

The Rangelands Roundup

The official Magazine for
Rangelands NRM Western Australia



May 2013



Rangelands NRM
Western Australia



Cover Photo: Gabriel, Year 2, Meekathara SOTA



CARING
FOR
OUR
COUNTRY



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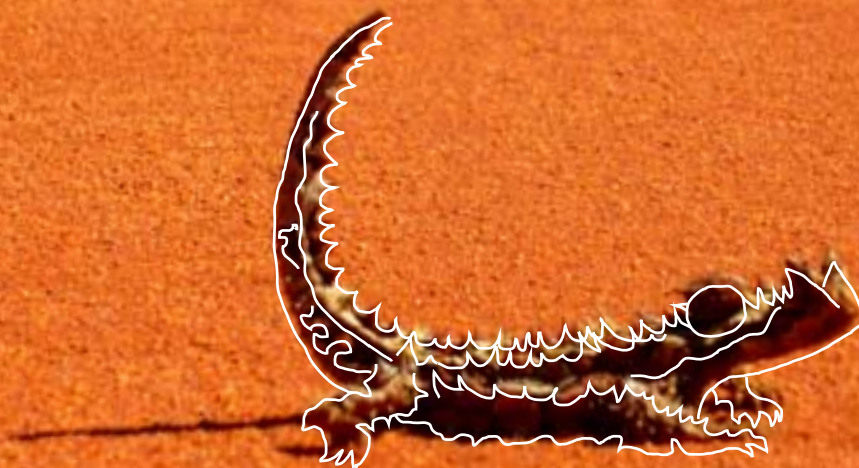
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About Rangelands NRM

Rangelands NRM Coordinating Group Inc. (Rangelands NRM) is a non-government, not-for-profit organisation responsible for the natural resource management of the rangelands region of Western Australia.

Natural resource management (NRM) is about taking care of these natural resources, with a particular focus on how the management affects the quality of life for both present and future generations.

Rangelands NRM facilitates the management of natural assets to support environmentally, socially and economically enriched communities within the WA rangelands, working closely with our partners in government agencies, non-government groups, private businesses and the community.

We aim to promote collaboration and best practice in environmental outcomes through the sustainable use of land, plants and animals, fresh water and coastal marine environment whilst representing community needs, acknowledging cultural significance and incorporating Aboriginal knowledge.

Rangelands NRM is responsible for the establishment, management, evaluation and communication of many natural resource management activities and projects in this region. With sound planning and management capabilities, we deliver real and observable results that lead to long-term sustainable outcomes. Our key functions are to identify and prioritise key assets; provide on-site technical guidance; coordinate the securing of regional investment; and design, coordinate and support on-ground programs and projects. We are the "grout" between the "tiles" of land and coastal resource managers.

Due to the vast size of Rangelands, community engagement is undertaken through seven subregional areas: Kimberley, Pilbara, Gascoyne, Murchison, Nullarbor, Goldfields and Desert Rangelands. Our head office is in Nedlands, Perth and we have staff located in Broome, Port Hedland, Karratha and Geraldton. Our Board consists of individuals representing community groups and key WA State Government departments.



Profile - Bill Mitchell, Chair

Bill Mitchell is the current Chair of Rangelands NRM Coordinating Group Inc. Bill was the inaugural Chair, from incorporation in 2004 to 2008 and then returned to the position in 2010. The affairs of the Rangelands NRM are managed exclusively by a committee consisting of a Chair, Vice-Chair, Secretary, Treasurer and between four and eight other committee members. The role of Chair requires Bill to preside over and act as the spokesperson of the committee, and thus stay abreast of key issues facing the rangelands of Western Australia.



WA born and bred, Bill grew up in the suburbs and attended Morley Primary School and Guildford Grammar. He studied commerce at the University of Western Australia, but before completing his degree, decided to take a break to go bush and spent time working on properties in the Goldfields.

"My parents bought the Murchison property Muggon in 1974 and my father asked me to manage the shearing as the manager had left eight weeks prior to its start. I was there for 30 years," Bill said.

He married in 1975 and raised two children, a boy and a girl. He obtained his pilot's licence in 1975, and purchased a Cessna 172 for mustering and mill runs. In 1981, Bill bought Muggon from his parents and continued to run the property which led to his greater involvement in the management of the rangelands.

In 1982 the Murchison was one of the first Land Conservation District Committee's (LCDCs) to be formed and it was the first government program that Bill became involved in. The LCDC encompassed an area of over 44,000 square kilometres, and 29 pastoral stations in a district historically known for growing wool. The aim of the LCDCs was to deal with all landcare issues in the district as well as educate the wider community about the rangelands.

"At the time, rather than have a small, select committee, it was decided all stations in the district should be members able to attend and vote at all meetings," Bill said.

Bill progressively became further involved in policy development by being the Pastoralists and Graziers Representative on the Soil and Land Conservation Council – the State body that looks after LCDCs.

In 1998, Bill sold the 186,417 hectare Muggon to the Department of Conservation and Land Management (CALM) to be part of the National Reserve System (NRS) of the Natural Heritage Trust. The network of protected areas across Australia, conserve examples of our natural landscapes and native plants and animals for future generations. Bill stayed to manage the property until 2004.

At the same time, in the late 1980s, WA formed the regional assessment panels for Landcare projects and Bill was asked to become a member of that and went on to become the Chair in the early 1990s. It was that group (as part of the Natural Heritage Trust) that evolved into what we know now as Rangelands NRM.

Since then, there has only been a period of two years when Bill wasn't actively involved with Rangelands NRM (2009-10).

In 2002, he became the Vice-President of the WA Local Government Association (WALGA) and in 2004-2010 took the role of President. WALGA is the peak advocacy body for local government associations in WA. Part of his role was to attend zone meetings and consult one-on-one with local councils at their location.

At the same time he was the Vice-President of the Australian Local Government Association (ALGA) which involved significant travel throughout Australia.

We took the opportunity to ask Bill some key questions about his likes, dislikes and advice about the future management of the WA rangelands:

Which is your favourite place in WA and why?

"I would have to say the Murchison in a good season, when there is plentiful food on offer and fat stock. It has so many iconic beauties. The one that really makes me smile is seeing an extensive freshwater lake. That said the worst place in WA would have to be the Murchison in a bad season."

What's your favourite Australian animal and why?

"Bush turkey or bustard - very good eating they tell me! They always come after a good rain and are a great indication that country has a good heart, supporting food they need like grass hoppers. They are a majestic, beautiful bird."

What do you love about the rangelands?

"The isolation and beauty of nature. I am always in awe of all the iconic locations and the vast clarity of the air and night sky. I enjoyed the challenge of trying to manage a large property, raise my children in the freedom and fun of the outback, and then to leave knowing the country was in better health than when I arrived".

What's the best advice you can offer to people new to NRM in the rangelands?

"There is a new generation of managers in the rangelands and there are new tools being implemented – from satellite imagery to virtual fences – that we never had access to in my time as a manager. The common denominator is to have a good pastoral station management plan that lays down different values of land condition and land types for different applications. Through Ecologically Sustainable Rangelands Management or 'ESRM', Rangelands WA can offer this. It is the starting point of good land management."

Which area of NRM do you think is most important and relevant in upcoming years?

"On a broader scale, we need to move away from State and Commonwealth funding reliance and move into partnerships with agencies and commercial enterprises to deliver sustainable rangeland practices. The trigger could be a carbon economy which I am very excited about. To think that possibly in future we can have carbon, conservation and cattle all sustainably managed on the one property! This applies equally for lands held for conservation. If they are sequestering carbon, why can't carbon be used to manage those lands?"

Now semi-retired, Bill currently remains a company director and holds positions on a number of committees. When he is not working, he spends time with his children and grandchildren, as well as helping his wife with her horses in polocrosse activities.



Conserving wetlands of international importance in the north-west

Each year from September through to March, hundreds of thousands of migratory birds from Asia head to the wetlands of north-west Australia. They come to the shores of Roebuck Bay, Eighty-Mile Beach and the Ord River Floodplain to roost at high tide, forage on the mudflats as the tide falls and begin their breeding season before departing again in March/April.

The Broome region is home to more than 300 species of birds, more than one third of Australia's total species, including 50 species of shorebirds, which is nearly a quarter of the world's total. This makes it the most significant site in Australia for shorebirds and also of high significance among other locations for shorebirds across the world. It is accepted that Roebuck Bay has the greatest diversity of shorebird species of any site on the planet.

What is a wetland reserve?

Under the Ramsar Convention, a wide variety of natural and human-made habitat types can be classified as wetlands. They include rivers, swamps, marshes, billabongs, lakes, salt marshes, mudflats, mangroves, coral reefs, fens or peat bogs. These environments can be natural or artificial, permanent or temporary, static or flowing, fresh, brackish or saline, and can include inland rivers and coastal or marine water to a depth of six metres at low tide, and even underground wetlands.

The Ramsar Convention

The Convention on Wetlands of International Importance (the Ramsar Convention) was signed by representatives from 18 nations in Ramsar, Iran on 2 February 1971 and came into force in 1975. The Ramsar Convention aims to halt the worldwide loss of wetlands and to conserve those that remain, through wise use and management. It was one of the first modern treaties between nations aimed at conserving natural resources.

Member countries are encouraged to nominate sites containing representative, rare or unique wetlands; wetlands that are important for conserving biological diversity; or those that are seen as significant because of their ecological, botanical, zoological, limnological or hydrological characteristics. For a wetland to be designated to this list it must satisfy one or more of the criteria for identifying wetlands of international importance. Once designated, a site is added to the Convention's List of Wetlands of International Importance and becomes a Ramsar site.

Australia's Ramsar sites and obligations

There are now 2047 wetland sites throughout the world, 65 of which are in Australia covering more than 8.1 million hectares. Australia was one of the first countries to become a Contracting Party to the Convention and designated the world's first Ramsar site, Cobourge Peninsula, in 1974.



Mangrove mudskipper © Ricki Coughlan

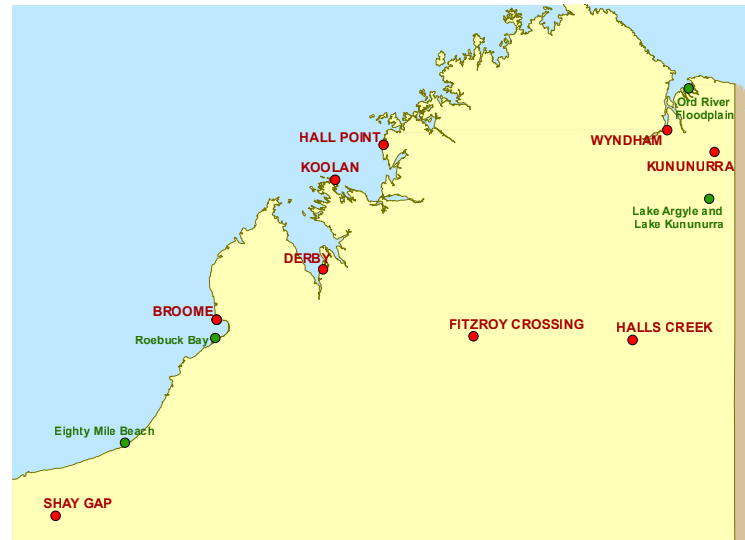


© Jan van der Kam

In designating a wetland as a Ramsar site, countries agree to establish and run a management framework aimed at conserving the wetland and ensuring its 'wise' use. They are obliged to ensure that these important sites are conserved and the ecological character of the wetland is maintained. In Australia, these obligations are met through Commonwealth and State/Territory legislation such as the *Environment Protection and Biodiversity Conservation Act 1999*.

The East Asian – Australasian Flyway

A number of wetland sites in the northwest of Australia including, but not limited to the Ramsar sites, are of international importance as the arrival and departure point of migratory shorebirds (waders). Some birds fly non-stop between continental East Asia (Japan, China and the Republic of Korea) and Australia along the 'East Asian – Australasian Flyway'. The Flyway stretches from Alaska to New Zealand and passes through 22 countries. It is estimated that over 50 migratory species travel along it, equalling about five million birds. Birds arrive at the northwest Australia sites in spring (August to October) and although there is a high turnover of birds moving onwards to southwest and southeast Australia, large numbers remain through summer and some stay through winter. It is also an important site for the northward movement in autumn with mass departures in March/April. It is estimated that over 300,000 of these birds use the sites each year



RAMSAR SITES



Birds take flight © Holly Sitters

Roebuck Bay

Roebuck Bay, on the coast of the Kimberley near Broome covers an area of 34,119 hectares and was declared a Ramsar site on 7 June 1990. It comprises red sandy beaches and areas of mangroves, with the eastern edge of the bay consisting of linear tidal creeks.

The bay has extensive and highly biologically diverse intertidal mudflats (over 16,000 hectares), making it a rich wader feeding ground and an important nursery for marine fish and crustaceans. The mudflats support an exceptionally high diversity of benthic invertebrates (small organisms that live at the bottom of a sea, river or lake) estimated at between 300 – 500 species, placing it amongst the most diverse mudflats in the world. Dugongs, green turtles and rare Australian snubfin dolphins regularly feed on the extensive seagrass meadows.

The Roebuck Bay Working Group (RBWG) with assistance from Rangelands NRM through the Commonwealth Caring for Our Country program is working to increase community understanding of the environmental importance of Roebuck Bay. One focus is to make linkages between the blue-green algae *Lyngbya* and nutrient/sediment loads going into Roebuck Bay from drains, septs and fertilisers. The growth of the *Lyngbya* is increased due to increased nutrients flowing into the Bay and the algae poses a particular threat to seagrass by smothering them preventing access to sunlight. The knock-on effect is immense when one considers the entire ecosystem and the importance that seagrasses play in the food chain. Through education and advocacy, the project has been working to educate people to undertake better practices and land management and to realise the impact that human activity can have on the ecosystem of Roebuck Bay.



Roosting birds © Ricki Coughlan

Eighty-Mile Beach

Eighty-Mile Beach stretches 220km along the North-West coast of WA about half-way between Broome and Port Hedland and was also declared a Ramsar site on 7 June 1990. The 175,487 hectare site consists of a section of coastline and adjacent mudflats, together with two large ephemeral lakes and a series of springs occurring in Mandora Marsh to the east.

More than 472,000 migratory waders have been counted on the mudflats during the September to November period. The springs in the hinterland are on an ancient river and estuary system and support unusual vegetation.

There has been significant work through Rangelands NRM to undertake projects to increase and maintain ground cover through grazing and fire management and work with Indigenous rangers



Measuring an avocet's beak © Kandy Currans

and local landholders to manage the land sustainably to protect the Ramsar values. Fences have been erected along beaches in properties within the area (including Anna Plains, Frazier Downs and Nita Downs) to manage stock and public access to the beach so that dunes can be stabilised and that there is minimal disturbance to bird roosting areas.



Bird surveys © Louise Beames



© Kandy Currans



Roebuck Bay, Broome © Teresa Belcher

Ord River Floodplain

The Ord River Floodplain site which covers 141,453 hectares, lies about eight kilometres east of the town of Wyndham in the Kimberley and comprises the Ord River and Parry Lagoons nature reserves with some additional lands. It is a large system of river, seasonal creek, tidal mudflat and floodplain wetlands that supports extensive stands of mangroves important for salt-water crocodiles and a large number and diversity of waterbirds.

It was declared a Ramsar site on 7 June 1990, as it is an important area for migratory shore birds as well as migratory marine species that utilise freshwater during their lifecycle. The area lies within the boundaries of six Aboriginal language groups and is an area of cultural significance.

Rangelands NRM through Caring for Our Country has been supporting Ord Land and Water and the Department of Environment and Conservation (DEC) to protect the unique character of the Ord River Floodplain Ramsar site through on-ground activities for the control and monitoring of Declared Weeds and Weeds of National Significance (WoNS) including *Parkinsonia*, *Noogoora Burr* and *Bellyache Bush*. Additionally, land management activities have been undertaken to limit public access, erosion and stock intrusion through improved boundary management. This has resulted in some track closures to sensitive areas in the Ramsar site and the installation of educational signage to inform community of the significant cultural and natural values of the area.

Land management activities are undertaken by the Yoorrooyang Dawang Regional Park Rangers in a joint management partnership with DEC. Pastoral Stations have been heavily involved in the planning and consideration for stock removal and boundary management especially in relation to the breeding areas of the protected Saltwater Crocodile.



Birds on beach © Holly Sitters

Lakes Argyle and Kununurra

Lakes Argyle and Kununurra are a large system of two man-made reservoirs and associated wetlands formed by the damming of the Ord River. The 117,495 hectare area was declared a Ramsar site on 7 June 1990. The lakes are most important as dry season refuges although 18 species have been recorded breeding in the Lake Kununurra wetlands. The system regularly supports more than 20,000 waterbirds. Rangelands NRM has supported projects to control Weeds of National Significance (WoNS) and feral animals within these sites.

Summary

The four major Ramsar areas throughout the Kimberley region of Western Australia have had substantial support from Rangelands NRM and the Commonwealth's Caring for Our Country program, as well as very significant funding from other sources, including the State Government. The support provided is an indicator of the importance attached to these critical wetlands and the commitment Australia has to the Ramsar Convention. Without ongoing work for their protection, the sites would suffer degradation, creating additional threats to the more than 300 species of birds which inhabit the wetland areas.



Shorebirds on beach © Jan van der Kam

Several key lessons have been learned from the projects associated with these wetlands. Key is the engagement of the local communities wherever possible to ensure success and longevity of the management of these sites. The Roebuck Bay site has a high profile and great buy-in from Broome schools and other community groups and has been a focus for actions on the ground over several years. It now provides the profile for a much more extensive network of activities through the Broome town site which impact on the quality of water flowing into the Bay.

The Desert Rangelands – Partnerships with Traditional Owners

Over the past four and a half years, the extent of Rangelands NRM's work in remote desert country has significantly increased as it partnered with traditional owners to deliver important environmental activities in their country.

In the first of a series profiling traditional owner groups, we are focussing on the Martu people who are the native title holders of the Martu determination in the Western Desert, east of Newman.

In future editions we will look at a neighbouring determination to the south, which is also Martu owned, known as Birriliburu.

The Martu People

The Martu are the traditional custodians of 13.6 million hectares of the Great Sandy, Little Sandy and Gibson Deserts. This area, which comprises part of what is known as the Western Desert, is held on trust for the Martu by the Western Desert Lands Aboriginal Corporation (WDLAC) following a 20 year struggle by the Martu to have their ownership and rights recognised.

The Martu are among the last of Australia's indigenous people to make contact with European Australians with many coming into stations and missions from the desert in the 1950s and 1960s.

One such story is the subject of a book called *Cleared Out* which won the WA Premier's Award in 2005 and was subsequently made into an award winning documentary called *Contact*. The story is based around one young Martu woman and her family's first contact with native patrol officers who were tasked with clearing the desert prior to the Blue Streak Rocket Testing Program in the early 1960s.

Some elders still living have first-hand experience of traditional lifestyle and have extensive traditional ecological knowledge of their country. This provides an important opportunity to preserve this knowledge as well as Martu culture and heritage before those people pass away.

Like many Aboriginal people, Martu speak or understand numerous languages. For most Martu, even the children, English remains a second or more language.

Native Title Determination

The Martu native title determination stretches from the Percival Lakes in the north to south of Lake Disappointment, and from near Jigalong and Balfour Downs in the west to the Kiwirrkurra and Ngaanyatjarra native title determinations in the east.

The main Martu communities are Jigalong, Parnngurr, Punmu and Kunawarritji however like many other groups people now live across Western Australia as marriage, work and health needs take people to other towns.

Jigalong is the most well-known of the communities having been established as a maintenance depot for the rabbit proof fence and the subject of a movie about three children who walked back 2,400 km from Moore River Native Settlement north of Perth. Jigalong was subsequently turned into a mission before being handed over to the Martu people in 1969.

The other communities were established in the early 1980s when people decided to return to live in their country, similar to the broader homeland movement.

About Martu country

Martu country has important cultural and natural values both to Martu and the broader community. Due to its remoteness and arid nature, no pastoral leases were ever established over the determination and development activities including roads have been limited.



© Kanyirninpa Jukurrpa

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left: Pamela Jeffries, Jigalong Caring for Our Country (CfOC) team, pointing out fresh tracks

Right: Jigalong rangers spraying buffel grass



© Kanyirninpa Jukurrpa

This limited development slowed the influx of invasive species and threatening processes which often accompanies activities that open up country.

Resisting the general trend across the deserts of Australia, Martu country remains home for a number of threatened fauna species such as the black-flanked rock wallaby, the greater bilby, the great desert skink, the mulgara and the marsupial mole.

Like other desert country, the birds and flora species respond quickly to the annual rains which generally occur over the hot summer months as a result of thunderstorm or cyclonic weather systems.

Threats to Martu country

Despite the remoteness and isolation, the fauna and flora face significant threats such as overgrazing by camels, donkeys and stock straying from the pastoral fringes, predation by feral animals such as cats and foxes, more limited and lower quality water supplies as traditional water sources are no longer able to be maintained, and altered fire regimes which are characterised by more frequent, large hot wild fires caused primarily from lightning strikes.

These threats also impact adversely on Martu cultural values – particularly water sources and the threat of damage by wildfire to rock art dating back thousands of years.

Another major concern for Martu is the impact on the cultural values of sites by inappropriate visitor access. This is particularly the case for sites around the Canning Stock Route which traverses north/south across the Martu determination. The stock route is regarded as one of the last great four wheel drive trips in Australia if not the world and has in excess of 700 vehicles per year travelling along its rough sandy track.

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Installation of tourist signs on the Canning Stock Route

Opposite Page

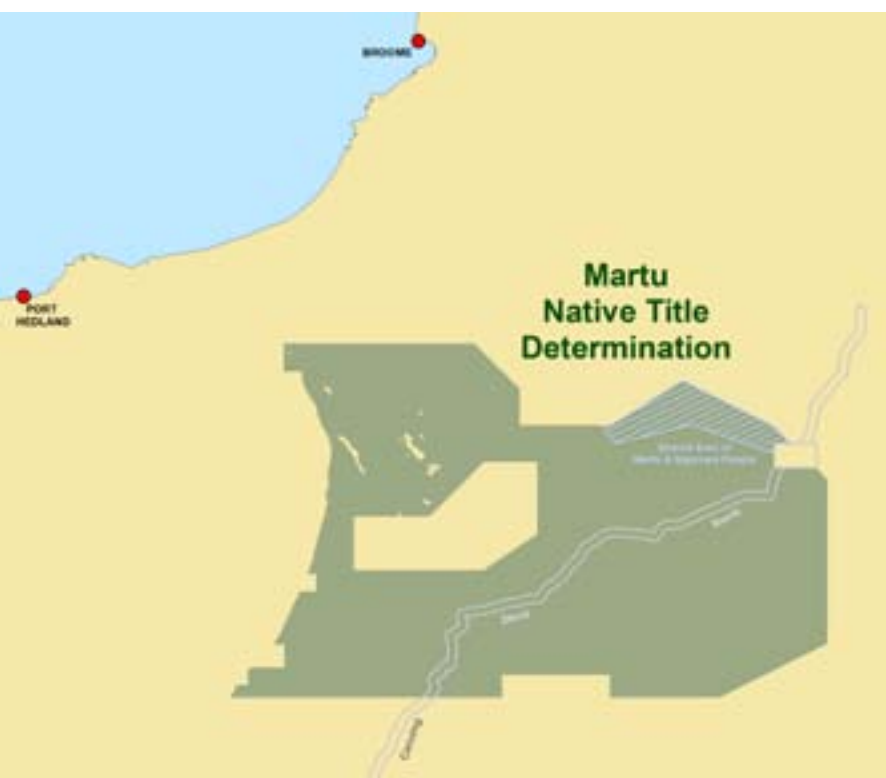
Left: Jigalong and Parnngurr Caring for Our Country (CfOC) teams involved in fauna trapping surveying

Right: Successful ignition



© Kanyirninpa Jukurrpa

Map 1 – Martu Native Title Determination



Martu priorities for looking after country

In 2008, Kanyirninpa Jukurrpa (KJ), a separate entity within WDLAC, began to focus on land management with the support of the Australian Government.

Martu elders identified key aspirations as being returning to country, teaching young people about country and looking after country with Martu culture and heritage being central to those activities.

For the elders their vision for looking after country meant many things. It included looking after cultural sites, managing tourists, making the country healthy again (as evidenced by bringing back bush tucker and importantly Martu being present in country), cleaning out water sources and reinstating traditional burning regimes.

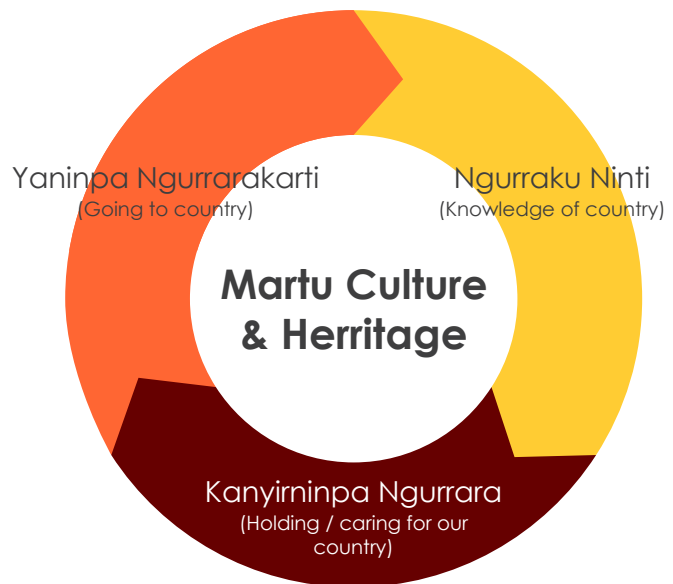
Another underlying aspiration of the Martu elders was the development of employment opportunities for young Martu living in their remote communities.

Martu land programs

Following some initial planning and consultations, KJ worked closely with Rangelands NRM, the Australian Government's Caring for Our Country initiative (CfOC), the WA Department of Environment and Conservation (DEC), the WA Department of Agriculture and Food (DAFWA), CSIRO, BHP Billiton Iron Ore, The Nature Conservancy and other partners to implement land management programs that responded to the elders' aspirations.

KJ now runs a range of successful programs or activities including:

- The Mankarr program, partly funded by Rangelands NRM and CfOC, which engages both old and young Martu (mainly women) to track and monitor threatened fauna and Martu priority species. This involves over 100 Martu and approximately 450 days of effort each year;
- Western Desert Fire Project, funded by Rangelands NRM and CfOC, that is enabling Martu to access and implement planned burning in remote country utilising helicopters and fixed wing aircraft supplemented by on-ground burning activities.
- The Ranger program, funded by the Australian Government's Working on Country program, employing approximately 20 Martu men in permanent full or part-time positions
- Feral camel management program, funded by DAFWA and CfOC, that has removed approximately 20,000 animals over the past three years
- Rock wallaby translocation program, funded by BHP Billiton Iron Ore, aimed at establishing a second colony at Jilukurru along the Canning Stock Route



In 2013, KJ will continue to work with Rangelands NRM and other project partners in the delivery of the above programs and the implementation of a broader Desert Rangelands Program.

Key priorities for this year will include: seeking funding to allow the continuation of the Mankarr and Fire projects, cat baiting, the relocation of rock wallabies, and increasing the amount of paid employment for Martu to look after country.

The Kaz Collins School of the Air Photo Competition 2012

The School of the Air (SOTA) Photo Competition started in 2011 and invited children living in the bush to submit photos of their 'country'. Children from all five Schools of the Air (Kalgoorlie, Meekatharra, Carnarvon, Port Hedland and Kimberley) took part in the 2012 competition. One hundred and thirty photos were submitted from 46 individual students.

The competition awarded a first and second overall prize and a first, second and third for the age groups Lower Primary (Kindy, Pre-Primary, Years 1 and 2), Middle Primary (Years 3, 4 and 5) and Upper Primary (Years 6 and 7). Prizes included a digital camera, a telescope and various environmental and science kits and books from our sponsors Scitech, Creaata Direct Learning and Australian Geographic.



Jessica (Year 6) - Under the Eucla jetty



Matilda (Pre-Primary) - Amazing life in the desert



Denni (Year 6) - Bird flying to its nest

Photos were used in the Rangelands NRM 2011-12 Annual Report and posted on the Rangelands NRM website and on Facebook. A calendar was also produced featuring the winning photos and were sent to all SOTA schools to be distributed to all families, teachers and staff plus key stakeholders in each region.



Riley (Year 5) - The trans line is littered with old cars from days gone by. Makes for an interesting ride.



Madison (Year 2) - Creek at Bullo Downs Station

The annual competition will continue as the 'Kaz Collins School of the Air Photo Competition' to recognise the contribution our colleague and friend had on the rangelands of WA before her death.

Education, erosion and envirorolls

With the help of Rangelands NRM, students from Perth schools were given a lesson in erosion and the use of envirorolls to control erosion during 2012.

For the last few years, Wooleen Station in the Murchison region has been hosting outdoor education programs. This year, St Hilda's Anglican School for Girls, Perth College and Penrhos College all participated in the program. Students have been learning how envirorolls help restore the river floodplains at Wooleen by constructing and positioning envirorolls to slow the water and trap debris. This year, to ensure the program at Wooleen could continue, Rangelands NRM funded purchase of the wire mesh to make the envirorolls.

The rangelands

Situated in the Murchison River region, Wooleen Station is a cattle station, extending over 152,000 hectares. Wooleen Lake, a Nationally Important Wetland is on the property and it is a semi-permanent home to a vast array of animal and bird life. The lake fills on average once in nine years. The station is also intersected by hundreds of kilometres of creek line, 36kms of the Murchison River and 37kms of the Roderick River.

Cause of the erosion

Due to 130 years of domestic and feral stock grazing, combined with the impact of grazing kangaroos and emus, grasses and plants in the rivers and floodplains of Wooleen Station have almost disappeared. By slowing down the flow of water in the river, Wooleen has a chance to re-establish some of the native perennial grass that once grew and plays a vital role in the ecosystem.

Without vegetation in the river systems, the river flows faster, carrying large grains of sand and rocks, which dig into the soil causing erosion. The larger the erosion area created by the sand and rocks, the quicker the water flows, eventually creating a gully washing the precious topsoil away. Furthermore, faster flowing water does not have time to seep into the ground. The grass and plants need this water to grow, creating a vicious cycle.

How envirorolls work

To improve the long-term future of the land, David Pollock and his partner Frances Jones, leaseholders at Wooleen, developed 'envirorolls' to act as an artificial filter in the river. Created from heavy gauge wire mesh, shaped into a hollow cylinder, envirorolls are used to slow the flow of water in the river and capture sediment and mulch travelling in the water against the mesh. Frances said the mesh often helps to sprout new vegetation as seeds and manure are also caught in the mulch.



Envirorolls in situ © Wooleen Station

"Often, after the river has flowed, and you go up to see an enviroroll, there is a mat of leaves, twigs and branches which have gathered against the mesh.

"This creates an ideal habitat for plants to grow in their own natural way when the conditions are right for them," she said.

By slowing the flow of the Roderick River enough to drop eroded sediment, the Wooleen Lake wetlands are protected.

David and Frances also took the brave step of removing the stock in these fragile pastures between 2007 and 2011, to give the new vegetation a chance to grow. Now there is only very light stocking in selected areas of the station.



Students making envirorolls © St Hilda's

A lesson in erosion

In recent years, Perth students have been learning about the environmental rehabilitation at Wooleen, building envirorolls as part of a team building exercise.

Seventy year 10 students from St Hilda's Anglican School for Girls participated in the compulsory outdoor education program. The program focuses largely on the relationships between students as well as the relationships between students and the natural environment.

Matt Berry from St Hilda's outdoor education department said the project was of great significance in teaching students about contemporary land management.

"Being able to have a hands-on approach with environmental rehabilitation has an enormous effect on how the students understand and relate to some of the current environmental issues that pastoral stations are faced with," he said.

"There is also definitely a sense of pride and giving back to the station by creating the envirorolls.

"Students can also see previous years' envirorolls and the positive effects that they are already having on the river area.

"Creating the envirorolls was noted as a highlight for many of the students in their journals," he said.

Isabelle Leclezio, a year 10 student from St Hilda's said she agrees it was a positive experience.

"Making the enviro rehab mesh rolls was a great team building activity, and it taught us all the importance of protecting and giving back to the environment," Isabelle said.

"It was rewarding to be part of the huge environmental rehabilitation going on at Wooleen Station."



Final touches to the envirorolls © St Hilda's

You can find out more about the innovative rehabilitation efforts of David and Frances at Wooleen, by visiting their website www.wooleen.com.au or by contacting them at info@wooleen.com.au. A 'Station Stay' is run at the homestead and the property and its work was featured twice on the ABC's 'Australian Story' in 2012.



Carbon Farming – the lowdown

The political controversy surrounding the introduction of the Australian Government's carbon tax in July 2012 has created headlines through the year. However, beyond the deliberations of increasing power bills and a mining industry under threat, the real debate is whether the clean energy legislation will ensure a more energy efficient future and a reduced national carbon footprint.

Whilst much of the discussion focused on the carbon tax for big polluters, legislation was also passed to create carbon offsets from the land through the Carbon Farming Initiative (CFI) bill. The CFI is a voluntary scheme which offers economic rewards to farmers and landholders in return for reducing carbon emissions or for storing carbon on their land. Whilst the coalition policy is to rescind the carbon tax, the CFI has bipartisan support and would be maintained under a future coalition government.

Why is it necessary?

Greenhouse gases in the Earth's atmosphere are essential for life on our planet. Part of a natural cycle, they regulate our climate by trapping heat inside the atmosphere.

In recent years this natural cycle has been disrupted as too many gases have been pumped into the atmosphere, making it harder to regulate the Earth's temperature. It is believed that this is resulting in a warming of our planet – global warming – causing climate change. The major contributors to this are: water vapour, carbon dioxide, ozone, methane and nitrous oxide.

Governments around the world are concerned that greenhouse gases are warming up our oceans and increasing the frequency of extreme weather events. In response, policy makers are looking at policies which reduce the amount of harmful gases in the atmosphere.

Carbon farming offers a plausible new income opportunity for landholders, whilst also conserving our natural resources for the use of future generations. But six months after enactment is the CFI developing relevance for landholders in the rangelands of WA?

The carbon market

By storing carbon or reducing greenhouse gas emissions on their land, farmers and land managers can earn carbon credit. Under the current governments policy Carbon credits (also sometimes referred to as 'carbon offsets') can then be sold as a commodity to individuals, businesses or government. Under the proposed coalition 'direct action' policy CFI carbon credits would only be purchased by the federal government.

Opportunities for storing carbon

Storing carbon is often referred to as carbon sequestration; it is the process of plants capturing carbon dioxide and removing it from the atmosphere. Carbon can be stored in vegetation such as trees (trunks, branches, leaves, roots), shrubs and grasses or as organic matter in the soil. Carbon sequestered in the soil also improves the soil fertility. Carbon stored by growing extra vegetation can benefit the environment and agricultural productivity.

Ways that landholders could store carbon to earn credits include the restoration of rangelands, replanting and rebuilding the soil of damaged land, replanting forests and protecting native forests.

Opportunities for reducing carbon emissions

Under the carbon tax legislation, the agricultural sector is exempt from paying a carbon price for its emissions, most of which comes from methane emitted by livestock. Carbon credits can be earned by reducing emissions of carbon dioxide and other harmful greenhouse gases below the level that is 'business as usual' for that type of agriculture. Emission reduction opportunities that are currently approved for CFI carbon credits include reducing methane emissions from livestock, savannah fire management, capturing and managing landfill gas, managing manure (for example from piggeries), and reducing the use of nitrogen fertiliser.

Wider benefits of carbon farming

The Carbon Farming Initiative may be the economic trigger to transform the rangelands management to give better outcomes in environmental, socio-cultural and economic terms.

In addition to the cash income from carbon credits, storing carbon or reducing emissions delivers a range of other benefits for the rangelands.

Carbon offset projects could also help to restore degraded rangelands, reduce the damage from large and uncontrolled fire, and help protect native plants and animals.

Environmental

Large areas of our rangelands are degraded and need rehabilitation. The Commonwealth Scientific and Industrial Research Organisation (CSIRO) identifies an overall improvement in the quality of grazing land and the restoration of habitat and diversity as having environmental benefits:

“An increase in the amount of soil carbon on grazing land which has suffered from significant degradation will improve water and nutrient retention and increase resilience;



Yarrie Station drilling © Peter Russell

“Retaining re-growth in the grazing system may have habitat and diversity benefits.”¹

Regenerating degraded rangelands can be achieved by changes to grazing management, controlling of large feral herbivores and reducing late hot fires. Some degraded land will need to be rested by removing all grazing animals. In other cases land can regenerate whilst being grazed by livestock, but under a grazing rotation system. A regeneration plan for a whole station might include destocking some fragile areas and more intensively grazing other more productive, land systems. Carbon credits could be earned from those areas where regeneration is due to changed grazing practices including both areas destocked and others with a rotation.

Socio-cultural

Wildfires through much of the rangelands, especially in the higher rainfall areas, are a significant emitter of greenhouse gases. Late season hot fires emit more greenhouse gas than early season cool fires. The difference can be claimed as a reduction for CFI carbon credits. Millions of hectares are each burnt year in the Kimberley and other parts of the rangelands. There is a big opportunity to earn carbon credits by moving to early season cool burning in the Kimberley.

Managing wildfires also has other environmental, socio-cultural and economic benefits. This may be particularly the case across Aboriginal lands. Following European colonisation, the Aboriginal cultural practice of landscape burning has been severely disrupted. Traditional burning involved lighting up many small patches in the early dry season, and this prevented large scale hot fires in the late dry season. Bush fires that occur late in the dry season can emit large amounts of carbon and other harmful greenhouse gases into the atmosphere. Massive late season bush fires can be difficult to control. Carbon credits can theoretically be claimed for controlled early-season burns that reduce the incidence of late-season wildfires as the early season fires produce much less emissions than the large late season fires. At the moment this only applies to the more than 1000 mm rainfall zone, but work is underway to extend this into drier areas. Savannah burning offsets would help to re-establish traditional Aboriginal fire management practices. Aboriginal elders

¹ Discussion paper—The emerging carbon economy for northern Australia: challenges and opportunities - <http://www.regional.gov.au/regional/ona/files/20121128-emerging-carbon-economy-discussion-paper.pdf> accessed 7th Jan 2013





Biomass weighing at Muggon © Peter Russell

could share their ecological knowledge with a new generation, preserving cultural knowledge. Creating jobs in fire management for younger generations will help to build stronger Indigenous communities in the rangelands.

Economic

In terms of livestock production, reducing methane emissions from beef herds can be claimed as a credit in some instances through the greenhouse gas avoidance protocols. This can be achieved in two ways:

Firstly, by improving the reproduction rates of cows it would be possible to reduce the number of breeders but still maintain the number of animals sold. With fewer breeders there would be a reduction in the amount of methane produced by the whole herd. This herd reduction in methane might be claimed as a carbon credit, however, a 'CFI Methodology' for this is yet to be approved by the federal government.

Secondly, the amount of methane produced by an animal can be reduced by improving their feed conversion efficiency. Feed conversion efficiency refers to the number of kilos of feed eaten required to produce one kilo of live weight gain. Feed conversion efficiency can be improved

Indigenous carbon farming fund

Through the Indigenous Carbon Farming Fund, Aboriginal land managers are also encouraged to participate. Indigenous communities will receive financial assistance for carbon farming initiatives, including the costs of specialists to work with Aboriginal land managers on carbon farming projects. There will be opportunities for Aboriginal people to earn carbon credits by using traditional burning practices to reduce emissions when compared to those from uncontrolled late hot fires. Aboriginal land holders could also earn credits from storing more carbon in the soil and vegetation of the properties. In the north of WA, the North Kimberley Fire Abatement Project is already engaging Aboriginal people in fire management practices. The Australian Government has funded the Kimberley Land Council to prepare for the start of carbon trading in 2013 through the North Australian Indigenous Land and Sea Management Alliance (NAILSMA).

through breeding, with many studs now including this in their EBV's. Feed conversion is improved, and methane production reduced, when the digestibility of the diet improves. Having better quality pastures or having animals select a higher proportion of the better quality plants, improves animal production and reduces the amount of methane emitted per kilo of animal live weight gain. Methane emissions from beef herds can be reduced by improving the pasture quality.

Work by Dr Dean Revell and his team at CSIRO has shown that some native shrubs can have a direct effect on methane production in the rumen. Small amounts of these plants in the diet caused a large reduction of methane in laboratory tests. Certain species of WA eremophilas were particularly effective in suppressing methane. Management to increase these shrubs in a rangelands pasture, or increase the amount eaten, could reduce herd methane emissions.

A win for all?

While the options discussed above provide opportunities for carbon sequestration and avoidance, there are still many issues to be resolved before carbon farming in the rangelands becomes a realistic option. Property rights, a 100 year permanence condition, lack of CFI Methodologies, proven management packages and uncertain carbon markets appear to be five major areas of concern inhibiting the take-up of carbon farming in the WA rangelands to-date.

Property rights: In the WA rangelands there are some complex issues around the rights to store carbon on the land. At present in WA, all of the carbon rights on crown land belong to the State.

Much of the rangelands are subject to pastoral leasehold, which means that unless a pastoralist has a diversification permit, they can only use their pastoral lease for grazing livestock. The State Government is working to resolve these issues so as to allow lease holders and non-exclusive possession Native Title holder's access to the carbon rights on their land.

Permanence: Another stumbling block to storing carbon is the 100 year permanence rule. This means that farmers and land managers have to guarantee the carbon stays in the soil and vegetation for 100 years. Understandably, many landholders do not want to commit to this 100 year period of maintaining the carbon they have sold. Carbon that has been stored due to good management can be lost due to natural events such as drought and bushfires. If natural disasters cause the loss carbon from vegetation in a CFI project, the land managers are not required to repay the credits but they are required to regrow the vegetation to the level of the carbon credits they have already sold. Many landholders may not want to pass the land onto their children with such long-term obligations. Also carbon credits must be recorded on the title of the land and the permanence obligations continues even if the land is sold. However, the 100 year permanence rule only applies to carbon storage projects. There is no permanence obligation on avoided emission projects such as savannah burning or methane reduction.

Methodologies: Carbon offset projects must be based on government approved 'methodologies'. Several methodologies for storing carbon in the rangelands have been submitted to the federal government but as yet none have been approved. Outback Ecology, an organisation based in Perth, have submitted a methodology for rangelands restoration to the Domestic Offsets Integrity Committee (DOIC), however timelines on public review and approval are at this stage unknown. Currently the CFI Methodology for savannah burning only applies in areas with more than 1000 mm of rainfall. An approved methodology for areas with annual



Carbon sampling © Kaz Collins



Demonstration at Yarrie © Teresa Belcher

rainfall that is less than 1000 mm is under consideration. This would then enable existing projects such as the Ecofire program in the far north Kimberley to be extended into lower rainfall areas.

Management packages: Carbon credits do not cover the carbon that is already stored in the soil and vegetation. Carbon credits are only for the increased amount of carbon stored due to management practices. These management practices cannot be 'business as usual'. Rangelands NRM has funds from Royalties for Regions to investigate new management practices that might lead to more carbon being stored in the rangelands. This year Rangelands NRM will be measuring carbon stocks at a range of demonstration sites across the WA rangelands. These sites will include rotational grazing, destocking of severely degraded land, vegetation, management works to fix erosion and restoring natural catchment hydrology.

Carbon markets: Another factor which may have contributed to a slow national take-up of carbon farming relates to uncertainty over future carbon markets. Long-term stability of the Australian carbon market is a concern for two reasons. Firstly, 2013 is a Federal election year and whilst both parties support the CFI, the Liberal/National Party has promised to repeal the carbon pricing scheme if it wins Government. The coalition has committed to buy carbon offsets direct from landholders but they are yet to commit to a price. Similarly under Labour policy some types of offsets from the rangelands will only be purchased by the government, and again they have not set a price. Secondly, Australia's carbon market is being linked to international markets. Prices paid in Australia will be influenced by international markets. Global carbon prices will fluctuate over time affecting Australian prices. Domestic Australian policy will also have a large effect on the future business demand, and therefore price, of land based carbon offsets.

Conclusion

The benefits of carbon farming may be far reaching, with financial, socio-cultural and environmental benefits. For farmers, land managers and Indigenous communities in WA, carbon farming presents an opportunity to complement many of the sustainable land management practices that are already underway to preserve the future of our rangelands. Where our natural resources are not currently being managed sustainably, the Carbon Farming Initiative and associated funding may provide a financial incentive to change agricultural and land management practices. However, its early days and a number of barriers currently remain for farmers and land managers in the rangelands of WA, before they can fully embrace carbon farming. In the meantime, it would appear that farmers and land managers are keenly observing from the sidelines to see how legislation, methodology and the carbon market evolve.

To find out more about the Carbon Farming Initiative contact Jane Bradley email janeb@rangelandswa.com.au or telephone 08 9964 8239.



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Wildfires, wilderness & working together

A regional fire management project has been successfully bringing communities together to tackle wildfires in the central and north Kimberley.

Destructive wild fires in the tropical savannahs of northern Australia have become a matter of serious concern for Indigenous communities, conservationists and pastoralists. The Kimberley is one of the world's last great wilderness areas and has such iconic values that managing wild fires across this vast and remote area is a conservation priority.

The changing fire patterns have become a threat to cultural sites, biodiversity and the livelihoods of pastoralists. Previous attempts to manage the problem have been unsuccessful due to a lack of co-ordination across individual properties. But in 2007, the Kimberley community decided it was time to get together and take action by the forming of the EcoFire project.

Why action was needed

The 'intense' and 'destructive' wildfires ignited by people and lightning, have become a frequent occurrence of the late dry season in the savannah rangelands.

Since European settlement, traditional Aboriginal fire management, which was dominated by burning small patches in the dry season, has largely been replaced by uncontrolled, very extensive fires. Local Aboriginal people have become increasingly concerned about fire damage to some of their cultural sites.

For local Indigenous communities, a decline in traditional fire management practices meant not only had they lost part of their cultural heritage, but through these damaging new fires, they also lost some plants and animals of cultural significance.

Betty Walker, Tirralintji Community and EcoFire participant described how the lemon grass plant used in bush medicine had become scarce.

"We lose a lot of bush medicine, bush plants...all the animals, and all the trees that we know from before we don't see now because they all burnt down, our grass we don't get the grass medicine like the lemon grass anymore because of wild fire, bushfire..." Ms Walker said¹.

Uncontrolled wildfires can be huge, frequent, and also have a hugely damaging effect on the region's biodiversity. As a direct consequence, conservationists have noticed changes in the composition of woodland savannahs.

Dr Sarah Legge, EcoFire Project Manager and National Conservation and Science Manager of Australian Wildlife Conservancy (AWC) said a loss of vegetation due to the frequent burns, meant a loss of shelter and food for a number of animal species.

"We found that the frequent burning meant there was less food for animals that relied on nectar, fruit and/or grain as their primary sources of nutrition.

¹ Legge S, Webb T, Swan D, Maher B, Smith J, Lawler P (2012) EcoFire 2004-11 fire pattern analysis central and north Kimberley. Australian Wildlife Conservancy, Perth, WA, p4

"In addition, the fires meant less tree hollows and logs on the ground, which would normally provide shelter and habitat for some species.

"Reduced food and shelter accentuated the impact of other threats like weeds and feral animals in the region. For instance, if small animals have no shelter they are more vulnerable to predation by feral cats."

Dr Legge added that the observed changes in fire patterns are associated with a serious decline in the region's biodiversity.

"About half of the small to medium sized mammals in the region have declined in population or distribution. For example, the Golden Bandicoot has disappeared from 90 per cent of its previous distribution, and is now restricted to the northwest Kimberley," Dr Legge said.

The destructive new fire patterns were also a huge concern to pastoralists. Greater areas of bare ground caused by the fires increase soil erosion and nutrient loss into waterways.

As well as reducing the quality of the pastureland, the frequent extensive fires often wipe out the grass feed for grazing cattle over large areas; this often means reduced production and therefore income for pastoralists.

By destroying fences and other infrastructure, the wildfires have additional financial consequences for pastoralists. It was estimated by the Kimberley Regional Fire Management Project that damage from unplanned fires can cost between \$50 - \$400,000 per property in a single year².

A co-ordinated approach

To tackle the wildfire crisis, the EcoFire project brought together pastoralists, Indigenous communities, private conservation (Australian Wildlife Conservancy) and government agencies for the first time. Funding for the project was provided by Rangelands NRM through the Commonwealth Caring for Our Country (CfOC) program.

Thirteen adjoining properties spanning an area of four million hectares were identified in the central and north Kimberley region for project participation. The properties included conservation, pastoral, and Aboriginal pastoral land and included four Aboriginal communities.

Managed by the Australian Wildlife Conservancy, the project uses a prescribed mosaic burning program delivered late in the wet season and early in the dry season to dramatically shift the seasonality of burning from mid and late dry season. The controlled burn program aims to create fire breaks by burning 'patches' through the grassland landscape which reduce the possibility for large scale, uncontrolled burns.

²Palmer C. (2004) Pastoral property management practices and Kimberley grasslands curing. Report of the Kimberley Regional Fire Management Project, Natural Heritage Trust.



© Australian Wildlife Conservancy

To create the mosaic burn patterns in the remote and inaccessible landscape, aerial incendiaries are dropped from a helicopter over about two months, mostly during April-May. This is no easy task; the distance travelled by helicopter dropping incendiaries each year is the equivalent of flying from Sydney to London and back³.

Helicopter incendiary drops are carried out early in the dry season when the vegetation is still damp and holding moisture. Humidity in the air causes the fires to go out at night. This results in less intense fires which leave more un-burnt patches of vegetation within the firescar than a late season wildfire.

To guide the helicopter work, the project develops burn plans for the entire project area each March, which aim to cater to the requirements of individual properties whilst being linked with the plans of neighbouring properties to ensure the fire management is co-ordinated across property boundaries.

At the same time, project participants undertake burning from the ground, especially to help protect infrastructure and cultural assets. The Australian Wildlife Conservancy worked with Indigenous communities and Wunggurr Rangers to deliver part of the program.

³Legge S, Webb T, Swan D, Maher B, Smith J, Lawler P (2012) EcoFire 2004-11 fire pattern analysis central and north Kimberley. Australian Wildlife Conservancy, Perth, WA, p7



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Success

The results from 2007-2012 are truly outstanding. Satellite imagery mapping demonstrates that the extent of late dry fires has been markedly reduced, there is less burnt vegetation at the end of each year, and the amount of 'old growth' vegetation in the project area has increased.

This success has not gone unnoticed. In 2008, the project was awarded both the 'Overall Western Australian Environmental Award' and 'Western Australian Community Achievement Award'.

Indigenous communities are positive about the project, and as a result of the project some community members are benefiting from employment and training opportunities.

The Australian Wildlife Conservancy has undertaken some research into the impacts on biodiversity of the burn programs and monitored responses to changed fire regimes by flora and fauna. The results indicate that the project has a positive impact on threatened and fire-sensitive species including Purple-crowned Fairy-wrens and native small mammals.

Dr Legge cites the example of the nationally Endangered Gouldian Finch (*Erythrura gouldiae*).



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"Mornington is home to a relatively large population of Gouldian Finches and extensive, frequent fires meant the availability of some types of grass seed had diminished, and this was causing starvation for Gouldian Finches in the early wet season.

"We monitor the physical condition of Gouldians through the year, and since inception of the EcoFire project, we have seen that the condition of birds in the early wet has steadily improved each year," Dr Legge said.

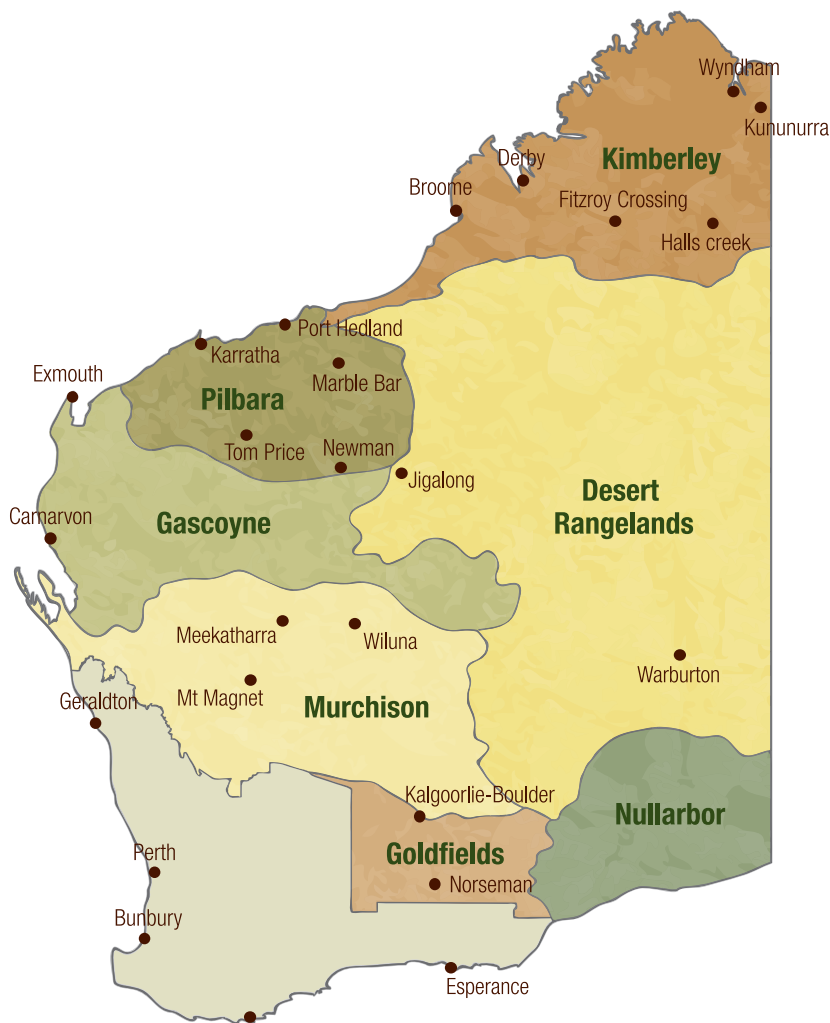
Conclusion

By working together, planning a co-ordinated approach to fire management, focussing on clear and measurable outcomes, and using an innovative delivery model that included a private conservation organisation (Australian Wildlife Conservancy), the community has been able to achieve remarkable and dramatic results.

The EcoFire project is funded by Rangelands NRM WA and the Commonwealth Government's Caring for Our Country Program from 2007-13. The success of the project has ensured continued funding from the Rangelands NRM and Caring for Our Country, and the WA state government's Kimberley Science and Conservation Strategy from 2012.



The 'rangelands' of WA



Rangelands NRM is the largest of the 54 NRM regions in Australia and one of six regions in WA. It covers around 85 per cent (2,266,000 square kilometres) of the WA State's land mass, and 75 per cent of the coastline.

Whilst often recognised by many Australian's as "the Outback" the name rangelands is an accepted term used around the world to describe the regions of low rainfall and highly variable climate of arid and semi-arid regions. Our rangelands contain a wealth of biodiversity including a total of 1800 types of plants and 605 vertebrate animal species currently identified.

Australia's rangelands support a significant amount of the country's valuable mining industry. In 2011-12, WA's mineral and petroleum production was valued at more than \$106 billion. Tourism is also a growing enterprise with the value of the WA tourism industry reaching \$5.97 billion (gross value added) in 2010-11.

Pastoralism is the most dominant land use across 45 per cent of WA's rangelands, with a greater proportion of sheep in the south and beef cattle in the north. The total gross value of agriculture in the 'rangelands' NRM region of WA (in 2010-11) was \$476.2 million which consisted of \$108.7 million in horticulture, \$26.6 million in sheep and lambs (\$14.0 million livestock and \$12.6 million wool), \$330.4 million in cattle and calves (livestock) and \$4.8 million in goats (livestock). (Source: 2010-11 ABS Commodities for Rangelands NRM).

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