so that they can take advantage of the termite swarms mentioned above when feeding nestlings, and so that their fledglings leave the nest, complete with voracious appetites, just as general insect availability peaks. Birds that eat grass seed breed towards the end of the wet season, when the stores of seed from various grasses have been fully replenished.

Grasses themselves have different strategies for producing their young (seed). Annuals, which live for just one growing season, often produce seed

towards the end of the wet, which lies dormant on the ground over the dry, ready to germinate in the next wet. Perennial grasses (which live for more than one year) have two main strategies – they either bolt at the first sign of rain and get their seeds out and hitting the ground with plenty of time left for those seeds to sprout and develop roots before the dry season strikes and halts all growth. Alternatively, other perennial grass species grow more lazily, producing their seeds at the end of the wet. The seeds lie on the ground, ungerminated, until the next wet. Indeed, they may need the dry months to break dormancy. This variety of seeding strategies is vitally important to the many animal species, from ants to Gouldian Finches, that rely on a continuous succession of grass seed throughout the year. It is a chain of resources that is easily disrupted by poor land management. This issue is a focus of the research program involving AWC and various other partners that is designed to help us manage resources for seed-eaters in the tropical savannas more effectively.

## What does it mean for us?

Mornington is a truly spectacular place in the dry. In the wet it turns into a different jewel, but one that few are lucky enough to experience. Washed-out roads, unfordable creeks, and a soggy dirt airstrip can cut us off for weeks on end. During heavy periods of rain just getting to the sanctuary office is an adventure, as sections of track and even the smallest of creeks must be waded or even swum. It can be an uncomfortable place - the mud is ubiquitous, biting insects pester like a dizzying nightmare, and when the sun comes out it is gaspingly hot and humid. But these inconveniences are a small price to pay for witnessing the re-generative season of the year, when previously bare patches of rock and earth are clogged with ephemeral wildflowers, and hundreds of tiny froglets leap frantically through the grass at your footfall. The harsh sandstone ridges turn damply soft and green, thickly dusted with spinifex-flowers; the air is filled with the chirrups of rufous songlarks and myriads of differently coloured grasshoppers. The torture of the build-up is soon forgotten in this magical time of year.



P. Doughty

*Uperoleia lithomoda* or the Stonemason's Toadlet



S. Legge

The wet season triggers a burst of colour, including flowers of this *Grevillea refracta*



S. Murphy

AWC is testing new techniques for prescribed burning in the wet season

# Mt Gibson Wildlife Sanctuary

## New project to enhance integrated fox and cat control

A major project designed to unlock the secrets to reducing fox and feral cat populations has been launched at Mt Gibson Wildlife Sanctuary. The project is a collaborative venture involving AWC, the WA Department of Conservation and Land Management and the Invasive Animals Co-operative Research Centre.

Foxes and feral cats have decimated wildlife populations in Australia, contributing directly to the extinction of several small-medium sized mammals. Developing a method for controlling, and ultimately eradicating, foxes and feral cats must be one of the highest priorities for conservation in Australia. In fact, it is difficult to identify any other single action that would have a more positive impact on wildlife populations.

It is estimated there are more than 20 million cats in Australia, killing up to 4 billion native animals each year. Sadly, the development of an effective, broadscale control mechanism to reduce the feral cat population has so far eluded scientists. At properties like Scotia, the removal of feral cats is a major challenge for AWC staff involving extensive tracking, use of soft jaw traps and sometimes shooting. ***The construction of feral-proof fences are still the only option if an area is to be maintained as a cat-free environment.***

The Mt Gibson fox and cat control project represents a major step in the process of developing a broadscale solution to the feral cat problem. If such a solution can be developed, AWC can accelerate our programs to protect and restore endangered mammals. In many areas, we will be able to reintroduce endangered mammals without the need for a feral-proof fence.

## Objectives of the Mt Gibson fox and cat control project

The most significant objective of the Mt Gibson project is to trial new baits for the control of foxes and cats.

Other objectives of the project include:

- Determining the efficacy of feral cat baits for the control of foxes, enhancing options for integrated control of both predators.
- Assessing the effect of the removal of foxes on feral cat distribution and abundance.
- Determining the impact of feral cat and fox control on the abundance of native fauna.

In order to meet these objectives, AWC and CALM staff will conduct detailed studies of survivorship, habitat use, behaviour and activity patterns for foxes and feral cats and for native animals (ie, the prey of foxes and cats).

## Components of the Mt Gibson fox and cat control project

The initial components of the project include:

- The first aerial baiting for feral cats, foxes and wild dogs using CALM's novel cat baits will occur around July 2006. This time of the year is a period of low prey abundance, hopefully resulting in a higher uptake of the baits.



Establishing a monitoring site at Mt Gibson

J. Richards

- Track transects and sand plots have been established to monitor bait uptake as well as abundance and habitat use by feral cats and foxes.
- Up to 20 feral cats, 20 foxes and 20 wild dogs will be captured at the sand-plot monitoring sites, and radio collared to provide information on habitat use, home range, and survival of the three species.
- Both native and introduced prey species will be monitored in representative habitat types throughout Mt Gibson Wildlife Sanctuary. Pitfall and Elliott trapping for small mammals, reptiles and invertebrates will be conducted twice a year, providing information about the seasonal and pre- and post-aerial baiting abundance of species.
- The diet of feral cats and foxes will be examined in conjunction with the monitoring of prey species to assist in determining whether cats are selective in their prey choice, and to more accurately assess the impact of feral cats on native fauna in the arid zone.





## Reintroducing native mammals at Mt Gibson

In conjunction with the collaborative fox and cat control project being carried out with CALM and the Invasive Animal CRC, AWC is also assessing the feasibility of establishing a fenced feral predator-free area on Mt Gibson. This would enable AWC to commence the process of reintroducing endangered mammals to Mt Gibson in a secure environment. When an effective 'landscape-scale' method for eradicating cats and foxes is developed (eg, use of the CALM baits being trialed as part of the collaborative



*Egernia depressa*, one of the nearly 50 reptile species at Mt Gibson

C. Armstrong

project), it will be possible to also release the endangered mammals outside the fenced area at Mt Gibson.

Watch out for more news on proposed

reintroductions at Mt Gibson. Candidate species include the Bilby, the Burrowing Bettong, the Banded Hare-wallaby and the Western Barred Bandicoot.

## New Research at Paruna Wildlife Sanctuary

University of Western Australia Honours student Andrew Hide has commenced a collaborative project with AWC to assess the survival and movement patterns of Woylies after translocation to Paruna Wildlife Sanctuary, in the southwest of Western Australia.

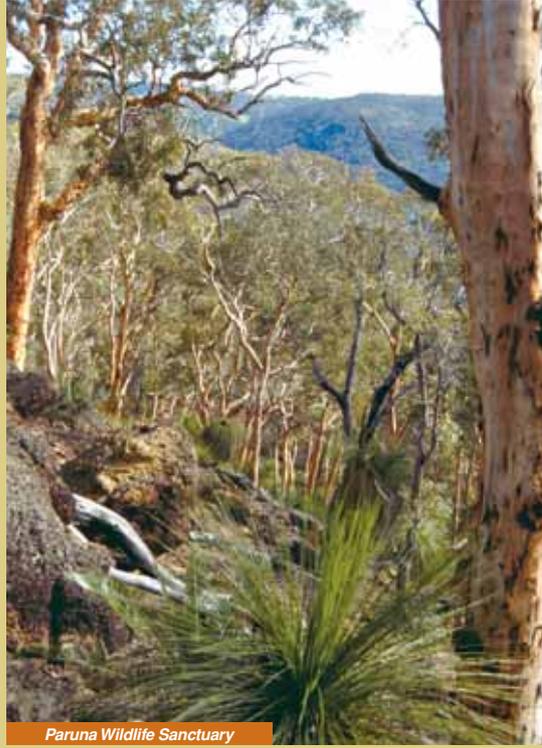
Paruna Wildlife Sanctuary was established by AWC in 1998, creating a 2,000 hectare wildlife corridor between the Walyunga National Park to the southwest and Avon Valley National Park to the northeast. Since its establishment, AWC, in conjunction with CALM, have translocated over 200 Woylies to Paruna.



Woylie

The southern boundary of Paruna is fenced to prevent incursions by foxes, cats and rabbits from the adjacent agricultural land. In addition, regular intensive baiting has been performed to eradicate foxes from the sanctuary. However, some cats continue to move through the corridor (cats do not readily take baits). The native Chuditch (Western Quoll) population has also increased with the establishment of Paruna, and Chuditch may also be a key predator influencing the size of the reintroduced Woylie population.

AWC is planning to translocate 100 additional Woylies from Karakamia to Paruna Wildlife Sanctuary in July 2006. Ten Woylies will be radio collared. Prior to the translocation (in April), Andrew will determine their home range at Karakamia Wildlife Sanctuary. After translocation to Paruna, the animals will continue to be monitored by intensive radio tracking and trapping between July and September. In addition, trapping throughout Paruna will provide information about the survival and movement patterns of animals that were previously translocated to Paruna.



Paruna Wildlife Sanctuary

This project will provide vital information about the role of wildlife corridors as well as the ecology of Woylies and the relative importance of feral and native predators. Such information will be used by AWC in designing future translocations, in managing Paruna and in assessing and developing future reserve acquisition proposals.

