Charles Darwin Reserve one year on

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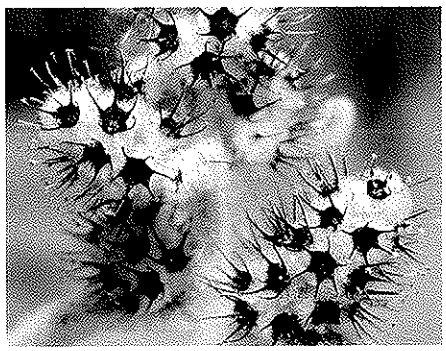
Bush Heritage purchased this 68 600 hectare property on the northern edge of the West Australian wheat belt in January 2003. It protects one of the last large remnants of the ancient woodlands, and heath and wildflower-covered sand plains, in southern Western Australia. The property is of great conservation significance and international importance, particularly for its vegetation communities and flora.



We arrived during one of the worst droughts in 100 years. Fire had burnt large areas of the reserve before Bush Heritage purchased the property, so we were well aware of the significant threat that it posed. Fire, foxes, goats, cats, weeds and rubbish were going to dominate our thinking for much of this first year. The stunning displays of wildflowers and the company of many visitors would be welcome diversions.

INFRASTRUCTURE

The infrastructure at Charles Darwin Reserve was time-weary and badly neglected. Unlike the house, which volunteer extraordinaire Don Royal and his band of helpers had refurbished before we arrived (*Bush Heritage News*, Winter 2003), everything else broke down repeatedly, soaking up time and testing our patience. The natural disasters just added extra colour to our lives.

Now, a year later, we hope Monger's Well windmill has been conquered. The generator, the electrics and the plumbing will be next. A new solar power system, new wiring and septic tank (that is lower than the toilet) are planned. We have dried everything out after the flood which broke the drought, replaced the pergola ripped off by a mini tornado and patched the holes that it punched in the roof on its way past.

FERAL ANIMALS

Since December 2003 nearly 200 goats have been taken off the reserve. We could tell many goat stories with a similar theme – of escape through rotting fences, reherding of runaways, dust, 40°-plus, and sweaty, cursing reserve staff. Improved fencing, as well as catching pens and herding races with higher fences, will gradually change the flavour of the tales.

Twenty-six rabbits, twelve foxes and two feral cats have been shot. Conservation and Land Management scientists have recently conducted a fox-baiting trial to test different bait attractants. Their tally from eleven nights' work was 58 foxes. A three-monthly, broad-scale baiting program will commence in May 2004.

WEEDS

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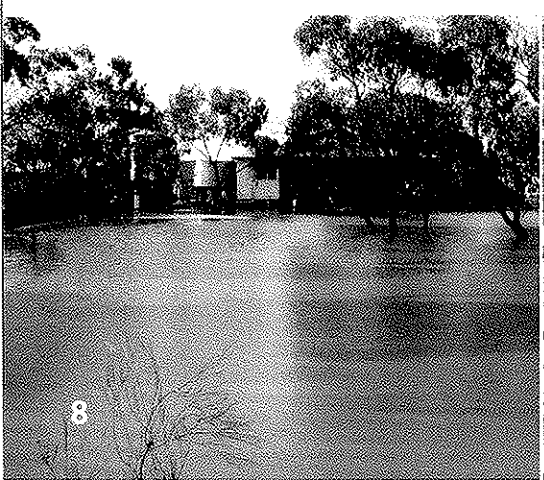

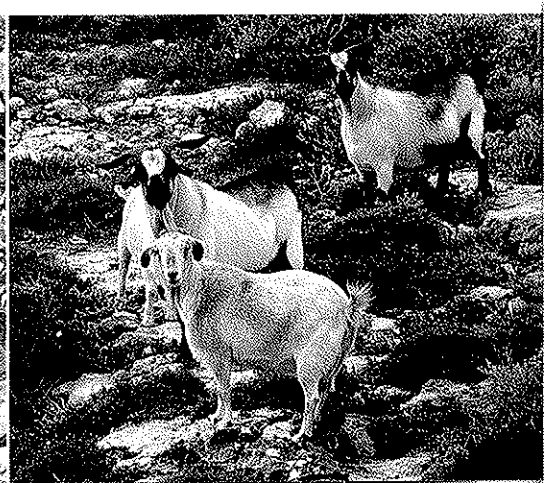

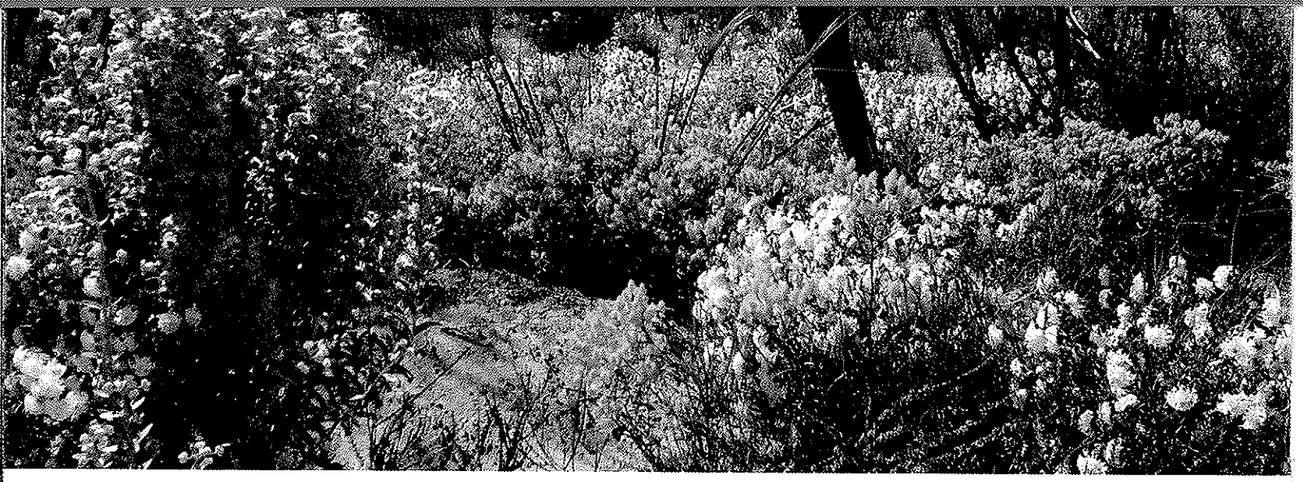

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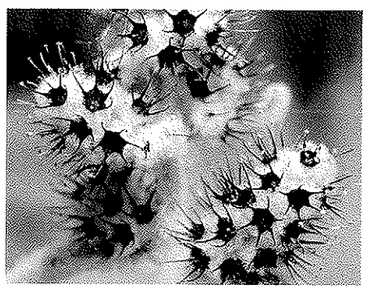

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WEEDS

Weeds have been mapped, mostly by volunteer Annette Stewart with help from Don and Betty Woods. Annette found the weeds restricted to disturbed areas (except at two sites) and less than one per cent of the reserve affected. Forty species were identified with only six being of major concern. Many volunteer hours have already been spent working to eradicate them.

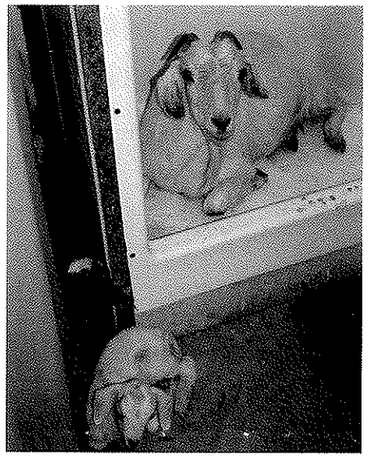
RUBBISH

The reserve came with a double dose of detritus from many years of human use and neglect. The clean-up has begun but the rubbish is of epic proportions. Helped by dedicated volunteers we have already dispatched thirty-six 2 m x 4 m caged trailer-loads of rubbish from just around the homestead. Many tonnes will need to be removed before the job is complete, as the 'dump' extends over hectares of the bush. A detailed waste-management strategy is guiding the clean-up and the recycling of as much as possible. Only the reptiles, which value discarded tin as homes, will be disappointed to see the last of it go.

NEW SPECIES

Chance meetings with unusual wildlife and the discovery of new species for the reserve have been highlights. Detailed plant and animal surveys are not yet under way but in one week Sue Patrick of the West Australian Herbarium discovered 58 new plants for the reserve including two new 'priority' plants. She found a few species that were either atypical forms, or constituted range extensions or were possibly undescribed. The reserve is a new location for one Priority 1 species that was previously known from only two sites. Charles Darwin Reserve is now the only protected site at which it is found. Our 'reserve herbarium' is expanding rapidly.

The list of wildlife grows. We have added three bat species to the list during the past year, and two reptile and two frog species since February. The bird list has



grown to 89 species, with good sightings of threatened malleefowl. The invertebrate fauna is extremely rich and varied.

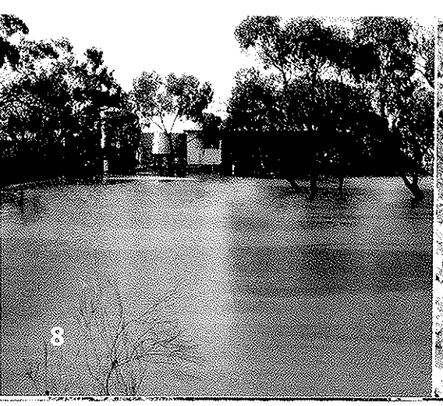
FIRE

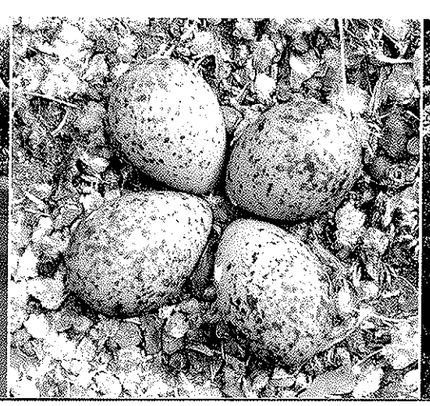
Earlier this year, a workshop on fire management at the reserve (see Page 10) set in motion the preparation of the fire management plan, and the reserve now has fire-fighting equipment and a water unit for the vehicle. The reserve management plan, which will guide the management actions over the next five years, is also under way.

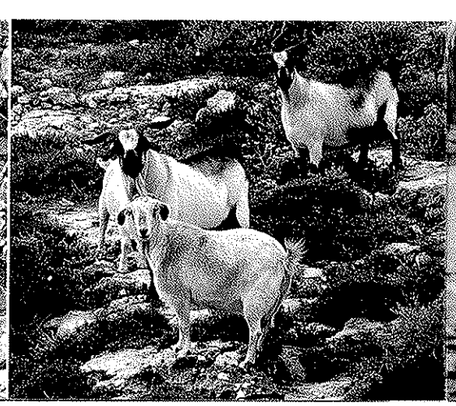
We would like to thank the 38 volunteers who have so far contributed 296 days of their time to help care for the reserve. This has meant a saving to Bush Heritage of over $53 000 in labour costs.

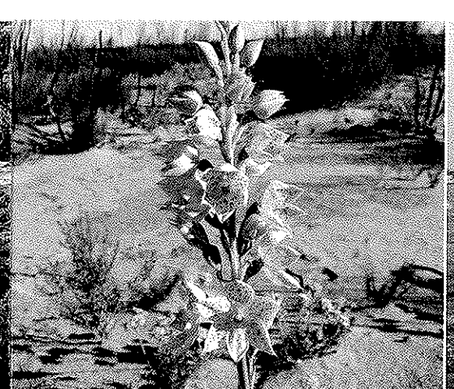
Facing page, clockwise from top: Wildflowers following fire. PHOTO LEIGH WHISSON **Many goats have been removed from the reserve.** PHOTO JIRI AND MARIE LOCHMAN/LOCHMAN TRANSPARENCIES **Banded plover eggs. House block after the floods.** PHOTOS LEIGH WHISSON **Lambs tail *Lachnostachys* sp.** PHOTO JIRI AND MARIE LOCHMAN/LOCHMAN TRANSPARENCIES

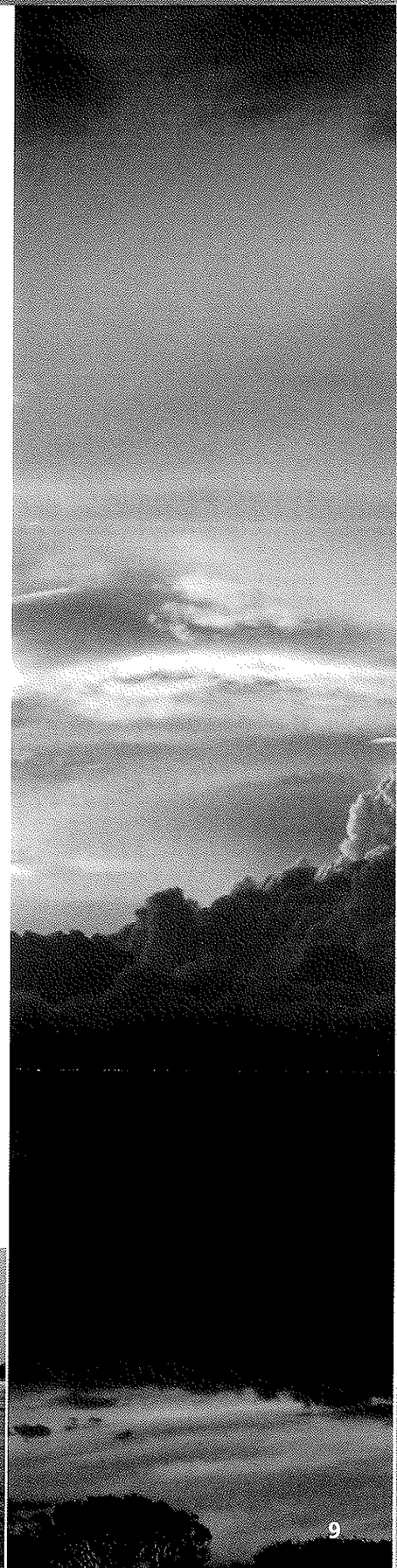
This page, clockwise from top: Feral nanny and kids find respite from the heat in the shower shed. The storm that broke the flood. Water rushing through the house block. Yellow sun orchid *Thelymitra* sp. PHOTOS LEIGH WHISSON











Species UPDATE

PHOTO: WAYNE LAWLER/ECOPIX

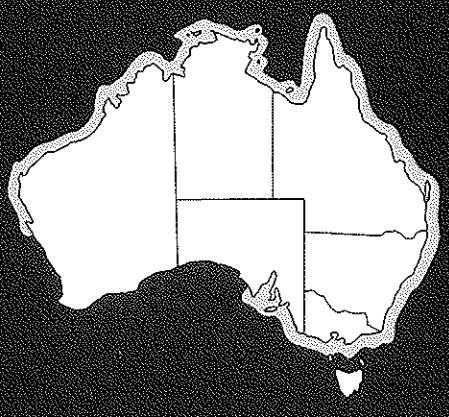
Common name: Loggerhead turtle

Scientific name: *Caretta caretta*

Conservation status:
Endangered: internationally, nationally, NT, Qld, NSW, Tas.
Vulnerable: SA
Rare: WA

Loggerhead turtles are found predominantly in the tropical and warm temperate waters of the world. They are among the biggest of the marine turtles. Their carnivorous lifestyle is reflected in their large heads and strong jaws. They eat molluscs, crabs, sea urchins, sponges and jellyfish. Females lay an average of 100 eggs per clutch in a shallow scrape in the sand.

The species is endangered around the world. Adult loggerheads are killed by hunters and as a result of fishing activities. Eggs and hatchlings are poached and killed by predators. Breeding is often disrupted by coastal development and human activities on beaches. Feeding habitats such as seagrass beds have been damaged or destroyed as a result of sedimentation, nutrient run-off, insensitive tourist development and destructive fishing techniques. The turtle breeding area next to Reedy Creek Reserve will now be managed by Bush Heritage.



Charles Darwin Reserve planning workshop

Bush Heritage landscape ecologist Phil Cullen reports

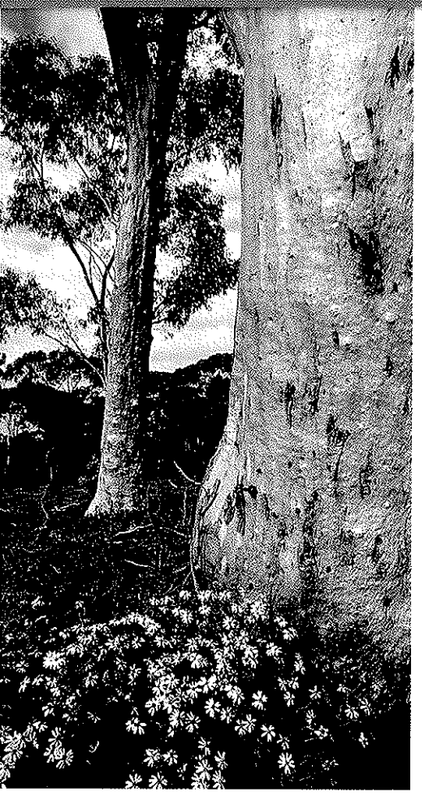
Bush Heritage recently brought together Western Australia's leading ecologists, natural historians and land managers, and some of our neighbours and staff, to engage in a few days' discussion and conservation planning for the Charles Darwin Reserve. Enticing these busy people was not as difficult as I expected. I made them an offer they could not refuse: a trip to the reserve at the height of the wildflower season, starlit dining with splendid Indian cuisine, and a trip every afternoon to show off the wonders of the property.

Our primary aim was to gather information and ideas for the reserve management plan but we had a couple of other important items on the agenda. We wanted our neighbours to join us, not only because of their invaluable local knowledge, but also so that we could propose a more regional approach to managing the land for conservation. We were also testing a planning program developed by The Nature Conservancy in the United States. This program gave us a framework for setting priorities and getting the best conservation outcomes with few resources. It worked brilliantly, keeping us focused on the critical issues while allowing the expertise of each delegate to build detail into the framework. We were also delighted when our neighbours to the north suggested a plan to reduce grazing on an area near the boundary of our two properties that is of special significance for plants.

Bush Heritage staff gained many insights into the workings of the semi-arid woodland and shrubland ecosystems that occur on the property. We learnt just how fragile many of these systems are. For example, a poorly sited or constructed track can cause drought stress across many thousands of hectares of bush by disrupting the surface flow of water after heavy rainfall. An artificial watering point can lead to dramatic changes in the diversity of fauna over areas of many square kilometres, which in turn can change the grazing pressure, impact severely on seed resources and even alter fire regimes.

Our special thanks to all the participants for their invaluable contributions and time. They include mining/environmental negotiator Frank Batini; Ashley and Dru Bell, our neighbours to the north; David Blood from CALM (Conservation and Land Management); fire management consultant Klaus Braun; Doug Bright, neighbour and owner of Mt Gibson Gold; Jackie Courtenay from Charles Darwin Reserve; consultant Peter Curry; fauna specialist John Dell; local environmental expert Charlie Nicholson; Sue Patrick from the West Australian Herbarium; Hugh Pringle and Peter Waddell from the Department of Agriculture; Jim Underwood, Manager of Mt Gibson (the neighbouring Australian Wildlife Conservancy reserve); and Margi Weir from Greening Australia.

From top: Wildflowers after the fire. The workshop under way. 'Botanising' in the ironstone country. PHOTOS: PHIL CULLEN



White Wells and a few other properties along the northern fringe of the wheatbelt represent the last chances we have to conserve large, intact expanses of these precious remnants.

INTERNATIONAL IMPORTANCE

White Wells lies within the Avon wheatbelt bioregion and the Southwest Botanical Province, both known for their remarkable species richness. This area is recognised internationally as a 'hotspot' for biodiversity and an area needing urgent conservation action. Plant species diversity in this region is higher than in Australian tropical rainforests. The Southwest Botanical Province covers only four per cent of Australia but 52 per cent of the nation's rare and threatened plant species occur there. On a global scale, the Province accounts for only 0.23 per cent of the earth's land surface but it supports 12.6 per cent of the world's rare and threatened flora.

GEOLOGY

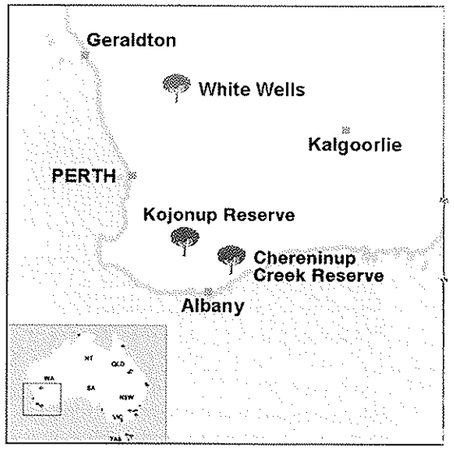
Although virtually flat, with relief usually measured in a few metres, White Wells is very diverse. It is comprised of 15 major land system types. Most of the property is underlain by ancient Yilgarn granite. The Yilgarn Craton (continental block) is over four billion years old and represents one of the oldest pieces of continental crust on the planet. This extremely old landscape is highly weathered and has eroded to a flat plain with few topographical features. The region is one of vast sand plains, low ridges of laterite or granite bedrock, breakaways and extensive natural salt lake systems.

A small gold mine, located in the northeast corner of the property is still operating, but does not impact on White Wells' conservation values.

VEGETATION

White Wells supports 12 vegetation associations. Some of the most significant are the 16,000 ha of york gum and mixed salmon gum - york gum - gimlet woodlands. With only six per cent of these vegetation types remaining and less than three per cent in conservation reserves, the purchase of White Wells represents one of the last opportunities to protect them on a large scale. Yellow sandplain shrublands, *melaleuca* thickets, samphire flats, dune vegetation, mallee, mulga, and herbfields associated with granite outcrops provide the diversity of habitats to support an impressive list of plant and animal species.

The property is renowned for its wildflowers, with carpets of daisies and orchids and a bewildering array of shrubs bursting into bloom in spring. As yet there have been no detailed plant surveys at White Wells but at least 40 rare or threatened species could be expected based on the records from areas of similar habitat in the district.



WILDLIFE

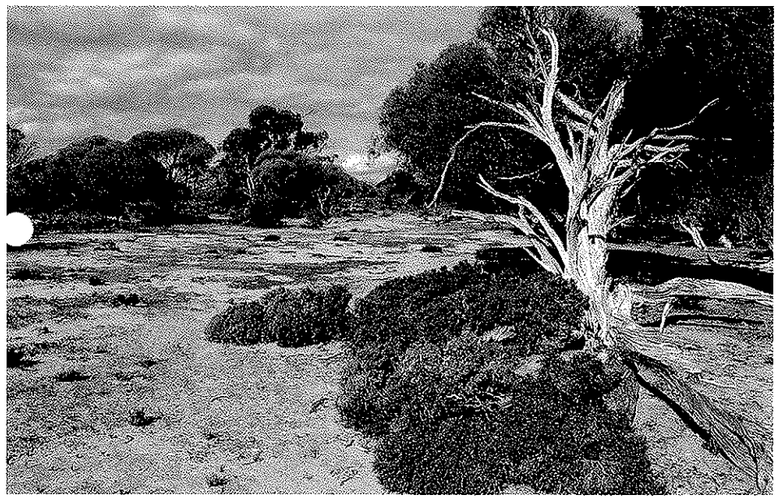
The property is extremely significant for its contribution to the conservation of woodland-dependant birds. Vegetation clearance in the wheatbelt has caused a serious population decline for many such species.

Clockwise from top: Salmon gum woodlands, jacky winter PHOTO: RAOUL SLATER, **regent parrot** PHOTO: KEN STEPNELL/NATURE FOCUS, **chestnut quail-thrush nest and sandy inland mouse will all be protected.** PHOTOS: MARIE AND JIRI LOCHMAN/LOCHMAN TRANSPARENCIES

To quote Professor Harry Recher *...the sheep-wheat zone (wheatbelt) of south-western Western Australia retains less than seven per cent of its original vegetation. Thus, we might imagine that all bird species dependent on native vegetation have declined in abundance by at least 93 per cent depending on habitat type.*

Some of the bird species of conservation significance found on White Wells are the square-tailed kite and malleefowl (listed as Nationally Vulnerable), the red-tailed black-cockatoo, white-browed babbler and crested bellbird (considered Near Threatened) and Major Mitchell's cockatoo, regent parrot and redthroat. A suite of declining woodland species will also be protected including the ...l-capped robin, hooded robin, chestnut quail-thrush and southern scrub-robin.

Unfortunately the mammal fauna of the region has suffered many extinctions. White Wells was once the home to stick-nest rats. Their long-abandoned nests can still be seen in caves along some of the granite breakaways. The numbat, bilby, burrowing bettong, western barred bandicoot and chuditch all frequented the woodlands and shrublands of the property. Now on the verge of extinction, these species highlight the need for further and ongoing conservation initiatives. Fortunately, at least 15 mammal species still survive here. Records from the area include eight bat species, many of which rely on the woodlands for habitat, Gilbert's and white-tailed dunnarts, sandy inland mouse and Mitchell's hopping mouse to name some.



ENCOURAGING CONSERVATION

White Wells adds to a growing list of properties in the northern wheatbelt which are coming into conservation hands. Our interest in purchasing White Wells inspired other conservation stake-holders in the region to get together to form what is likely to be called 'The Northern York Gum Conservation Province Management Group' of which Bush Heritage will become a member.

White Wells is a landscape of subtle beauty. Only rarely, for brief periods after favourable winters, does the country burst forth with a dazzling abundance of wildflowers. However, in less flamboyant seasons close inspection reveals a rich display of natural intrigues. The woodlands ring with the calls of many birds, reptiles scurry into hiding when approached and myriads of insects go about their business amid the plants, litter and logs. Above all else White Wells preserves a landscape with a conservation value which is far greater than the sum of its individual parts. In this respect it is priceless.

Clockwise from top: York gum woodland, Mitchell's hopping mouse, common firebush, prickly gecko, salt pan with samphire.

PHOTOS: MARIE AND JIRI LOCHMAN/LOCHMAN TRANSPARENCIES

The Darwin connection

Chris Darwin, Charles Darwin's great, great grandson explains why he and his partner Jacqui Courtney are donating $300,000 to Bush Heritage.

Late in his life, the great naturalist Charles Darwin wrote; *'I feel no remorse from having committed any great sin, but have often and often regretted that I have not done more direct good to my fellow creatures'.* This poignant quote from my great, great grandfather inspired me to use my inheritance from him to rectify this omission in his life.

My partner, Jacqui and I began by researching how our 'fellow creatures' were faring. We were horrified by what we discovered. Did you know that we are plunging into a 'mass extinction spasm' - a short period in Earth's history (normally less than a few thousand years) when more than 65 per cent of all species become extinct?

The fossil record shows that there have been at least five mass extinction spasms. These catastrophes occur due to massive habitat changes. The meteorite that slammed into the planet during the Cretaceous caused one such event and wiped out the dinosaurs.

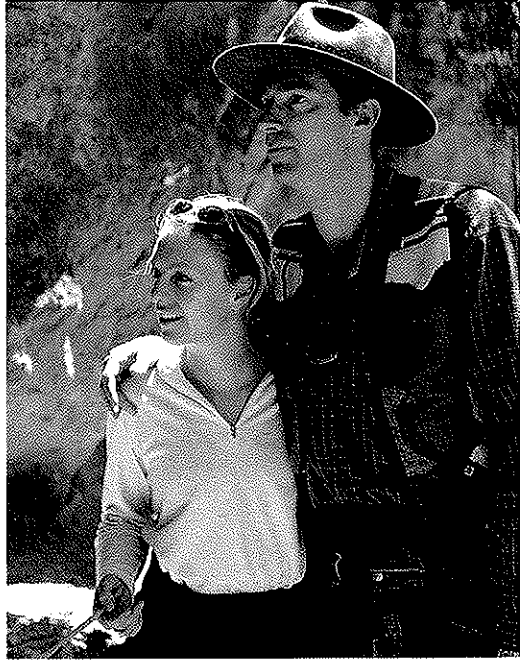
Professor E O Wilson, one of the most respected biodiversity experts, estimates that we are losing between two per cent and six per cent of the planet's species every ten years. The cause is massive habitat destruction from land clearance. If these figures are right, well before the next millennium party begins, over 65 per cent of the Earth's species will be long gone.

Jac and I decided to use Charles Darwin's money to try and slow this terrible decline. The best solution seemed to be to buy high conservation land before it, and its inhabitants, were destroyed.

We have been working with Bush Heritage for nearly three years. During this time, the largest land search in the organisation's history has been undertaken and I have visited over 20 properties in the search for something very special. Our quest is now over. We found what we were looking for and it is called White Wells.

You can read in detail about White Wells on pages one to three of this newsletter. Jacqui and I believe that if Charles Darwin was here today, he would be delighted that his money was being used to protect this property, which will be named in his honour.

We cannot contribute all that is needed for the purchase and long-term protection of White Wells, so we urgently need your help. We invite you to join us in this exciting venture. Please donate what you can afford, so we can all protect this peaceful and diverse landscape forever.



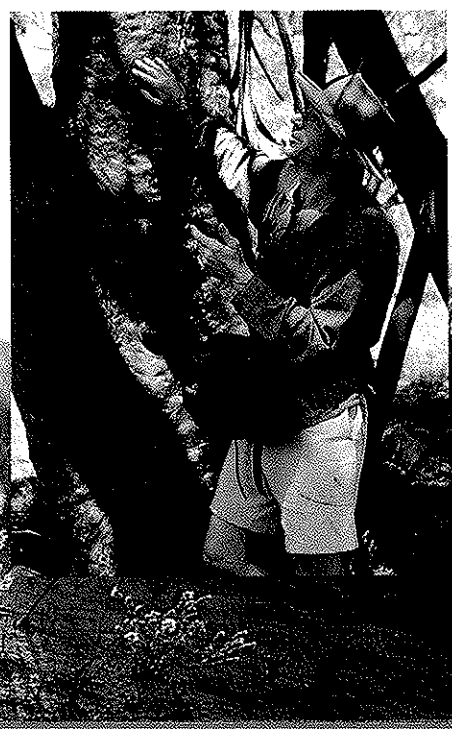
Clockwise from top. Chris Darwin and Jacqui Courtney at White Wells, Chris examines a salmon gum, PHOTOS: DOUG HUMANN **sand plains at sunset, star flowers *(calytrix sp.)*.**
PHOTOS: MARIE AND JIRI LOCHMAN/LOCHMAN TRANSPARENCIES

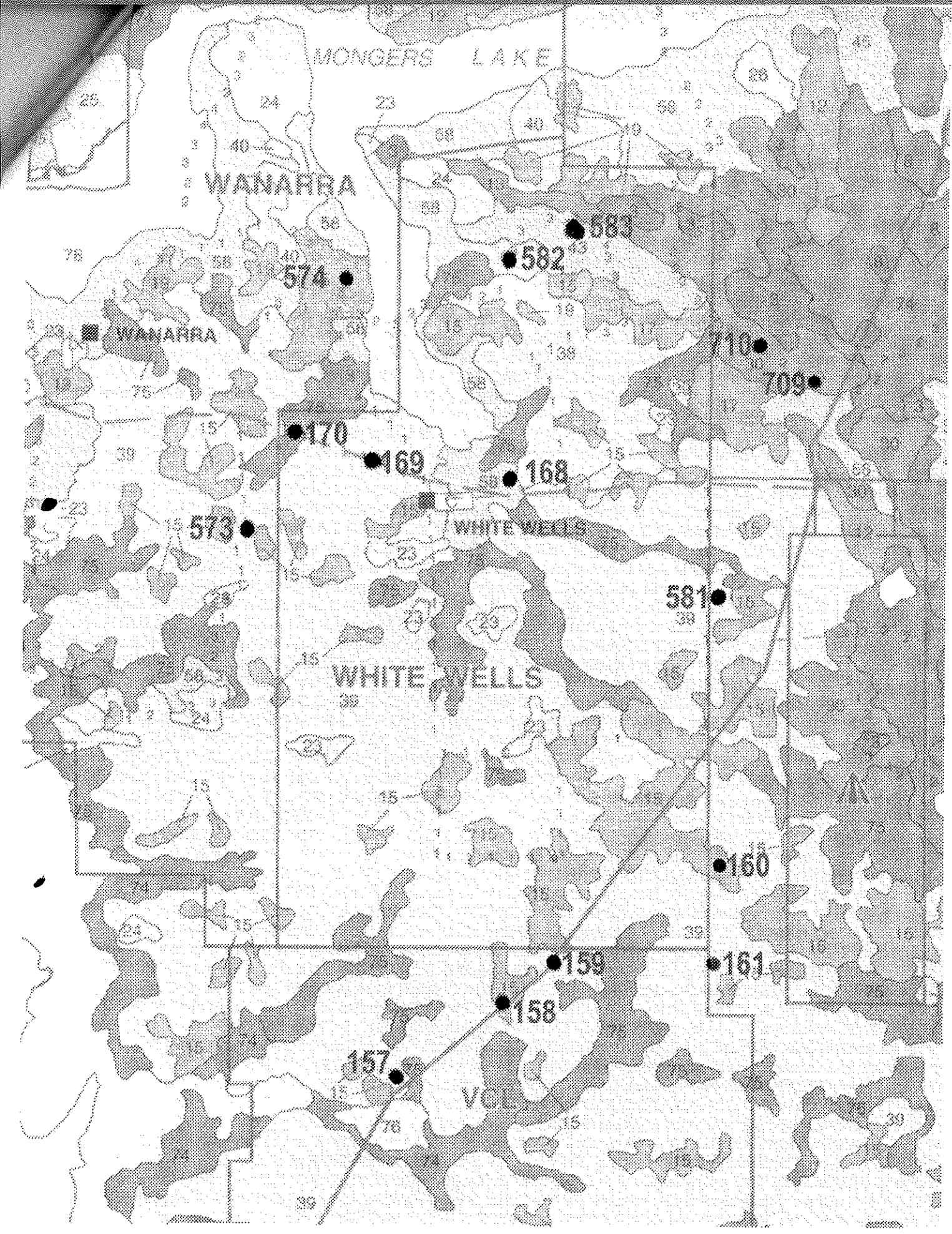
Planet Earth is not just our home, but also the home of millions of other species. We are convinced that if we do not act now, future generations will look back with dismay at the destruction of the natural world that we presided over. By helping buy White Wells you will make a direct contribution to slowing Earth's sixth mass extinction spasm, and help to save the animals and plants with which we share this beautiful planet.

We look forward to meeting you one day, perhaps at the Charles Darwin Reserve.

Chris Darwin.

Jacqui Courtney

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