

# Milestone 1: Data Collation Report

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A report to the Mallee CMA and multi-regional “National Malleefowl Monitoring, Population Assessment and Conservation Action Project” steering committee.

**12 April 2006**

## **Acknowledgements**

This is a collaborative project and the VMRG acknowledges and is appreciative of the input and cooperation of a large number of people and groups across Australia. In particular, we would like to acknowledge the efforts of Sharon Gillam, Dave and Heidi Setchell, Jody Gates, Peter Copley, Susanne Dennings, Carol Nicholas, Ray Dayman, Peter Sandell, and Alice Rawlinson in sending us data, or urging others to do so. Peter Copley commented on and improved a draft of this report.

We are also highly appreciative of our VMRG members who have embraced this project and have offered to enter data and track down additional information.

Acknowledgment is also due to Ann and Peter Stokie who have worked tirelessly and effectively in contacting groups, requesting data for this project, and providing assistance in to groups in monitoring efforts.

## Introduction

The multi regional “National Malleefowl Monitoring, Population Assessment and Conservation Action Project” is a two year NHT funded project that implements key components of the National Malleefowl Recovery Plan. The general objects of the project are:

- Collate existing Malleefowl monitoring data for analysis
- Interpret breeding density trends in the light of management practises and environmental variables
- Develop a consistent national monitoring system and a national database, and foster on-going and self-sufficient monitoring that facilitates government, private and community monitoring programs.
- Develop the monitoring program in the future so that management actions that are most beneficial to Malleefowl conservation can be identified and demonstrated, and integrate this knowledge into outcomes for conservation on private and public land across Australia.
- Involve all stakeholders in this project and provide advice to regional NRM bodies on how best to promote Malleefowl conservation within their region.

The first phase of the project aims to tackle the first two points above. This document reports on the first of the above points: collation of the national monitoring data, following general and targeted calls for data that were circulated in January and February 2006. All monitoring groups had previously stated their support for the program and for developing a national approach to Malleefowl monitoring across Australia. Although this report was due in mid March, the bulk of the data had not been received by the VMRG at that time and a one month extension was requested from the national project steering committee to provide more time for monitoring groups to organise and send their data.

Here, I provide an overview of the state of the national data to date arranged in three sections:

1. Core data: These are the data from which Malleefowl population trends may be deduced and comprise the original nest records. From these records, the activity of individual nests can be deduced, the reliability of these estimates can be assessed, and the records can be vetted.
2. Ancillary data from Malleefowl monitoring programs: These data provide information on the abundance of animals detected at Malleefowl nests by their prints and scats, and recorded as part of routine Malleefowl monitoring.
3. Other data relevant to the Malleefowl trends: These are data not collected during monitoring, but important for the analysis of Malleefowl trends. These data include rainfall records, information on fox and other pest animal control, fire history, landscape context, habitat type etc.

A final section provides concluding comments on this phase of the project.

## **1. Core data**

### ***1.1 Monitored nests: Years and sites at which monitoring occurred***

NSW (about 2-3,000 nest records over 6-18 years)

No data have been forwarded yet, however data from Mallee Cliffs NP (149 mounds; monitored 1989 - 2005) Tarawi NR (107 mounds; 1997 - 2005) and Sunnyside (27 mounds; 2000 - 2005) have been promised. These data are in an electronic form and are being checked for discrepancies. The data from these three sites are expected immediately after Easter.

SA (about 5,100 records over 2-18 years)

Sharon Gillam produced a report for SA DEH (2006) summarising the monitoring results at all 40 SA sites. This report provides an excellent overview and scope of the monitoring data and estimates of activity. There are however inconsistencies in the older summaries and these are difficult to resolve as many records exist only in paper form.

Of original raw records, DEH forwarded about 1606 records in an electronic form (spreadsheet) in February and we have entered these into a database and sent this back to DEH with summaries generated from these raw data. Most (67%) of these data are from the last two years and most were collected on palm field computers. We also located an old database housing 1209 historical records and this has also been sent to us (10 April). Currently, we have thus received about 2,700 nest records in an electronic form, or about 54% of the total records estimated to exist in Gillam 2006. The remaining approximate 2,300 records presumably exist only as the paper data sheets. Many of these have been sent to the VMRG (see below).

VIC (10,900 records over 2-18 years)

All records in database and available.

WA (unclear)

No electronic data records or summaries have been received from any group in WA, so at this stage the number of nests monitored at various sites in different seasons is still very unclear. Only a few of the 23 monitoring sites listed for WA are likely to have records that are useful for calculating trends as most sites are recent or rarely visited. Sites of particular interest include those of the MPG and NCMPG. The MPG are currently entering their historical data and have sent us about half of their paper records (about 300 data sheets received 1/4/06) for entry onto databases. No records have been received from other groups involved in the monitoring.

In short: Data collation has been very slow. Despite a general willingness by most to share the monitoring data they have collected over the past two decades, it has become increasingly clear that most groups have simply not been able to either relocate or access these data.

## **1.2 Malleefowl activity**

We currently only have data from Victoria and SA in a form that allows some assessment of breeding nest numbers. Of the 70 monitoring sites in these states, 40 sites have been monitored for at least three years and may be useful in determining population trends, the remainder being recently established sites.

The ease with which these data may be used in the analysis depends on 1) whether or not sites were visited every year, 2) when a site was monitored, what proportion of known nests were actually visited each year, and 3) the reliability of activity assessments within the data.

### **1) Completeness of annual monitoring.**

In SA, there are 18 sites with histories that stretch for 3-17 years, and these have been monitored about 150 times over a potential total of 228 site-years. Thus, once established, sites were monitored in two thirds of subsequent seasons and were not visited in a third. In Victoria, there are 24 sites which have been monitored for 3-17 years, and these have been monitored about 291 times over a potential total of 312 site-years. Thus, sites were monitored in 93% of subsequent seasons.

### **2) Proportion of known nests visited**

The proportion of known nests that are revisited each year provides a crude estimate of the thoroughness of the monitoring and this reflects upon the reliability of the activity estimates. In Victoria, 98% of known nests were visited each year (about 1 nest in 40 missed), whereas in SA on average about 85% of known nests were visited each year (about 1 nest in 7 missed).

### **3) Reliability of activity estimates**

Although observers are invited to record their impression of whether a monitored nest was active when observed, there are a number of reasons not to take these data sheets on face value. Accordingly data sheets in SA and Vic have been designed to enable data checking and vetting by the inclusion of various fields that provide further information, such as describing the nest. Data has routinely been vetted in Vic as part of the annual reporting of the monitoring, but this has not occurred in the SA data. A quick look at the available data showed several nests that were recorded as active but clearly were not, and other nests that raised various degrees of uncertainty.

The three points above will require different responses. Nothing much that can be done about missing data for sites or nests, and these issues will have to be addressed statistically in the analysis. However, the reliability of activity estimates (point 3) can be improved by vetting records. This is most efficiently done on bulk when the data is on a database, and as the SA data is not complete we have not started vetting these records yet.

### **1.3 Data entry**

Unfortunately, there are still many records that have yet to be received by us and many exist only in paper form. In fact, of the roughly estimated 20,000 ground-based monitoring records collected over the past two decades across Australia, about 9,100 are from outside Victoria of which we estimate that there may be up to 3-4,000 represented only on paper data sheets. Thus, data entry is taking a more prominent role in this project than had been anticipated. The following is a state-by-state account of the data entry situation.

#### **NSW**

All the data is apparently collated and in an electronic form. The data are expected to be available by 20<sup>th</sup> April 2005 (currently waiting for a specific person, who is on leave, to return to access the data).

#### **SA**

About 2,300 monitoring records have yet to be entered electronically in SA. Copies of many of these paper records have recently been sent to us (April 2006). Summaries of the data exist, and these have been collated and reported (Gillam 2006), but there is a need to have the raw data stored electronically and in a form that facilitates access, vetting, and analysis along with the rest of the monitoring data.

Data that has been received from SA in an electronic form (spreadsheet and database) is being transferred to a national database (this database is temporary, it is not available outside this project and no data will be retained after this project without appropriate permission). We have also provided a database with most of these records to SA and customised forms to facilitate data entry and vetting. To speed up data entry, the VMRG also offered to enter any paper records and this offer was recently accepted and several hundred datasheets already posted (arrived 4<sup>th</sup> April). Since then, we have customised a cybertracker sequence for the SA data entry onto palms and plan to distribute the records and palms to VMRG members within the next two weeks.

#### **VIC**

Data have been collated and are available.

#### **WA**

Much of the data from WA only exists in paper form. No clear estimate of the total number of records at different sites and years exists at this stage. The MPG has one of its members entering their monitoring data using a palm+keyboard customised by us for their data sheets and for rapid data entry. However, progress is understandably slow and the MPG recently accepted an offer by the VMRG to help enter the data. Several hundred datasheets have already been sent to the VMRG (arrived 31 March).

There has been no data received by the VMRG from the NCMPG as yet.

## **2. Ancillary Malleefowl monitoring data**

The Malleefowl monitoring data sheets used in SA, Vic and parts of WA provide other relevant information apart from breeding numbers and reliability checks. In particular, signs of other animals such as foxes, rabbits, kangaroos and goats are routinely recorded. These data are in the same state of collation as the breeding records and at this stage a complete data set only exists for Vic. Prints and scats of foxes, kangaroos and Malleefowl at nests are generally common and should provide important information on the trends in these animals. In the Vic data the signs of other animals of interest (rabbits, goats, sheep, dogs, cats) are generally rarely recorded, but may nonetheless provide information of major changes in the abundance of these animals.

## **3. Other data relevant to the Malleefowl trends**

Environmental variables and past management of Malleefowl monitoring sites is being pursued wherever the core monitoring data have been collated or where we have a clear idea of what data will be available for analysis. In WA, we have not pursued the environmental and management data yet with any vigour because the core data is not yet available and there is uncertainty about which monitoring sites will be used in the analysis.

### ***3.1 Rainfall***

Rainfall data has been primarily sourced from the BoM using their 25 km<sup>2</sup> cell model from which monthly rainfall can be calculated for any monitoring site since the 1980s. Data for the Victorian sites has been purchased, and the complete rainfall records for other monitoring sites will be purchased once the monitoring data is collated.

Apart from these BoM modelled data, the VMRG has obtained rainfall records from farmers close to some of the Victorian monitoring sites. These records will be compared to the modelled data and used to check its accuracy. While other states have not been asked to provide similar records, in SA an attempt is being made to track down alternative sources of rainfall records in case these data are needed during the analysis.

### ***3.2 Fox control information***

Summary tables of fox control regimes that have operated in or near grids in SA have been provided by SA DEH (6 March). These summaries contain considerable detail and include the frequency and in some cases the intensity and area of fox baiting regimes covering the periods grids were monitored (back to 1989 in some cases). These detailed data are of great value and SA DEH permitted us to send these tables (8 March) to representatives in other states to demonstrate the type of data we require for analysis.

In Victoria, Parks Victoria has also provided information (31 March) on recent fox baiting that has occurred in National Parkes and Fauna & Flora reserves. For the most part, these records only cover the past 5 years. The VMRG intends to contact rangers and land managers directly to attempt to obtain further details of the fox baiting programs that operated in the 1990s.

In NSW, the details of fox baiting that has occurred in the vicinity of monitoring grids over the past two decades is available and is expected to be sent to the VMRG in late April along with the monitoring records.

### **3.3 Landscape values**

In both SA and Vic landscape values for monitoring grids have been measured. These include values for the remoteness of grids, the amount of edge shared with cleared and agricultural land, and the uses of neighbouring land. In Victoria, VMRG rural members are also trying to obtain information on the years in which crops were grown on farm paddocks neighbouring Malleefowl monitoring sites. If successful, the data sheet and process may be used in SA to obtain similar information.

### **3.4 Fire histories**

Fire histories for every grid in NSW, SA and Vic have been obtained or are being prepared.

## **4. Concluding comments**

1. Collating from around Australia has been surprisingly difficult and this was not anticipated by the VMRG, state representatives or by myself. For the most part, data custodians have been willing to share the data that is available to them. However, it has become increasingly (and slowly) clear that the monitoring data is fragmented, much of it is still only in paper form, and in some areas the monitoring has continued for many years (even decades) without any assessment of the data or feedback to volunteers that might have identified problems. In fact, even within individual states it is clear that the data is often so fragmented that no one person has a clear idea of where all the data resides, let alone access to these data.
2. In general, data storage and management has been poor and the difficulty in obtaining records over the past three months serves as a clear indicator of the need to greatly improve current practises. Despite the best intentions of most groups around Australia, it is clear that in general the data was not, and still is not, readily accessible. Many (3,000 – 4,000) records collected over the past 20 years still only exist as the original data sheets. It is also likely that at least some of these paper sheets have been lost, or at least their current location is uncertain.
3. The VMRG offered at the start of this project to help anyone enter data that were still only stored on paper sheets. Various groups have accepted this offer, but only recently (in the last 3 weeks). Had the offer been accepted earlier the VMRG might have entered much of these data by now. The magnitude of the data entry task is a real concern, and it may be necessary to enter only parts of the records, or to select only particular monitoring sites for data entry.
4. Considering the time frames provided for review and analysis of the national monitoring data, the steering committee for this project may need to re-consider the scope of this project. The VMRG strongly believes that this project should be as inclusive as possible, both because the power of the analysis depends on the number of sites included, and because excluding data may undermine the legitimacy of the groups who collected these data and damage their future funding

prospects. The current project represents the best chance we are likely to have to find and collate all existing monitoring data. However, it is also true that we cannot wait indefinitely for the monitoring data and we face real time constraints.

5. There is perhaps no clearer demonstration of the need to develop a national database and data management processes than the difficulty that various regions and states have had in managing and collating the monitoring data. Somewhat ironically, the difficulties that have frustrated progress to date also vindicate the direction of the entire project.