

# A Natural Partnership – Industry and the Environmental sector having a positive impact on nature conservation in the SA Arid Lands

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**Keywords:** Adaptive management, biodiversity, ecosystem management, landscape ecology, mining, partnerships.

## Abstract

Many might think that a partnership between resources companies and a conservation charity is an unlikely one. However, both sides are landowners and managers sharing some clear synergies and goals, including a concern for nature conservation. Both want meaningful relationships with neighbours, the local community and traditional owners. There are multiple opportunities for information sharing and collaboration.

Nature Foundation began working with South Australian mining and petroleum companies in 2009 as a third party provider, to assist them meet their legislative requirements under South Australia's *Native Vegetation Act 1991*. Approved native vegetation clearance must be offset by an action that will produce an overall environmental gain, known as a Significant Environmental Benefit (SEB).

While it is a constant challenge for Nature Foundation to fund its ambitious conservation objectives, early partnerships with companies such as Santos and Beach Energy ultimately led to the establishment of Witchelina Nature Reserve (4,200 square kilometres), a former pastoral station located near Lyndhurst. Witchelina is an established SEB credit site providing clearance proponents an alternative to paying into the Native Vegetation Fund or undertaking an offset project themselves.

Nature Foundation has built its 36 year history through partnerships with governments, industry, universities, indigenous communities and community groups. These partnerships have yielded landscape-scale conservation outcomes at Witchelina and demonstrable environmental gains, research opportunities and involvement of the wider community in conservation activities.

## Introduction

Founded in 1981, Nature Foundation is a not-for-profit nature charity that works to Save, Protect and Restore South Australia's natural biodiversity. Working closely with communities, governments and industry, Nature Foundation relies upon its supporters, members and donors to support this vital work. Nature Foundation's vision is *Nature Loved by All and Thriving* fundamentally representing that the prospects of both society and nature are reliant on each other.

In the early years, Nature Foundation focused on assisting the state government with acquiring high priority landscapes and ecosystems that should be protected and become part of the state's National Parks system. The Nature Foundation has been directly involved in either purchasing or contributing to the purchase of 24 properties that have become either public or private reserves. As Nature Foundation grew in size and expertise, it made a strategic decision to care for and manage large properties in its own right, with the aim and effect of growing the capacity of the nature conservation management sector playing a role in the protection of just over 1.15 million hectares of South Australian bushland and wetlands.

In 2009, deep in the Millennium drought, Nature Foundation acquired the 4,200 square kilometre pastoral property, Witchelina Station. A diverse partnership was formed and resulting in funding from the Commonwealth's Caring for our Country program, the South Australian Government and five resources companies, who elected to discharge their environmental offset obligations through this project.

## **Partnership with Industry**

It took the vision and energy of the resources sector and the Commonwealth, along with strong and enthusiastic state departmental support from the Department of State Development (DSD) and the Department of Environment Water and Nature Resources (DEWNR), to help secure the purchase and fund the early management of Witchelina.

Petroleum and gas companies operating in the Cooper Basin were seeking options to discharge their legislative obligations under the Native Vegetation Act SA. The Act requires that if native vegetation is cleared, the environment must be compensated by an 'offset', an action that results in a Significant Environmental Benefit (SEB). The aim of an SEB is to produce an overall environmental gain.

Under delegated authority, the Native Vegetation Council (NVC) provides DSD with a mechanism to permit native vegetation clearance proponents to discharge their SEB obligations directly through a third party provider with approved SEB credits. This allows clearance proponents to work directly with Nature Foundation and DSD to discharge SEB obligations efficiently. The liability associated to the SEB offset is then transferred to the Nature Foundation who is committed to managing SEB offsets in the long-term. All SEB offsets are recorded and deducted from Witchelina's SEB credit register.

Resources companies recognised the mutual benefits of discharging their SEB obligation with an enduring conservation charity, as an alternative to undertaking the offset project themselves or by making a payment into the Native Vegetation Fund. Throughout they have been clear that they want to keep in touch with the environmental gains their SEB obligations make possible.

Since the purchase of Witchelina in 2010, Nature Foundation has offset 23,674 hectares of cleared vegetation undertaken in the SA Arid Lands Natural Resources Management region.

Santos, Beach Energy, Epic energy, Stuart petroleum Limited and Victoria Petroleum NL (both now Senex) contributed to the purchase. These innovative early adopters were then instrumental in leading others to the cause to protect and restore Witchelina Nature Reserve. Nature Foundation now delivers SEB offsets, protected in-perpetuity, for Arrium Mining, Beach Energy, Electranet, Epic Energy South Australia, Heathgate Resources, KJM Contractors, Santos, SEAGas, Senex Energy (previously) and WPG Resources

## **Conserving Witchelina**

Witchelina Nature Reserve spans a diverse array of habitat types, contributing to its important ecological value. The reserve is home to a high proportion of South Australia's flora and fauna with 32 mammal species (19% of SA), 160 bird species (33% of SA), 39 reptile species (16% of SA) and 379 plant species (8% of SA). The number of species found at Witchelina continues to grow as a result of ongoing survey work by scientists and citizen scientists, as well as significant habitat improvements. Threatened fauna of particular importance present at Witchelina are the Thick-billed Grasswren (*Amytornis modestus raglessi*) and the Plains Mouse (*Pseudomys australis*).

In 2010, a two-week Bush Blitz biodiversity survey was conducted at Witchelina. In total, 695 species were identified, of which 475 had not previously been recorded at the reserve. Added to existing records, 928 species are now known from this area. Of these, 175 are putative species new to science (Bushblitz 2010).

## **Principles of Witchelina Reserve Management**

Nature Foundation's management and operations planning for Witchelina Reserve is guided by the core principles driving its conservation strategy and reflects the guiding principles summarized as

- IUCN Category 1a "Strict Nature Reserve".
- Commonwealth Government 'Caring for Our Country' funding agreement requirements.

- 'Significant Environmental Benefit' requirements of the South Australian Native Vegetation Act.

Through active management Nature Foundation is reducing the impact of a number of threatening processes, primarily focusing on total grazing pressure and predation. Total grazing pressure is a combination of the impact on native vegetation caused by herbivores, both introduced and native as well as feral and domestic. Nature Foundation has removed all domestic livestock, the majority of feral goats and has been tackling the degradation caused by rabbits and monitoring the numbers of macropods.

Predator control has involved reducing the numbers of foxes and feral cats to alleviate the pressure on native fauna, and allowing them to reproduce and build in numbers as habitat also improves.

Nature Foundation's Council has identified Buffel grass as the highest priority weed for control. In order to protect important habitats from further invasion, Nature Foundation has a property wide management program that has mobilised managers and volunteers to map all known infestations and undertake methodical control program.

### **Conserving Thick-billed Grasswren**

In 2011, Arrium Mining sought a biodiversity offset strategy for its habitat disturbance at the Peculiar Knob Iron Ore Mining Project. The disturbance created a Significant Environmental Benefit obligation and in addition triggered the Commonwealth's Environment, Protection, Biodiversity and Conservation (EPBC) Act 1999, due to impacts on the habitat of the EPBC listed Thick-billed Grasswren (TBGW) (Eastern subspecies, listed as vulnerable) (*Amytornis modestus raglessi*). Nature Foundation developed a project designed to create a net benefit for the TBGW. Witchelina Nature Reserve, considered equivalent arid land habitat to the area where vegetation clearance took place at Peculiar Knob, was the focus of the strategy.

The biodiversity offset strategy consisted of two aspects. Firstly, on-ground reduction of threatening processes including the impact of predation on the TBGW by feral cats and foxes and the reduction of grazing pressure on TBGW habitat by feral grazers (e.g. sheep and goats), and increasing the area and quality of TBGW chenopod shrubland habitat. The second aspect was a research component, designed to improve knowledge of the ecology, distribution and environmental preferences of the Thick-billed Grasswren in arid South Australia. This program ran for a period of four years (2012 - 2016) as a partnership with Flinders University; two PhD students were employed to investigate the ecology and population genetics of the TBGWs. Nature Foundation managed the reporting requirements for the State and Commonwealth Governments that were required for this project.

### **PHD summary and findings**

The focus of the research component was to understand of the ecological context of nesting behaviour and fledging success in the previously unstudied Thick-billed Grasswren.

Radio- tracking showed that adult TBGW males have a large home range, with a mean of 8 ha. Active grasswren territories were more likely located at sites with low prior grazing intensity. Vegetation cover and insect abundance were significantly associated with grazing history.

Predation risk at Witchelina Nature Reserve was measured using artificial avian nests: rodent predation risk was ~10 %, avian predation risk was ~12 %, and observed predation at natural nests was ~13 %. Predators more often preyed on artificial nests with little vegetation concealment. Active natural nests were within dense vegetation cover. Vegetation concealment was not found to be a predictor of predation, suggesting snakes and rodents as main nest predators. However, of the 47 natural nests, predation was low, with (74 %) producing fledglings.

Vegetation cover predicted parental feeding at nests; parents at sites with dense cover fed nestlings more frequently. Video recordings of feeding at nest showed that grasshoppers and caterpillars were commonly fed to developing nestlings.

Finally, results showed that TBGWs are cooperative breeders, with up to two helpers observed feeding at 50% of video-monitored nests. Using ddRAD-seq genetic analysis we established that

helpers were related to the attending breeding pair. No evidence was found for extra-pair paternity in offspring of five thick-billed grasswren groups.

## Management implications

On-going long-term population monitoring is crucial to determine the viability of populations, and is an intrinsic part of species conservation management, especially for highly specialized species that have small and range-restricted populations.

Dispersal, recruitment and gene flow of populations increase their genetic diversity, which ultimately improves the long-term survival and persistence of species. A recent study by Slender *et al.* (2017) examined two TBGW subspecies within their previously known distributions and a region where the subspecies were parapatric<sup>1</sup>. They found different patterns of morphology and mtDNA haplotypes, dispersal from west to east, and that the two subspecies are currently interbreeding (Slender *et al.*, 2017). Further research is required to determine factors affecting population recruitment, dispersal and gene flow must therefore be identified and considered in the future conservation management of the vulnerable TBGW.

Modern Australia has undergone extensive changes in landscape since European settlement in the late 1800's (Ford *et al.*, 2001), and predictions are that up to fifty per cent of Australia's terrestrial birds will be lost unless land management practices are changed (Kirkwood and O'Connor, 2010, Recher, 1999, Szabo *et al.*, 2012).

The conservation and restoration of this critical habitat is key for on-going conservation management of the Thick-billed Grasswren. This study recommended that land managers reduce current grazing pressure in areas where Grasswren's are present to restore vegetation cover and abundance of preferred chenopod nesting shrubs *Maireana pyramidata* and *Maireana astrotricha*.

## Social and Economic Benefits

By choosing a third party to deliver environmental offsets, resources companies are able to get on with the business of delivering minerals and resources to the markets and provide jobs for the region and state. The opportunities for their staff to experience Witchelina and see the restoration work first hand, has helped to build knowledge fundamental to delivering environmental policy and a deeper connection to nature.

The partnership with industry and the success of the program that followed has also built stronger ties with traditional owners, universities and the local community.

A recent and innovative collaboration between Heathgate Resources, Port Augusta Secondary School, Career Employment Group and Nature Foundation is providing unique learning experiences and pathways to employment for Aboriginal high school students "on country". Outback ecology work experience camps held at Witchelina form the gateway for students to participate in the Aboriginal School Mentoring Program (ASMP). The dynamic program developed by Heathgate to create career pathways won the 2016 SA Premier's Community Excellence Award in Mining and Energy for Excellence in Social Inclusion.

Teams of volunteers have refurbished the homestead and shearers precinct into ideal accommodation and facilities for visiting researchers, contractors, volunteers, tourists and school groups. Increased visitation to the region benefits local businesses and other tourist operators.

## The Future

Witchelina Nature Reserve will continue to offer an area of high ecological importance to protect an amazing diversity of species and for the discharge of SEB offsets. With new SEB policy in place from 1<sup>st</sup> July 2017, clearance proponents operating in the IBRA regions of Gawler, Flinders Lofty Block and Stony plains will be able to discharge their SEB obligations at Witchelina. Nature Foundation is

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<sup>1</sup> **Parapatric** speciation is extremely rare. It occurs when populations are separated not by a geographical barrier, such as a body of water, but by an extreme change in habitat. While populations in these areas may interbreed, they often develop distinct characteristics and lifestyles.

committed to continuing its work with industry, communities and governments both on its nature reserves and elsewhere to influence and advance nature conservation and sustainable land management practices in South Australia and beyond.

The new SEB Policy has opened up opportunities for Nature Foundation's SEB/Industry Program to look beyond its own nature reserves to provide SEB offsets. With industry proponents, Nature Foundation is exploring roles as a third party SEB provider assisting landholders deliver stewardship projects on their properties, co-management projects with traditional owners and land acquisition for nature gain and protection. It's an exciting time to be working in partnership with industry, universities, indigenous communities, governments and community groups. Nature Foundation is finding that its openness, creativity and willingness to collaborate are proving to be productive and helpful to a range of interests during transitional to the new SEB policy.

Nature Foundation very much looks forward to continuing to work with Industry, communities and governments to create and grow a positive environmental legacy in South Australia.

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