

7. Malleefowl conservation activities in New South Wales 2012 – 2014

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Abstract

There have been many new, as well as many ongoing programs to aid Malleefowl recovery across New South Wales over the past few years. Some of the new programs include the implementation of the Saving Our Species program by the NSW Office of Environment and Heritage with Malleefowl as an Iconic Species; the introduction of a supplementary pest control program in a number of national parks specifically for Malleefowl and a number of large-scale fencing and pest control projects on private lands for the protection of Malleefowl, facilitated by local Catchment Management Authorities (now Local Land Services - LLS).

Some of the ongoing programs that have been progressed over the past few years include the use and trialling of remote cameras to monitor Malleefowl activities and recovery efforts; the continued implementation of the Fox TAP 2 program, with a review of some of the aspects of the program and an increase in the use of M44 bait ejectors; landscape scale predator control programs across both private and public lands and aerial and land based monitoring of Malleefowl. In addition, the Taronga Western Plains Zoo is currently assessing their Malleefowl breeding facilities and program to determine future directions.

Some of the notable achievements since the last forum have been the input of the first set of monitoring data for NSW into the National Malleefowl Monitoring Database, with a view to encourage further input of data into the system from areas across the state; the fencing of some very large mallee properties by the Western LLS to create predator and goat free exclusion areas for Malleefowl with support from local landholders and, the injection of around \$200,000 by the state government to implement recovery actions for the species across various tenures and programs in the state via the Saving Our Species program.

Saving Our Species program

The Saving Our Species program is a NSW state government initiative introduced in 2012 that aims to maximise the number of threatened species that can be secured in the wild in NSW for the next 100 years. Unlike previous threatened species programs, Saving our Species:

- allocates all threatened species to one of six management streams that identify the types of actions required for each species;
- provides targeted conservation projects that set out the actions required to save specific plants and animals on mapped management sites;
- prioritises projects based on their benefit to the species, feasibility and cost, to help decision-makers and investors make the most effective investments in threatened species conservation;
- regularly monitors the effectiveness of projects so they can be improved over time; and
- encourages community, corporate and government participation in threatened species conservation by providing a website and a database with information on project sites, volunteering and research opportunities.

There are almost 1,000 threatened species in NSW and these have been allocated to one of six management streams depending on their distribution, ecology, security and what is known about them. The six management streams are:

1. site-managed species (401 species)
2. iconic species (5 species)
3. data-deficient species (183 species)
4. landscape-managed species (132 species)
5. partnership species (155 species)
6. keep watch species (95 species).

Priorities for action under Saving our Species are species in the site-managed, iconic, data-deficient and landscape-managed species management streams. Direct action will be considered for nationally listed partnership species but is not expected for keep watch species unless threats substantially increase.

The Malleefowl has been assigned to the Iconic Species management stream. Iconic species are considered important to the community socially, culturally and economically and the community expects them to be effectively managed and protected. Only four other species have been listed as Iconic. These are the Brush-tailed Rock-wallaby, Koala, Southern Corroboree Frog and Wollemi Pine.

Through the Saving our Species program, \$1.2 million in funding up to 2016 has already been allocated to implement actions for these Iconic Species. In terms of Malleefowl projects, this has equated to \$133,000 in funding for the past 2 years, with similar amounts planned for the coming years (Irvin, M. 2014 pers. comm., OEH 2014a).

Projects have been prepared for these species based on existing recovery plans. Projects for all Iconic Species will be undertaken and will not be prioritised. The projects undertaken for Malleefowl include remote camera monitoring, mound digs and contributions to fox control programs on both private and public lands (Irvin, M. 2014 pers. comm.). **Marc Irvin** will be speaking a little later in this forum on the Malleefowl Iconic Species Project.

Supplementary Pest Control Program

The NSW National Parks and Wildlife Service (NPWS) undertakes one of the largest pest management programs in Australia, with more than 650 targeted control activities on reserves and neighbouring land every year. This includes baiting, aerial shooting, mustering, fencing, trapping, ground shooting and more. Pest animals targeted through NPWS Regional Pest Management Strategies include feral goats, feral pigs, rabbits, deer, wild dogs, feral cats and foxes (OEH 2014b).

In 2013 the NSW government announced a proposal to introduce recreational hunting in all national parks in NSW. The proposal was to allow recreational hunters (including children 12 years and over) into national parks with registered firearms, including black powder muskets as well as bows and arrows, to hunt feral animals. The aim was to assist in controlling feral animals in national parks in order to help protect threatened species. The proposal however did not take into account the safety of national park visitors, staff, researchers and other people that may be visiting the reserves, involved no planning or supervision by NPWS staff and enabled little, if any, regulatory control over the process and the shooters. Fortunately the proposal as it stood was withdrawn.

Later in 2013, a new proposal was agreed upon, called the Supplementary Pest Control (SPC) Program. In this program, NPWS is partnering with experienced and skilled volunteer shooters to supplement current NPWS control programs and help reduce pests for the protection of threatened species. A three-year trial program is currently being undertaken in 12 national parks and reserves across western NSW covering an area of around 485,000 hectares (Figure 1). These reserves are:

- Cocopara Nature Reserve
- Coolbaggie Nature Reserve*
- Goonoo National Park*
- Goonoo State Conservation Area*
- Gundabooka National Park
- Gundabooka State Conservation Area
- Murrumbidgee Valley State Conservation Area
- Murrumbidgee Valley National Park (Yanga Precinct)
- Nombinnie Nature Reserve*
- Nombinnie State Conservation Area*
- Woomargama National Park
- Yathong Nature Reserve*

* Reserves where Malleefowl occur

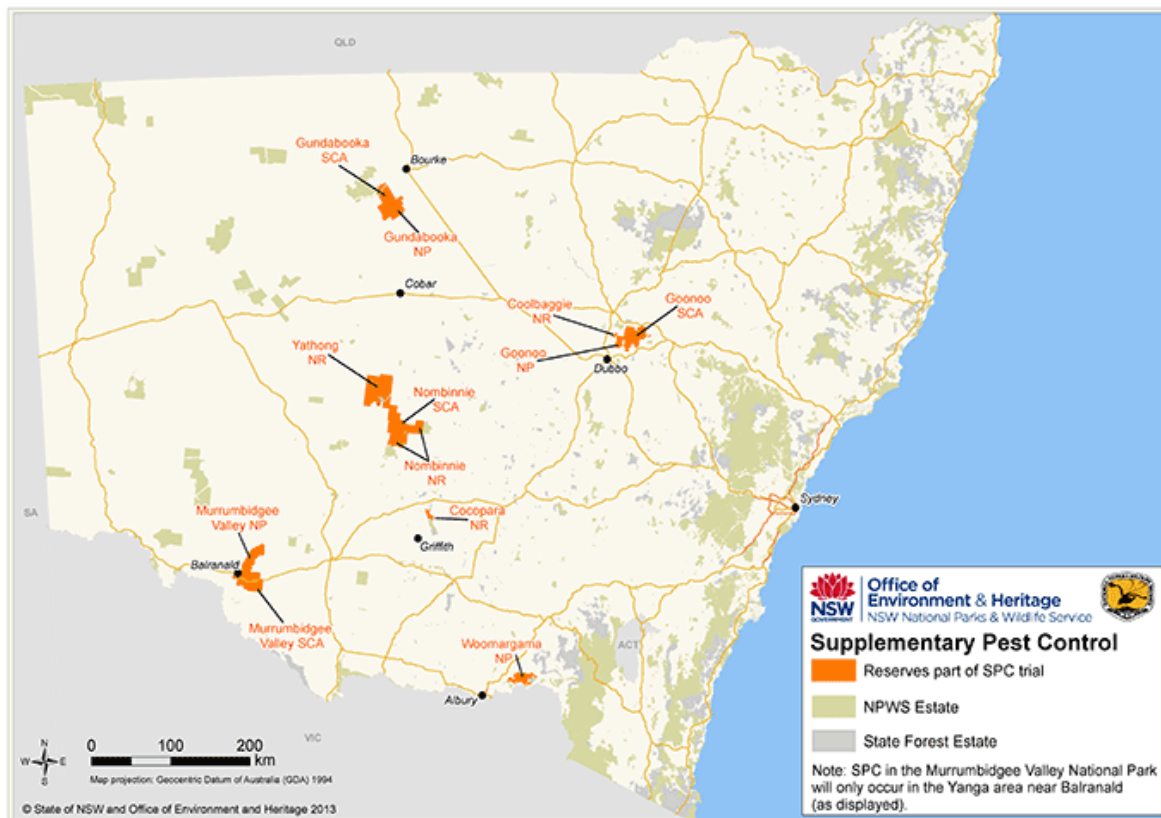


Figure 1. NPWS reserves included in the SPC Program (OEH 2014b).

These reserves were selected because they have ongoing pest management programs that could be complemented by additional ground shooting by experienced and skilled volunteers. Six of the parks contain Malleefowl records and have ongoing feral animal control programs for the protection of Malleefowl, which strongly influenced their selection for this program.

Experience has shown that pest animal management works best as part of an integrated program using a variety of techniques, including shooting, baiting and trapping. This is because individual animals that are not susceptible to one technique can be removed using another (OEH 2014b). For this reason, the current fox baiting and goat trapping programs being undertaken in the six Malleefowl reserves will be complemented by on-ground shooting programs to eliminate bait-shy and trap-shy individuals.

The program is being welcomed by NPWS staff as it is a safe program, volunteers work under the direct supervision of NPWS staff and the program's procedures and safeguards will be implemented in the same way as existing pest control operations in NPWS reserves. The initial selection and recruitment of the volunteers involves robust procedures to ensure that they are appropriately qualified and skilled to ensure the effectiveness and humaneness of the shooting program. The volunteers taking part must have high level training and competency testing in safe firearms handling and shooting proficiency that is equivalent to that of trained NPWS staff (OEH 2014b).

The operational phase of the trial began in mid-2014 with a number of programs already completed and others being planned. The programs completed so far have been undertaken in Goonoo SCA, Gundabooka, Woomargama NP and the Murray Valley NP (Yanga Precinct). Some have had limited success, whilst others have had more success. In Goonoo SCA for example, a two day shoot was planned and undertaken but no target species (foxes and goats) were shot.

The three year Supplementary Pest Control trial is a first for NSW. It will be monitored and evaluated to determine how effective the contribution of this new approach is in reducing pest animal populations and protecting our native species. The Natural Resources Commission (NRC) is undertaking an independent evaluation of the trial program to provide recommendations to the NSW government on its future after three years. This evaluation will consider ecological, social and economic outcomes of the

trial and will involve input from the NPWS and the Sporting Shooters Association of Australia (NSW) Inc. (OEH 2014b).

NSW Fox Threat Abatement Plan (Fox TAP) review

In 2009/2010 a review of all fox control and monitoring programs implemented since 2001 under the NSW Fox Threat Abatement Plan (Fox TAP) was conducted. The review found that there were a number of issues regarding data collection and monitoring and that there was little communication between different agencies undertaking or overseeing fox control programs around the state. This made it difficult to collate, analyse and compare the results of fox control programs across NSW and prompted a revision of the plan.

The revised NSW Fox Threat Abatement Plan (FoxTAP2) was developed in 2010 and is one of the largest biodiversity conservation programs in NSW. It mirrors similar efforts in other states such as the Western Shield program in Western Australia, Southern Ark in eastern Victoria and Operation Bounceback in South Australia (OEH 2011).

The primary actions in the plan are the control and monitoring of foxes at priority sites across NSW, with a number of small changes to these sites and priority species. The plan also proposes the development of individual plans for each site, the centralised collation of all data, a mechanism for ongoing review of priority sites and species, the use of best practice guidelines for control and monitoring and improved communication between agencies.

Priority sites are the sites in NSW where fox control actions will be focused under the FoxTAP2 program to protect target threatened species, such as Malleefowl. Actions at these sites, however does not mean that fox control cannot also be undertaken at other sites by individuals or agencies but these sites are the priority for control. Priority sites were identified for each target threatened species by considering three site attributes:

1. The potential for impact at a site (based on fox density and habitat fragmentation);
2. The significance of the site to the species overall (with a higher priority for larger or outlying populations); and
3. The ability to achieve effective fox control (depending on the size of the area and complexity of land tenure).

Based on these attributes, 61 priority sites over almost 1 million hectares of public and private lands were identified. These are shown in Figure 2.

Nine of these sites are designated nil-treatment for the purposes of measuring the response of native fauna to fox control. Five sites have been identified for the protection of Malleefowl, with one of those sites a nil-treatment site. These are listed in Table 1. For each priority site a site plan has been developed in consultation with all public land managers involved including Forests NSW, local pest management authorities and catchment management authorities (now Local Land Services) and other relevant groups. Each site plan:

- identifies the target species for protection at the site, e.g. Malleefowl;
- proposes the extent, frequency and methods of fox control to be undertaken;
- describes the specific objectives for the site and the monitoring methods;
- assigns responsibilities (and cost estimates) for all the actions in the plan; and
- provides a date for review of the plan.

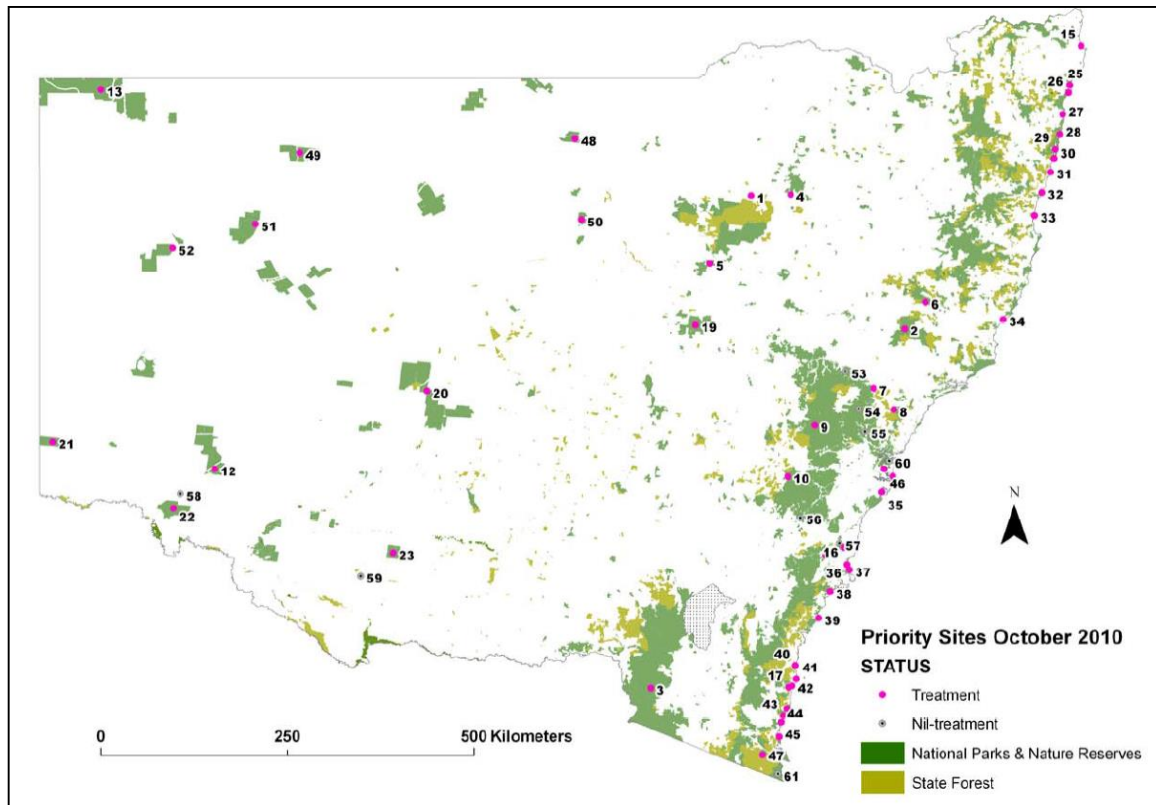


Figure 2. Priority sites for fox control under the NSW Fox Threat Abatement Plan (FoxTAP2) 2010 (OEH 2011).

Table 1. FoxTAP2 priority sites for Malleefowl.

Site Number	Site Name	Threatened Species impacted	Tenure	Treatment
19	Goonoo	Malleefowl	NPWS/ SF /Private	Fox control
20	Central Mallee	Malleefowl , Chestnut Quail-thrush, Southern Scrub-robin	NPWS	Fox control
21	Tarawi	Malleefowl , Chestnut Quail-thrush, Southern Scrub-robin	NPWS	Fox control
22	Mallee Cliffs	Malleefowl , Chestnut Quail-thrush, Southern Scrub-robin	NPWS	Fox control
58	Wamberra	Malleefowl	Private	nil

At the four Malleefowl priority sites, fox control methods are being undertaken including ground baiting using various bait types and M44 ejectors, some aerial baiting and ground shooting by NPWS staff and/or via the SPC program. Foxes and native fauna are being monitored using sand-pads and motion-triggered cameras and Malleefowl are being monitored using motion-triggered cameras, aerial (when resources permit) and ground-based surveys and individual mound monitoring.

For many sites, including the Malleefowl sites, data is yet to be collated centrally and analysed to determine the effectiveness of fox control on the target threatened species and other native fauna.

National Parks and Wildlife Area Programs

The restructure of the National Parks and Wildlife Service over the past few years has affected funding and resources with some impacts on Malleefowl protection efforts. In addition, with the review of the Fox Threat Abatement Plan, funding for the implementation of FoxTAP2 has been transferred to the various regional offices, resulting in reduced fox baiting and Malleefowl monitoring capacity. Funding under the Saving Our Species (SOS) program has however, enabled some supplementation of fox baiting and monitoring efforts where needed.

In the Central Mallee (Mid West NPWS Area) the fox baiting program has been reduced from three times to twice per year, with the second round being funding dependent. Yathong, Nombinnie and Round Hill Nature Reserves are all included in the program, which involves ground and aerial baiting and supplying baits to neighbouring landholders. SOS funding has enabled the purchase of 190 M44 ejectors (a bait delivery system) which will hopefully compensate to some degree the drop in aerial baiting (Douglas, L. 2014 pers. comm.).

There is currently no Malleefowl monitoring being undertaken in the reserves. Given the size of the area and number of mounds, it is difficult to monitor all of the mounds on the ground and aerial surveys have been halted due to funding shortages. In 2012, a partial aerial survey was conducted but due to time constraints was unable to be completed. Fortunately, the spatial data of each mound visited was recaptured as there were queries regarding the projection of the data. Of the 90 mounds visited, 14 were active, 28 inactive, 18 not found, 29 remnant mounds and 1 uncertain. The aim for the Area is to fly transects in order to survey all of the three parks (approx. 245, 000ha) in the near future (Douglas, L. 2014 pers. comm.).

In the Lower Darling NPWS Area, in the south-west of NSW, traditional ground based fox baiting is undertaken within the Area's three large mallee reserves, Tarawi Nature Reserve, Mallee Cliffs National Park and Mungo National Park, four times per year. In addition, 100 M44 ejector stations have been established within Tarawi NR and Mallee Cliffs NP and are checked every month. Fox (and other pest species) numbers are monitored through bait take and spotlight transects at Mallee Cliffs and Mungo NP, while bait take and sand pads are utilised within Tarawi NR (Dayman, R. 2014 pers. comm.).

Ground based mound monitoring has been undertaken within Mallee Cliffs National Park since aerial surveys were discontinued in 2009. Surveys are now undertaken every two years of the 25 historically most active mounds across the reserve. Results are shown in Figure 3 below (note that no surveys were completed in 2009 or 2013).

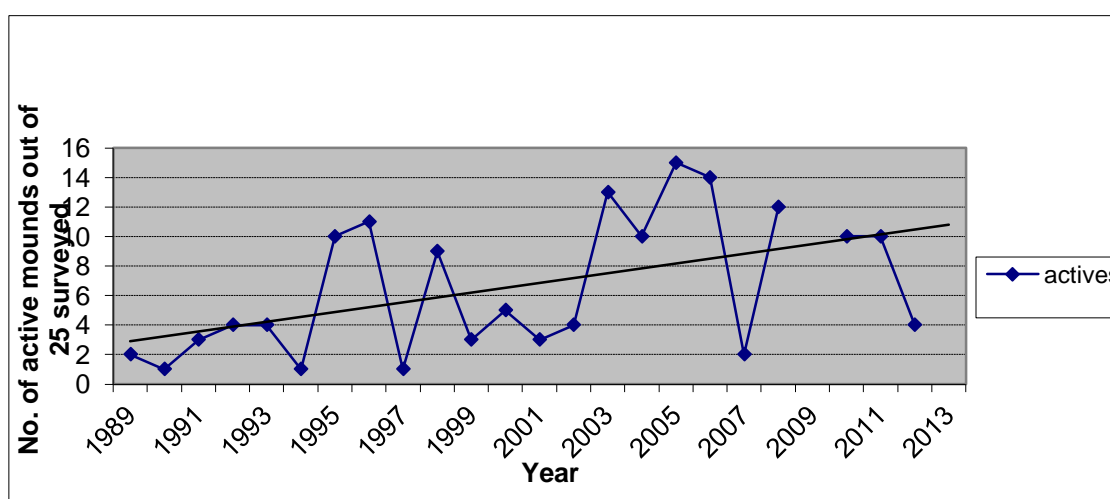


Figure 3. Malleefowl mound activity (25 historically most active mounds) in Mallee Cliffs National Park (note 2009 and 2013 not surveyed) (Source: NPWS Lower Darling Area).

Two remote cameras have been established on mounds within Mallee Cliffs NP in an attempt to quantify mound visits from pest species such as foxes, cats and feral goats. Preliminary results show that while

fox activations vary significantly through time they do account for a substantial number of overall animals captured on cameras in Mallee Cliffs NP. One camera is also situated on a mound in Tarawi Nature Reserve and it is anticipated that more cameras will be established on other mounds in the near future (Dayman, R. 2014 pers. comm.).

In the Goonoo site (Coonabarabran NPWS Area) ground based fox baiting is conducted on an ongoing basis across Goonoo State Conservation Area (SCA) and National Park (NP), Coolbaggie Nature Reserve, Brelong NP and Cobbora SCA, equalling almost 75,000 hectares. The use of M44 ejectors will begin in 2015, with around 100 ejectors planned to be installed across the area. Monitoring of foxes is undertaken twice per year for a month, utilising 40 remote camera sites and capturing on average around 5,000 photos per monitoring period. Initial analysis of the photos as well as bait take data have indicated very low numbers of foxes throughout the area, but has identified an increase in goat numbers. Hopefully the Supplementary Pest Control Program in Goonoo will assist in eradicating this increasing goat population.

Malleefowl mound monitoring in the Goonoo site has been undertaken over a number of years, with data being entered into the National Malleefowl Monitoring Database for the first time in recent years. Around 25 mounds are known to occur across the area, with three of these being active over the past few years. These mounds have been monitored using remote cameras, with over 100,000 photos collected but yet to be properly catalogued and analysed. In 2012 one of the mounds was excavated to determine whether it contained eggs, with six newly laid eggs being found. Unfortunately this mound was abandoned shortly after the excavation and the other two known active mounds had become inactive the year prior, resulting in currently no known active mounds in the Goonoo site. This has prompted actions through the SOS program to undertake aerial surveys possibly using LiDAR technology as well as potential foot based surveys to attempt to identify further mounds across the area and hopefully discover other active mounds. A history of Malleefowl conservation and monitoring efforts in Goonoo forest will be presented by **Alison Towerton** at this forum.

A proposed coal mine 30km southeast of the Goonoo site may result in around 7,000 hectares of offset lands being added to the Goonoo site, increasing the area of potential Malleefowl habitat, some of which may include recently active mounds.

All of the reserves mentioned above are currently included as priority sites under the FoxTAP2 program for the protection of Malleefowl, whilst the Central Mallee and Goonoo sites are also included in the Supplementary Pest Control Program for the protection of Malleefowl.

Local Land Services Programs

The Western and Central West Local Land Services (LLS) have undertaken a number of large habitat fencing and feral animal control programs in the west of the state to protect Malleefowl.

Near Nymagee, the Western LLS has assisted two families who have fenced a combined area of 3,130 hectares on their properties to protect Malleefowl and their nests from goats and foxes. Ongoing fox baiting in the area will help to reduce predation on Malleefowl eggs and chicks and the exclusion of goats and stock will reduce competition for food and the destruction of habitat thus improving habitat for Malleefowl and overall biodiversity (Baker, M. 2014 pers. comm.).

Eight Malleefowl mounds (active and inactive) have been identified in the area and mound shape and size and evidence of shells or feathers has been recorded, along with any calls heard or behaviour observed. Fifty fox baiting stations have been set up around and within the area and baits are checked and replaced every three weeks. In addition, 50 sand plot monitoring sites have been established at the bait stations to identify the animals visiting the stations. Motion sensing cameras have also been deployed in a 1km x 1km grid system across the block. Cameras are deployed for two weeks at a time before they are retrieved and the images analysed. To date, foxes, goannas, goats, emus, kangaroos, rabbits, pigs, ravens, pigeons, shingleback lizards, people and vehicles and of course Malleefowl have all triggered the cameras. The data collected is utilised in conjunction with the National Malleefowl Monitoring System. Preliminary results of the project have been positive and have shown that fox activity has been reduced (Baker, M. 2014 pers. comm.).

In central NSW large areas of mallee have been fenced with the aim of protecting Malleefowl. Near Hillston an area 15km x 18km has been fenced to exclude goats, with over 1,000 goats being removed

from this site. Cameras installed at mounds in this site have shown no goats. Two other sites near Mt Hope have also been fenced and goats removed, resulting in around 110, 000 hectares being fenced. A large revegetation project is also being planned around the Yalgogrin site, to reconnect this site with surrounding mallee sites (NMRT 2012, 2013a, 2014).

Besides goat removal, other pest work in central NSW has included pig and fox baiting, with many landholders being involved. Fox baiting has been conducted around the perimeter of sites but not within the sites, which does not seem to have any impact on foxes inside these areas. The Invasive Animal CRC is running experimental trials with the LLS at Mt Hope, looking at different baiting techniques for fox and pig control (NMRT 2013a, 2013b, 2014).

Aerial and ground survey work has been conducted across the area, with 100,000 ha of mallee having been surveyed in the Mt Hope region for signs of Malleefowl populations. A number of significant populations were noted, and over 50 active mounds seen on both national park estate and private lands. Mounds are ground checked and cameras have been installed at many to monitor the activities of Malleefowl and other animals (NMRT 2012, 2013a).

Milton Lewis will be providing two presentations later in this forum on some of the feral animal control work undertaken by the Central West LLS in the rangelands of NSW.

Captive Breeding

Taronga Western Plains Zoo in Dubbo currently has 17 adult Malleefowl in aviaries. Two of the birds are very old (20 years) and are still breeding successfully, demonstrating the longevity of the species and their reproductive capacity. There is currently no release programs planned for offspring and the zoo is investigating various options for the continued management of the captive population (Kleinig, S. 2014 pers. comm.). **Paul Andrew** from Taronga Zoo will be leading a discussion regarding the options during this forum.

Acknowledgements

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