# GLUEPOT RESERVE – A VISION FOR THE FUTURE OF ENVIRONMENTAL CONSERVATION AND SUSTAINABILITY.

Not long ago George Negus, one of Australia's most highly rated journalists, described Gluepot as "one of the conservation miracles of the 21st century".

BirdLife Australia Gluepot Reserve is Australia's largest community managed and operated conservation reserve. Situated 64 km from the River Murray in South Australia's Riverland, the reserve is managed and operated **entirely** by volunteers. Some 54,000 ha is size, it is home to 22 nationally threatened species of birds, 53 species of reptiles and 12 species of bats, some of which are nationally threatened. **There are few areas of the world that support such a concentration of threatened species.**

The Reserve is part of the largest block of intact mallee left in Australia and so the viability of threatened bird populations and other flora and fauna is high. Prior to the November 2006 fire (that burnt 8,000 hectares of the Reserve's 54,000ha) the last major fire on Gluepot was over half a century ago in December 1950. Importantly, some whole areas were not burnt at all during these widespread fires. A diversity of fire impacts, together with a diversity of understoreys within the mallee and other woodland communities, gives rise to a wide variety of niches for birds and other animals. Many of the trees within the mallee and Casuarina woodland are hundreds of years old with numerous hollows. Such old-growth habitat is essential for many species including threatened species.

Gluepot Reserve is a large internationally significant area for biodiversity conservation. Populations of threatened species in the Reserve have been maintained or increased in number. A good understanding of the species and their management needs has been obtained and continues to be refined through high quality research. High quality monitoring directs management decisions with minimal adverse impacts on the natural values of the Reserve. Feral predators, introduced herbivores and weeds are controlled to low levels. Appropriate fire regimes maintain the conservation assets of the Reserve. Human use of the Reserve is carefully managed to minimise adverse impacts. A successful and financially independent conservation program continues that is a model for other groups who manage conservation reserves. There is an appreciation and awareness of the special conservation values and character of the Reserve by the international community, Australian federal, state and local governments, scientists and the Australian public, ensuring the protection of the Reserve remains of utmost importance. ***It should be noted that Gluepot is carbon neutral***.

By successfully combining the elements of biodiversity conservation and enhancement through land management, scientific research and monitoring, environmental education and sustainable ecotourism, Gluepot Reserve has taken conservation management into a new era. The Reserve is providing an international model to show that sustainable use of the landscape is both feasible and desirable. A highly successful program of this size and complexity is unique in Australian land management.

Gluepot is protected in perpetuity as a conservation reserve by the signing of a SA Heritage Agreement and until 2016, was the largest area of land in South Australia under Heritage Agreement. Gluepot is also part of the National Reserve System, is on the Register of the National Estate and is further protected under the

Commonwealth EPBC Act as *'critical habitat'* – the first area of land on mainland Australia to have achieved this protection.

A skilled 19 person volunteer Management Committee, with a strong background in business management, conservation, land management, fire management, wildlife survey, research and monitoring, weed, feral and pest animal control, computing, GIS, database management, library management, archaeology, history, education, ecotourism and community involvement, is responsible for all management issues. The Reserve is manned on a continuous basis by Volunteer Rangers and Assistant Rangers.

Volunteers are the life-blood of the Reserve and come from all states of Australia and overseas. Since the Reserve was purchased in July 1997 and to the end of 2018, volunteers had donated 523,313 hours and 3,198,841 km of mileage - that equates to an overall donation of time and mileage of $14,932,689 million. Over the past 20 years, the average for donated hours has been about 29,000 hours per annum – during 2015, volunteers donated 29,628 hours and in 2016, 38,767 hours. The Reserve is the recipient of 45 national and international awards in the fields of science, conservation, environment, ecotourism, health and the built environment – including eight Landcare awards.

Volunteer Ranger positions on Gluepot have historically been booked out three years in advance, and are currently booked to midway through 2021. The Reserve's Assistant Ranger Training Program offers young graduates and under graduates, the opportunity to obtain training in many facets of conservation and park management, scientific research and monitoring methodology and a wide range of other skills not readily available in any other training programs - there is no charge made by the Reserve for this service. During 2016, seven French and three Australian second year university students spent their internships at the Reserve. Students stay for up to nine months and many undertake special projects on the Reserve as part of their university course. The Reserve provides a supervisor/mentor for these projects. Gluepot is accredited as an exemplar training institution by several overseas universities.

The Reserve's overall management philosophy is to *"Effectively manage a large, internationally significant protected area for biodiversity conservation as an addition to Australia's National Reserve System and to develop a successful, financially independent program that will be a model for other community groups with small operating budgets (approximately $80 – 100,000)".*

Other objectives include the increase of public awareness of measures to conserve biodiversity through on-site education programs and by involving volunteers in all aspects of the Reserve's programs; development and implementation of high quality management, monitoring and business plans; to implement and monitor management actions aimed at improving the quality of native vegetation and enhancing populations of threatened species; and initiate and support high quality research based on problems associated with the mallee environment and in particular, threatened species.

The Reserve has been extremely successful in developing Gluepot as a *'Quality Centre for Scientific Research'* and to-date, 24 Australian and overseas universities and research institutions conduct ongoing research projects on the Reserve. Up to 2015, 19 PhD projects had been undertaken on Gluepot. The Reserve recently ‘hosted’ a $1.4 million research project that looked at fire mosaics in relation to biodiversity. This project was supervised by La Trobe and Deakin Universities and

seven PhD projects were involved. Overseas research institutes and universities also undertake research projects on Gluepot. In 2014, six scientists from the University of New Mexico (USA) spent three months at Gluepot (as part of an international research project) studying the *"Physiology of heat tolerance in arid zone birds"*. Another PhD student from the University of Wisconsin (USA) commenced a DNA study of the Black-eared Miner and a PhD student from the ANU commenced her project looking at *"Aspects of bird responses to fire regimes in the mallee".*

Visitors to Gluepot are encouraged (where practical) to assist with the Reserve's research and monitoring projects.

Gluepot has the greatest number of permanent biodiversity sites (200) of any Australian land area. These sites are monitored by Reserve personnel, for vegetation, birds, mammals and reptiles - 50 of the sites are photo-point sites and seven 1km x 2km Malleefowl research and survey grids have also been established. With 75 bird Atlas sites, Gluepot has the highest concentration Atlassed sites in Australia and these are monitored on an ongoing basis (a minimum of four times a year) by Reserve volunteers and visitors. Bird banding is conducted a week per month in selected areas to establish populations of cryptic ground dwelling species of birds for long-term research. The Reserve's Bird Banding Manager provides a bird banding service to students undertaking bird research projects.

The Reserve has always been at the forefront of using the latest technology to assist with the management of the Reserve and with research and monitoring projects. 'Stealth' movement detection cameras are widely used across the Reserve to monitor animals along the electrified fences, breeding behaviour and feral intrusion on active Malleefowl mounds and to monitor bird species using the five elevated watering troughs. A drone is being utilised to find active Mallefowl mounds during the breeding season.

The Reserve has established Australia's first permanent bat recording station (seven solar powered ANABAT systems are deployed across varying habitats on Gluepot) in addition to a number of long-term bat research projects (12 species of bats occur on Gluepot, two of which are on the endangered list).

Gluepot, through its Environmental Education Centre, has for 16 years, run up to 13 two and three day courses on a wide variety of conservation and environmental subjects.

Total grazing pressure is recognised as one of the key threats to native plants and animals. Since the removal of sheep from Gluepot in 1996 there has been a reduction in total grazing pressure with many species regenerating, providing Gluepot with the best vegetation condition of any mallee in Australia. An active Feral & Pest Animal Management Program has ensured that goat numbers have been kept to a minimum. Additionally, Gluepot has completed building 50 km of new electrified fencing on its north and west boundaries, thus ensuring minimal intrusion of feral goats into Gluepot. The Reserve also pioneered the use of GPS satellite tracking goat collars (used for research purposes and to track mobs of goats) in the 1 million hectare Riverland Biosphere.

For thousands of years there was no permanent water on Gluepot Reserve, and the plants and animals had evolved to cope with this sometimes harsh environment. 80 years ago, a major development phase began and most of Gluepot's 18 dams were dug just before World War II. The provision of permanent water meant that some parts of the property were overgrazed and the soil was damaged during droughts,

particularly those areas within 2 km of these artificial water points. However, a CSIRO study showed that the impacts of grazing can be recorded 8 km or more from dams. During 1999 -2001, Gluepot Reserve supported a PhD study on the impact of dams on the Reserve's vegetation and avifauna. At the same time a comprehensive on-going flora and fauna-monitoring program was devised and implemented. Overgrazing was not just by sheep, but feral goats and elevated numbers of kangaroos contributed too.

Of the 18 dams on the Reserve, 16 have been 'decommissioned' (bulldozed flat) and the two dams at the Homestead have been retained and fenced off (1.4 km long and 2 m high) to prevent herbivore access. Following dam closures and the subsequent re-vegetation of the sites, goat numbers are now relatively insignificant and kangaroo numbers have fallen to 'natural' pre-dam levels. It is worthy of note that Gluepot has led the way in the closure of artificial watering points and a number of other conservation reserves around Australia are now following suit eg. Scotia and Tarawi (NSW), Calperum and Taylorville (SA) etc.

Other feral animal control programmes include fox baiting – the Reserve baits six times per year and in addition uses special cage traps and Ecotraps to catch foxes. The Commonwealth Government has now given permission to use M44 Fox Bait Ejector Systems. The ejectors use 1080 capsules and 150 units are presently being used, in addition to the meat bait program. The Reserve is also very active in reducing cat numbers utilising cage traps, Ecotraps and baiting for the occasional rabbits.

The Reserve has developed superb infrastructure, including 14 marked walking trails situated in strategic areas of the Reserve; a world class Visitor Information Centre; four magnificent camping grounds set in prime birding areas; research quarters including a new 5 bedroom accommodation block; converted half of the shearing shed into an Environmental Education Centre; built a large steel 19m long storage shed; installed the Riverland's largest self-contained solar power system; installed five elevated bird watering troughs overlooked by large bird hides and a 6 X 9 metre library/science centre building was completed in early 2015.

The many thousands of visitors that come to the Reserve each year are mainly birdwatchers, conservationists and environmentalists. The Reserve has been an industry leader in the accreditation process and was one of the first tourism attractions in SA to achieve Advanced Eco Certification and National Tourism Accreditation. In late 2009 it was announced that Gluepot had received the highest level of accreditation – Leader 5 Star – in the Climate Action Certification Program released by Sustainable Tourism Australia – the first organisation in Australia to achieve this (Gluepot is **carbon neutral**). Members of the Reserve's Management Committee are or have been, represented on the boards of Eco Tourism Australia (Past Chair); SA Tourism Industry Council (Past Chair); Riverland Biosphere Reserve (Past Chair); Riverland Tourism Association; Riverland West Chamber of Commerce; Scientific Expedition Group (Chief Scientist on the Management Committee) BirdLife Australia (Board member) Friends of Parks SA (President), Member, SA Parks and Wilderness Council (DEW) etc.

Gluepot has always seen 'challenges' as a means to increase the resilience and viability of the Reserve - being able to ensure the long-term financial stability of Gluepot has been the largest challenge.The Reserve must raise approximately $100,000 per annum to cover the Operating Budget - that includes at least $23,000

per year set aside for a Capital Replacement Fund. The Reserve has always ended each year with a surplus budget.

To ensure the financial position of Gluepot - in perpetuity – the Reserve set about raising $1 million for the Gluepot Reserve Foundation. Four years ago, the target sum was raised to $1.5 million (as a 'hedge' against further GFC's). The Foundation capital presently stands at $2.5 million. The funding for future Operating Budgets is now ensured in perpetuity.

For all capital works and research projects Gluepot must apply to governments, foundations etc. for grants, along with most other organizations in Australia. Since 1998, the Reserve has been the recipient of $985,223 in grants.

By looking at challenges as 'opportunities,' Gluepot has been a national leader in a number of core environmental management issues: eg. fire management, land and environmental management, feral and pest animal control, weed management etc. Gluepot is a 'model' that both national and international conservation organizations are following. Many of the research projects undertaken at Gluepot Reserve will help solve the problems of land degradation and loss of biodiversity. They will assist in providing the opportunity for this generation to sustain itself and to make sure that there are resources left for the generations to come. Importantly, they will increase awareness of the environmental issues surrounding this highly endangered area of Australia's wilderness.

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