

8. Malleefowl conservation in South Australia - Activities from 2012–14

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Abstract

Malleefowl conservation in South Australia (SA) from 2012–14 has been largely dominated by the now well-established national monitoring system, which has been in operation in some form since 1989, and now consists of thirty regularly monitored sites in four Natural Resources Management (NRM) regions. The SA Department of Environment, Water and Natural Resources (DEWNR), contract staff and a growing body of volunteers conduct the monitoring.

Volunteers remain a critical part of the monitoring process, collecting important data, including trends in breeding activity, which underpins Malleefowl management strategies. Breeding activity was consistently higher over the regions in 2012, with overall state-wide activity picking up slightly from 6% in 2005 to 8% in 2013.

Other activities to promote Malleefowl conservation conducted by DEWNR include predator and herbivore control; prescribed burning and tracking in the arid far-west of SA. Private landholders and community members also participate in these activities.

The recently appointed position of National Malleefowl Coordinator has given added impetus to staff and volunteers participating in monitoring and other recovery initiatives, as the challenge to maintain activities is ever present, with limited resources and uncertainties in continued funding for staff and contractor positions. This position, together with the Adaptive Management Project currently in progress, will provide further opportunities to drive recovery actions for Malleefowl in South Australia.

Introduction

Malleefowl *Leipoa ocellata* occur sporadically throughout the arid and semi-arid mallee scrub regions of SA, in both public reserves and on private land (Figure 1). Public reserves are managed by the Department of Environment, Water and Natural Resources (DEWNR), and on ground works such as prescribed burns and predator/competitor control are undertaken to benefit threatened species, including the Malleefowl. Several patches of mallee on private land are protected under Heritage Agreement covenants, which also contribute to conservation of Malleefowl.

Malleefowl conservation in SA from 2012–14 has been largely dominated by the now well-established national monitoring system, an event which occurs annually in the mallee regions below Goyder's Line. The monitoring system has been in operation in some form since 1989, and now consists of thirty regularly monitored sites in four regions, using the latest software and hand-held electronic devices to capture data, which go into the National Malleefowl Monitoring Database. The monitoring process is coordinated by DEWNR and contract staff, with sites monitored by both volunteers and staff.

Other activities to promote Malleefowl conservation conducted by DEWNR include predator and herbivore control; prescribed burning and tracking in the arid far-west of SA. Private landholders and community members also participate in these activities.

The last three years have seen significant changes to funding resources and organisational structures within DEWNR, which in some cases have led to reduced capacity or loss of staff who were familiar with the monitoring system and regional volunteers. This has been challenging in terms of keeping the established national monitoring system rolling along, and maintaining and supporting good working relationships with already known and new volunteers.

The recently appointed position of National Malleefowl Coordinator has given added impetus to staff and volunteers participating in monitoring and other recovery initiatives, and has been particularly useful in light of limited resources and uncertainties in continued funding for staff and contractor positions.

This position, together with the Adaptive Management Project currently in progress, can provide further opportunities to drive recovery actions for Malleefowl in South Australia.

Malleefowl conservation activities in SA from 2011–12 to 2013–14 are outlined in this paper.

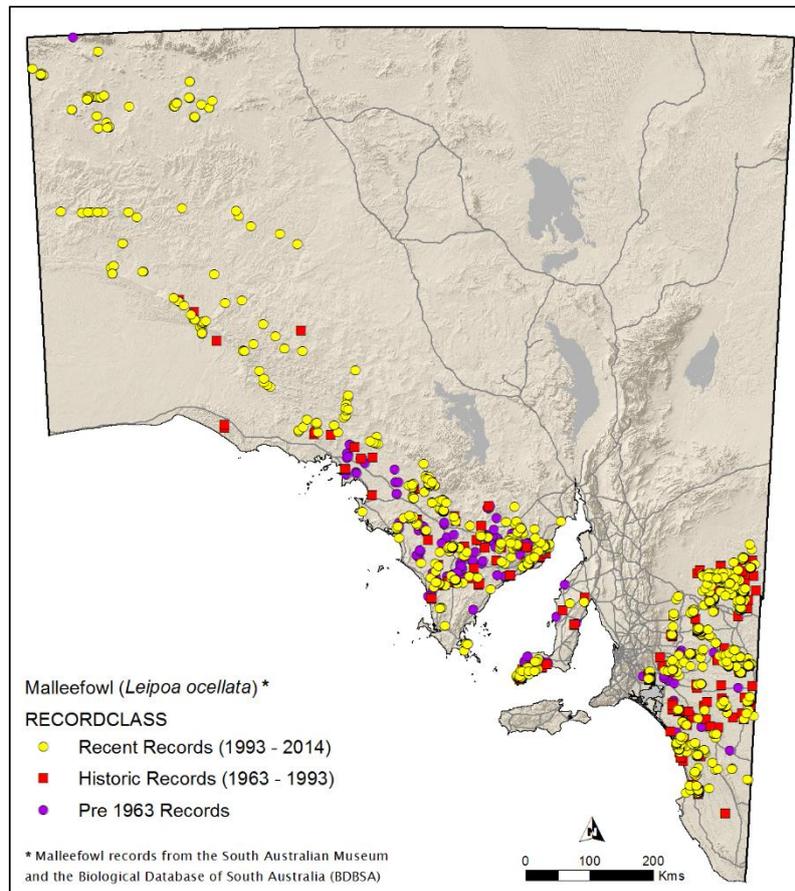


Figure 1. Distribution of Malleefowl in SA, with records shown in three age classes. (Source: Biological Databases of SA, DEWNR, 2014).

Activities over the past three years: 2011–12 to 2013–2014

Monitoring

By 2007, forty monitoring sites, or grids, were established in SA, however only thirty of these sites are now regularly monitored each season (Table 1). The sites range in size, however, most measure around 4 km² which is the standard sampling size recommended in the National Monitoring Manual (Victorian Malleefowl Recovery Group 2007). The monitoring sites are located in the southern third of SA (Figure 2), and have been selected to represent the general mallee habitat in which the birds persist, while being close enough to human settlement to visit. In 2009 ten sites that were regularly monitored by Community Land Management (CLM) volunteers in the Murraylands were no longer surveyed, leaving the total number of grids in this region at twenty, all coordinated by DEWNR contract staff. There are five grids on Eyre Peninsula, however, one site in the Gawler Ranges (Pinkawillinie) was severely burnt by wildfire in 2006, and has only been revisited once since then, in 2011. A number of sites in the Murraylands were also burnt in 2006 (Pooginook, Gluepot 3, Gluepot 5), however, these sites have continued to be monitored. Funding has been sourced in a number of regions, specifically to upgrade the electronic monitoring devices, with all regions no longer using the original Palm Pilots.

Table 1. Number of grids regularly monitored in each region in South Australia.

Region	Regularly monitored grids
Murraylands	20
Eyre Peninsula	4
Yorke Peninsula	1
South East	5
Total	30

Table 2 shows the number of active and inactive mounds recorded within the monitored grids, across each of the four regions in SA, over the last three breeding seasons from 2011–13, including the percentage of active mounds. The total number of mounds monitored in each region has been reasonably consistent over the last three years, with a small number of new mounds found in the South East each season. Breeding activity in the Murraylands was slightly higher in 2012, with 55 active mounds found, up from 38 in 2011, and down again to 31 active mounds in 2013. Breeding activity was lower in 2013 for Eyre Peninsula, and remained relatively stable across the three seasons for Yorke Peninsula and the South East. Yorke Peninsula, which is represented by one grid in Innes National Park (see Figure 2), showed the highest breeding activity over the regions, followed by the South East. Both of these regions experience higher rainfall than the more arid sites located in the Murraylands and Eyre Peninsula, which may be a contributing factor to higher breeding activity. The percentage of active mounds recorded in each region over the last ten years is shown in Figure 3. Breeding activity was higher across most regions in 2012. Overall, activity picked up slightly from 6% in 2005 to 8% in 2013.

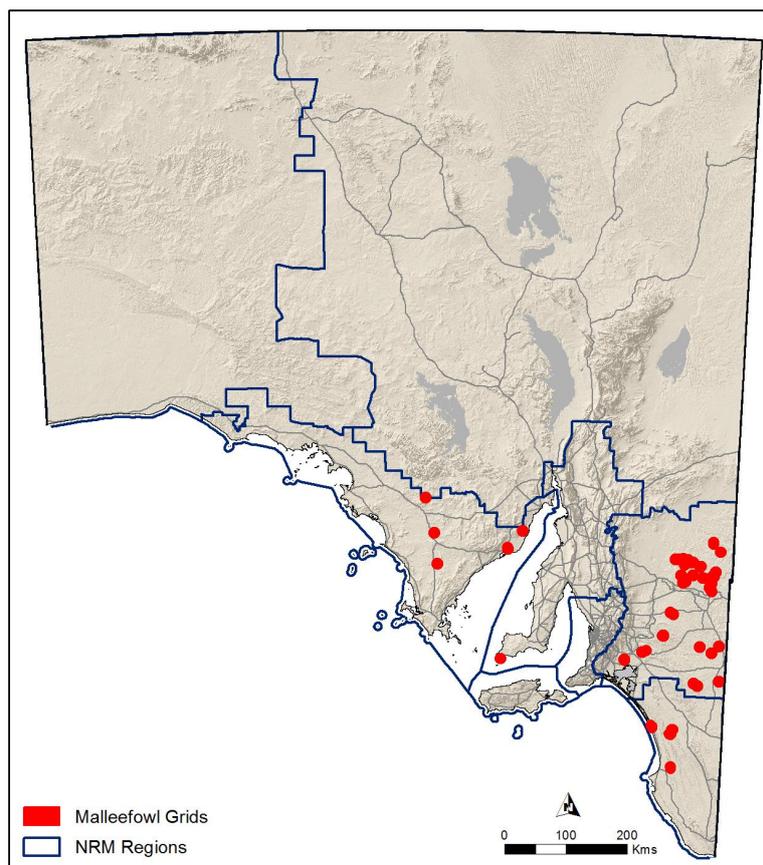


Figure 2. Monitoring site locations within four of the eight Natural Resources Management Regions in SA.

Table 2. Number of active and inactive mounds recorded per region in South Australia, across three Malleefowl breeding seasons.

Region	2011			2012			2013		
	Inactive	Active	Total	Inactive	Active	Total	Inactive	Active	Total
Murraylands	548	38 (6%)	586	533	55 (9%)	588	559	31 (5%)	586
Eyre Peninsula	201	16 (7%)	217	178	17 (9%)	195	188	11 (6%)	199
Yorke Peninsula	36	11 (23%)	47	38	9 (19%)	47	37	10 (21%)	47
South East	160	29 (15%)	189	164	32 (16%)	196	169	29 (15%)	198
Total	945	94 (9%)	1039	913	113 (11%)	1026	953	81 (8%)	1034

A report by Benshemesh (2006) suggests a significant decline of 2–3% per year in Malleefowl breeding activity at least over the last decade, in sites that are regularly monitored across southern Australia, with a definite downward trend shown in South Australia. On examining which environmental variables may be responsible for the decline, winter rainfall appeared as a major factor affecting Malleefowl breeding densities, which agrees with other studies on the ecology of Malleefowl (Benshemesh 2006). The effects of patch size and fire were found to be insignificant, and similarly, there was no evidence that foxes or fox control influenced Malleefowl breeding numbers (Benshemesh 2006). A study by Gillam (2008) found rainfall in 2006 across the lower half of SA to be well below average, which could partly explain the dip in breeding activity from 2006 to 2007 that can be seen in Figure 3.

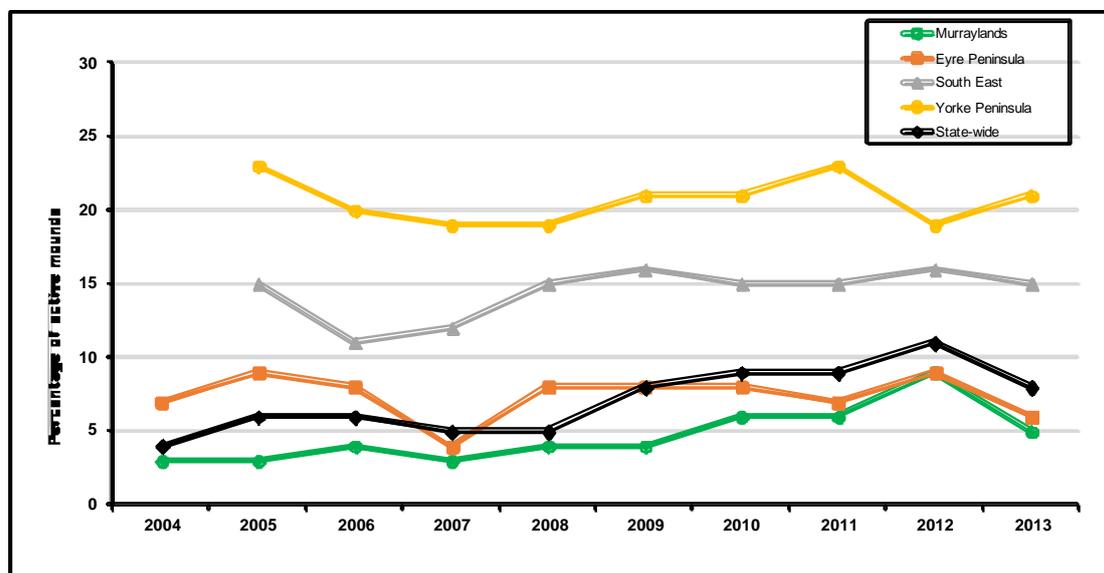


Figure 3. Percentage of active mounds across four regions in SA, plus a total for the state, from 2004 to 2013. No grids were monitored for the South East and Yorke Peninsula in 2004.

Looking at the grids individually during the last three seasons, the Innes NP grid has shown the highest breeding activity in 2011 with 4.2 active mounds/km², and in 2013 with 3.8 active mounds/km². Peebinga CP grid in the Murraylands had the highest activity in 2012, also showing 3.8 active mounds/km². This was followed closely by the Murray Bridge Army Range and Ettrick grids, also in the Murraylands, with 2.9 and 2.6 active mounds/km², respectively. Mt Boothby grid in the south east showed the highest breeding activity in that region, with 2.6 active mounds/km² in 2012.

Any further interpretation of grid activity would require knowledge of a range of other variables at play, such as regional rainfall, competitors (e.g. rabbits, goats, sheep), predators (e.g. feral cats), fire history, etc.

Monitoring of the grids in SA, along with other activities such as grid re-searches, would almost certainly not be possible without the dedication, energy and time put in by volunteers across the regions, each season. Regular volunteers have continued to monitor sites, and new volunteers have come on board. There is still room for more people to take part in the monitoring process. The number of volunteer hours recorded for the annual Malleefowl monitoring for each region in SA is shown in Table 3, with over 850 hours contributed across the state each year. This is outstanding, and does not include time spent on other activities such as grid re-searches, checking camera traps, predator control, etc.

The challenge to maintain coordination of the monitoring process at both regional and state levels remains, particularly given departmental changes in staff, priorities and resources. Unlike the Victorian Malleefowl Recovery Group or the North Central Malleefowl Preservation Group (WA), which conduct an annual training weekend pre-monitoring season, to train and refresh volunteers in the use of equipment, safety measures, the monitoring process and general networking, training in SA is undertaken within regions, is somewhat more informal, and relies on paid personnel with knowledge of the whole monitoring process. The transfer of data, photos and equipment has also provided challenges in some regions.

Despite these challenges, both staff and volunteers have maintained an enthusiasm which has so far prevailed, and we continue to strive to improve communications and support with staff and volunteers across regions.

Table 3. Number of volunteer hours per region in SA over the last three years, for Malleefowl monitoring (Source: National Malleefowl Monitoring Database, DEWNR internal regional reports).

	Murraylands	Eyre Peninsula	Yorke Peninsula	South East	Total
2011	632.5	119.2	32.0	193.5	1023.2
2012	510.0	133.7	54.0	175.0	885.7
2013	657.8	n/a	76.4	131.2	865.4

Yorke Peninsula Region

There is one Malleefowl monitoring grid on Yorke Peninsula, located in Innes National Park (NP) on the southern tip, and established in 1992. This grid represents the remnant coastal mallee woodland communities on southern Yorke Peninsula, where scattered populations of the birds continue to exist. Establishing a second grid in the region has long been on the DEWNR agenda, and several attempts have been made at locating a suitable site, however, this has not yet been successful.

An intensive fox control program commenced within Innes NP in 2004, prior to the reintroduction of Mainland Tammar Wallabies to the park. Baits were laid throughout the park on a fortnightly basis for the next seven years, which changed in 2012 to every three weeks. Fox control activities on southern Yorke Peninsula were further improved in 2008 with a community-based “Baiting for Biodiversity” program commencing. This program was instigated by Natural Resources Northern and Yorke, primarily to protect endangered species, including Malleefowl. As at 2014, there are 690 permanent bait sites across 80,000 hectares. Thirty-nine sites are located on private property and four on reserves. Two baiting rounds are conducted over a ten-week period in February/March and September/October each year, with a total of 2,800 baits laid each round. Average bait-take for the program is 35% per round. Testing of fox scats was carried out in 2013 and 2014, with feathers (from all birds) representing a very low percentage of the fox diet (5% 2013; 2% 2014). The overall scat analysis indicated that house mice,

rabbits, sheep, kangaroos and insect material formed the major part of the fox diet. Whilst it is has been recognised that fox baiting has not necessarily increased Malleefowl breeding activity (Walsh *et al.* 2012), it is notable that of all the grids monitored across southern SA, breeding density remains the highest on the Innes NP grid.

South East Region

Over the last three years, significant changes have taken place within DEWNR's Natural Resources South East (SE) Sustainable Landscapes Project Team (former Threatened Species and Habitat Recovery Team), in terms of structure, staffing and resources, in turn impacting on various recovery initiatives previously identified in the Regional Action Plan for Malleefowl. Despite this, five sites in the SE continue to be monitored annually, coordinated by part-time Project Officer Vicki Natt, who also coordinates grid searches when required. Funding for this position is currently provided by the Coorong Tatiara Local Action Planning Association, for a five-year period.

A re-search of the Mount Scott grid commenced in July 2012. After numerous attempts were made to complete the search process by various staff and volunteer groups, it was almost completed in September of that year. The search unveiled a further four mounds which were added to the list of known mounds.

Interpretive signs were installed in late 2011 at the entrance to a number of parks with important Malleefowl populations (Figure 4). This was made possible through a grant from Nature Foundation SA.

Predator control continues to occur in a number of the reserves in the Upper South East containing Malleefowl, including fox baiting and feral deer control.

The Sustainable Landscapes Project Team is currently working on reviewing and updating the SE Regional Action Plan for Malleefowl.



Figure 4. Interpretive signage at the entrance of Gum Lagoon CP, which contains significant Malleefowl habitat.

Murraylands Region

In DEWNR's SA Murray-Darling Basin NRM Region (SA MDB or Murraylands), funding has so far continued to be sourced for Mallee Eco Services (Dave and Heidi Setchell) to be contracted to coordinate the seasonal monitoring of twenty grids. Other Malleefowl recovery initiatives have started or continued, with great support from Chris Hedger, Fire and Threatened Mallee Bird Ecologist for the SA MDB.

A number of groups continue to be actively involved in the Murraylands Malleefowl monitoring program including: Friends of Gluepot Reserve, Friends of Riverland Parks, Scientific Expedition Group (SEG), Community Land Management, BirdLife Australia, Sporting Shooters SA and individual volunteers.

In the winter of 2013, DEWNR's Natural Resources SA MDB staff conducted an aerial survey over parts of Gluepot Reserve to determine the number of mounds located outside of the regular grids that are surveyed. This was undertaken so the region could then decide how best to manage the Malleefowl population in this area. Gluepot, and the wider Bookmark Biosphere area, represent the arid to semi-arid environment that Malleefowl inhabit – much of which is inaccessible by foot. A helicopter was deployed to survey 6,000 ha of the 54,000 ha Gluepot Reserve. Eighteen unused mounds were found, one active mound and one bird was seen. The area surveyed showed the mounds to be at a much lower density than the area currently monitored with seven grids. This could be an accurate reflection of mound density in this area, or perhaps the method did not pick up all possible mounds. The accuracy of this method of survey needs to be tested by flying over an existing grid, to help determine its usefulness. Whilst the aerial survey covered an area much quicker than could have been achieved on foot, it was expensive.

Another project currently in progress is reviewing and recommending future directions for a SA MDB predator control program for ground dwelling birds, including Malleefowl. This project commenced in 2009, and involved working with private landholders so that baiting foxes occurred twice a year: in autumn during the lambing season, and spring during the ground-dwelling bird nesting-season. A requirement was for participating landholders to fill out and send back report forms stating the number of baits laid and the uptake. Unfortunately, over the five-year project term, the return of reports was poor with numerous inconsistencies in data gathered. As such, no analysis of these data has been undertaken. Future project options include a pilot study aimed specifically at identifying impacts of fox baiting on known ground dwelling bird populations. The Bookmark Biosphere area has been suggested as a potentially suitable study site.

For information on further Malleefowl recovery activities in the SA MDB, see paper by Chris Hedger on ***Reproductive outputs of two comparable regions of the SA Murray–Darling Basin – Results and learnings for recovery*** and poster by Chris Hedger and Jarrod Pippas on ***Mallee Fires in the SAMDB – Losses, learnings and linings***.

Eyre Peninsula Region

The past three years have also seen major changes to staffing and structure within the Eyre Peninsula (EP) NRM Region. Long-time Malleefowl monitoring coordinator Andrew Freeman moved on to a new role in late 2011, although he still ran the monitoring program that season, and extra training and support was provided to EP volunteers by Graeme Tonkin and myself, in the 2012 season. During this time the once centrally operated office in Port Lincoln was split into sub-regions, with the four regularly monitored grids spread over three regions. This required training new staff in the monitoring process for the 2013 season. These challenges have been resolved, with staff and volunteers ready to tackle the 2014 season with renewed enthusiasm!

A re-search of the Munyaroo and Lock Grids is currently in progress. Both of these sites have not been searched for around ten years.

See report by John Read and Katherine Moseby on ***Comparison of three survey techniques for locating Malleefowl mounds***, whose study was undertaken on northern Eyre Peninsula.

Aboriginal Lands

See report from Adam Pennington on ***Malleefowl as a flagship species for indigenous land management in the Great Victoria Desert of Western Australia***, and report by Joe Benshemesh on the ***Progress towards a method of monitoring Malleefowl in the Maralinga Tjarutja Lands, South Australia***.

Statewide

In April 2013 Tim Burnard was appointed by the National Malleefowl Recovery Team (NMRT) as the National Malleefowl Recovery Program Coordinator. This position was funded by agencies Australia-wide, including five South Australian NRM Boards with Malleefowl in their regions. The position is part-time, for an initial period of three years. It is a very exciting period for the NMRT, as it provides for the first time an opportunity to drive and support Malleefowl recovery initiatives in a way not possible by a volunteer-based recovery team. One of the major components of Tim's role is to assist in facilitating community groups in the National Monitoring Program to ensure a coherent national approach, as well as work closely with the Adaptive Management Project Team to collate relevant nationwide information. Tim has worked very hard in his first year to meet and network with relevant agency staff, volunteer groups and individuals; to learn the monitoring system, become familiar with the national database, and visit the sites to assist volunteers. In South Australia Tim managed to inspect all regions, particularly during the 2013 season, and gained an understanding of the many facets of the monitoring system. Support from Tim will continue to be provided to all regions.

As the Adaptive Management Project continues to progress, a number of experimental sites will be set up in South Australia, most likely in the SA MDB. This also provides an opportunity for a number of stakeholders (land managers, agency staff, volunteers), to become involved in a recovery activity that makes use of the monitoring data with the potential to better inform management of this unique species.

Conclusion

The National Malleefowl Monitoring System continues to play a large and important role in the overall Malleefowl recovery program for SA. While there have been changes to staffing and funding arrangements in all regions, staff and volunteers have shown an extraordinary resilience and dogged determination to overcome the challenges that have presented, with the National Coordinator position providing further support. All regular grids continue to be monitored, and funding has been sourced through numerous avenues to upgrade monitoring equipment and fund contract staff.

The monitoring data from SA contributes to a program operating at a national scale at over 120 sites, which is in turn underpinning an Adaptive Management Project that aims to make the best use of these data. We look forward to continuing our contribution to improving Malleefowl conservation.

Acknowledgements

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