



Malleefowl Monitoring in Victoria: 2009/10

Report to the Victorian Malleefowl Recovery Group

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1. Monitoring effectiveness

Appendix A.1 shows a breakdown of the effectiveness of the monitoring effort and the overall result is once again impressive. The VMRG visited 1164 Malleefowl mounds during the 2009/10 breeding season (all 'sought and found', plus all 'new' mounds), including 19 newly recorded mounds found during searches of Wathe v03 and Annuello v07, and 11 mounds found incidentally at eight sites. A total of 20 mounds on the annual lists were not found, three of which could not be found despite being sought, while 17 were not sought at all and appear to have been forgotten. Most of these "forgotten" mounds occurred at One Tree Plain (site v17) where a mix-up resulted in half the site being monitored twice and the other half not at all! One Tree Plain was burnt in 1997 and we have not yet detected any signs of Malleefowl returning, so missing 13 mounds this year is not a great disadvantage. Elsewhere, a total of four mounds were neither sought nor found, and three mounds were searched for, but not found. Overall, even with these missed mounds, we still managed to find 98.4% of mounds that we set out to monitor (had the mix-up not occurred at v17, our monitoring success would have been similar to previous years at 99.4%). This represents a terrific effort again, and all should be proud of this effort.

The VMRG also organised two searches of sites that had not been searched for many years, Wathe v03 and Annuello v07. Both seem to have been very successful in terms of organisation and thoroughness, and added the many newly found mounds to the monitoring lists as outlined above. At Annuello, the old site was extended to include the area between the original site and the main access track, which is where most of the newly found mounds were at this site. These searches were especially timely because both of these sites have been affected by recent nearby fires (some of Wathe v03 was in fact burnt). As a result of these nearby fires, homeless Malleefowl may have been pushed into the unburnt habitat at these monitoring sites and this may account for the boost in breeding numbers at these sites last year (see last years report). Now that the sites have been thoroughly searched we can be more confident of the monitoring records from these sites.

2. Malleefowl Breeding numbers

Of the 1164 mounds that were monitored in 2009/10, 131 were active (120 of which were inside sites, and 11 of which were mounds outside the strict site boundaries; see Appendix A 3a-c). This is one of the highest total counts of active mounds we have ever observed (see Appendix 2 for individual site trends), but is down on last year's record numbers when a total of 153 active mounds were recorded. Much of this difference may be accounted for by reduced breeding at four key sites: Torpeys (v02), Wathe SW (v03), Wandown (v15), and Menzies (v14) (Appendix A. 3a) where the combined breeding total was down from 70 active mounds last year to 49 this year, a reduction of 30%.

The decline at Wathe (v02 and v03) is not surprising and was forewarned in last year's report. Wathe experienced an extensive wildfire in November 2007 which burnt over half of the old growth habitat in the reserve. While some of the habitat at the monitoring sites was burnt, these sites nonetheless contain much of the old growth habitat in the reserve and represented refuge for Malleefowl that were left homeless by the fire. Despite the loss of some habitat in the two monitoring sites at Wathe, breeding numbers soared last year to unprecedented levels due to this likely shift of birds from the burnt to unburnt habitats. But the crowding evident in the breeding

numbers last year most likely resulted in an unsustainable situation and so it was not surprising that a 'correction' occurred. Despite the decline that has occurred at Wathe in the past year (from 25 to 16 active mounds: 36% decline), breeding numbers are still higher than they have been for many years and this suggests that further (but smaller) declines are possible. Interestingly, at Annuello (v07) which also showed an increase in breeding numbers last year following a nearby fire, breeding numbers were unchanged from last year.

The declines in the past year at Wandown and Menzies were less pronounced than at Wathe (from 45 to 33 active mounds: 27% decline) but are harder to explain. Possibly, these neighbouring sites missed out on critical rains, although if this is the case the affect must have been quite localised as nearby monitoring sites (v07 and v27) showed relatively steady breeding numbers. Other possibilities include the affects of sonic bird deterrents in nearby almond orchards, although these have been operating for a number of years.

Apart from these areas, breeding numbers were similar to last year; some sites were a little higher, some a little lower, but overall numbers were similar. In general, breeding numbers tended to be a little lower than last year in the north of the state, and higher in the south, and this also may suggest a rainfall affect.

Rainfall throughout the western mallee in 2009 showed a return to average conditions during the autumn/winter periods, in contrast to the decade or so to 2007 when dry conditions prevailed during this period. Widespread and above average rains fell across western Victoria in June (Figure 1), an important time for Malleefowl when they renovate their mounds and wait for rain to wet the litter, and this most likely benefitted the birds. Apart from these rains, the northern areas were below average from May to August, whereas further south rainfall was above average throughout this period.

Trends in Malleefowl breeding numbers over the past few decades are shown in Figures 2 and 3, in which monitoring sites are grouped according to how long they have been monitored. In terms of the seven key monitoring sites that have been tracked for the past 22 years (Figure 2), the 2009 result showed a sharp drop from last year's record breaking total, and a return to numbers more in line with previous years. Three of the seven sites shown in this aggregated total showed substantial declines in breeding numbers from last year (v02, v03 and v15; discussed above), and these declines account for the drop in breeding numbers in the aggregate total.

Regional Malleefowl breeding trends over the past 14-17 years also showed declines in comparison to last year trends (Figure 3), and were also affected by the declines at Wandown and Menzies (v15 and v14; NE), and at Wathe (EBD). Nonetheless, the aggregate results for the Eastern Big Desert are amongst the highest since 2001 (albeit still lower than during the 1990s), and the results for the North East are considerably higher than those from the 1990s (albeit not as high as they have been since 2001). In the North West, which was unaffected by the declines in Wathe and Wandown, breeding numbers were only slightly lower than last year and, while this result is amongst the highest over the past 13 years, it was still considerably lower than the breeding numbers recorded in 1996.

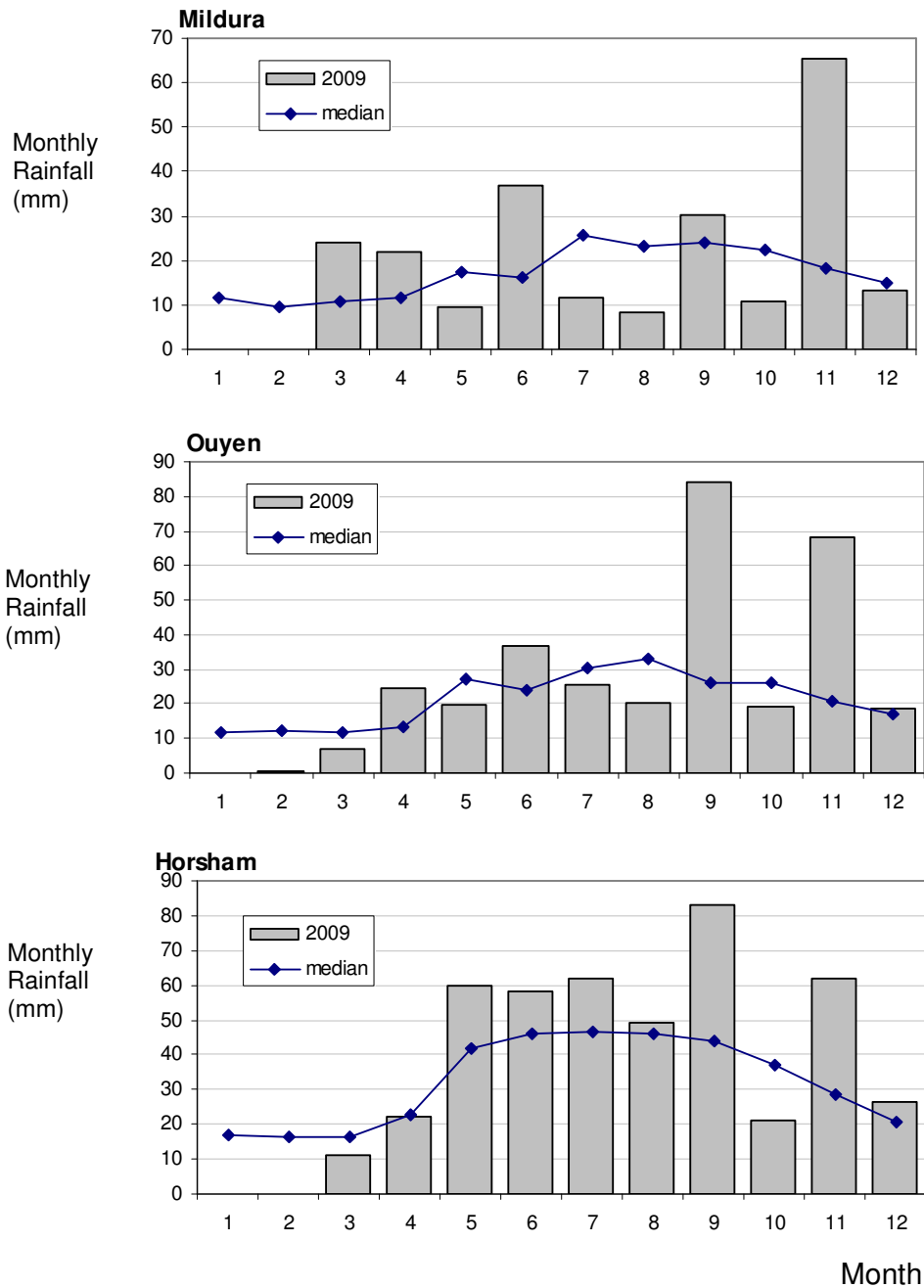


Figure 1. Rainfall at Mildura, Ouyen and Horsham in 2009 (bars) and median rainfall since early 1900s (line). During the critical months prior to breeding (May to August) in 2009, rainfall was a little below the long term median in the northern mallee (Mildura), but was well above median values for the southern Mallee (Horsham). (Data from the Bureau of Meteorology website).

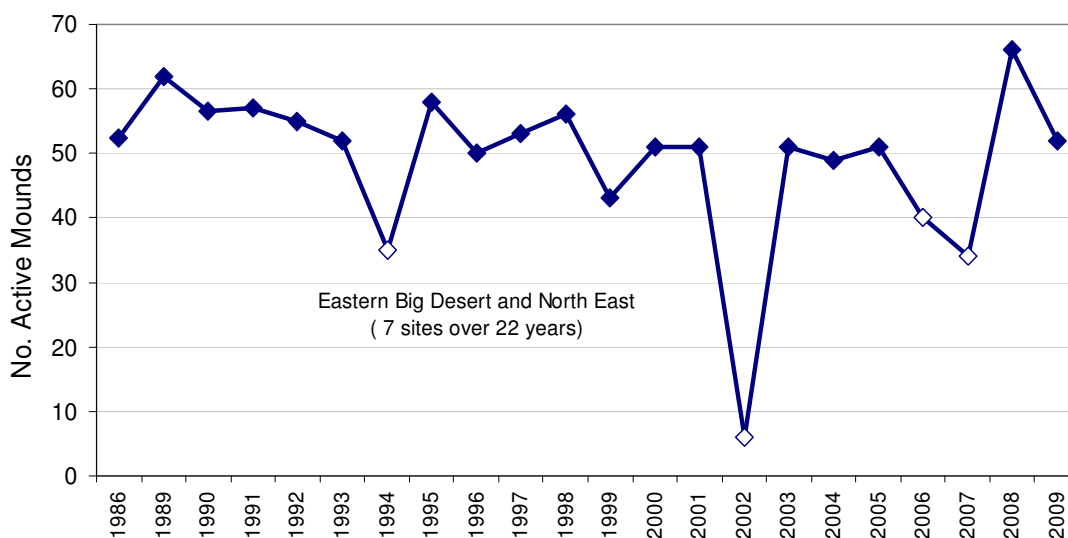


Figure 2. Trends in Malleefowl breeding numbers at 7 set sites over the past 22 years. 1994, 2002, 2006 and 2007 were major drought years (white points). Data comprise the common sets for sites 01, 02, 03, 04, 07, 20 and 23.

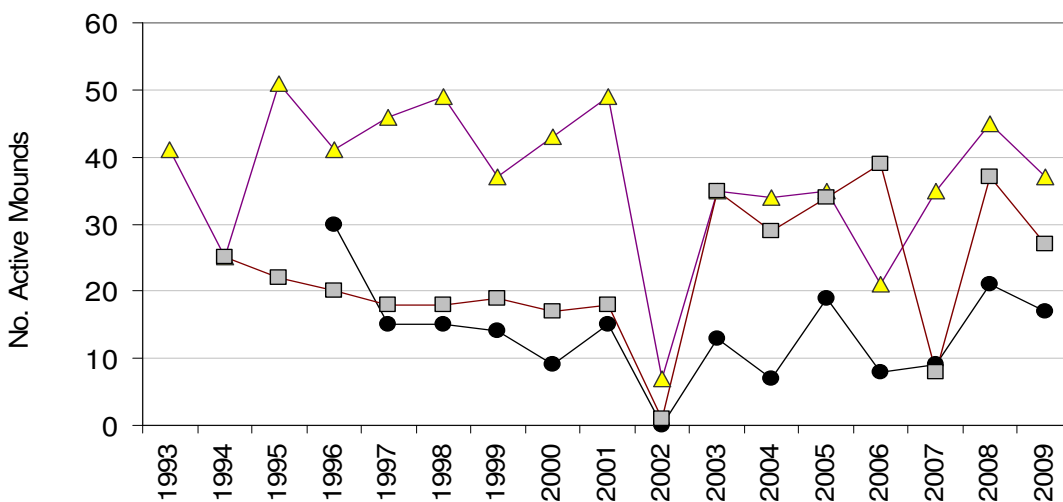


Figure 3. Trends in Malleefowl breeding numbers at 22 sites over the past 14-17 years. Eastern Big Desert comprise 6 sites over 17 years (triangles), North East comprise 4 sites over 16 years (shaded squares), and North West comprises 12 sites over 14 years (solid circles). 1994, 2002, 2006 and 2007 were major drought years in many areas.

Individual Grid trends

Appendix B shows the histograms of grid trends from historical records to 2009/10. The value (i.e. number of active nests) for each histogram bar is also shown so that you can distinguish between seasons when there was no breeding at a site, and seasons when the site was not monitored. All sites are represented in numerical order.

3. Changes to data recorded in the field

Few changes were needed to the data collected in 2009/10, although there were a number of cases where people apparently finalized their monitoring record after they had already left the mound. This error can be avoided by making sure that each record is finalised while you are still at the nest in question. (If you are unsure about this, please ask!).

For many monitors, this season may have been one of frustration or gadget-geeky-joy (or both) as we rolled out the new devices (Magellan Mobilemappers) that are replacing the old, tired Palms. Given the very little instruction provided, things generally went very well although there were some bugs in the program that caused extreme frustration for some (the bug caused the device to freeze sometimes after taking a photo). These bugs were mostly in Cybertracker itself, and although they were quickly corrected by Cybertracker programmers, unwittingly we sent the buggy version into the field without realising that there was a problem, or that there was a solution available.

Another issue, for which one of us (JB) was uniquely responsible, was that the GPS on the new devices was set to low accuracy which caused lots of problems when trying to vet the records. This has also been corrected.

Frustrating though these problems may be for you when you are out in the field, it's important to not become disheartened with the new technology. Our monitoring program is like a well oiled machine, but like any complex system when something is changed there is an opportunity for system failure. We have changed a lot behind the scenes in the past year or so: we have rewritten the monitoring sequence for a completely new version of Cybertracker, developed a completely new on-line database to handle the data, and changed the devices we are using in the field to capture data. There have certainly been lots of hiccups along the way, and we are sorry that some of you had to deal with problems in the field, but we are through the most challenging period now and I am sure the problems are largely behind us (this is not to say there won't be other stuff ups).

On the positive side, the new Magellans did perform well for the majority of people, and many people used the in built camera to take monitoring photos (this, incidentally, is where most of the problems occurred). Importantly, the data was more secure than on the Palms and was easily transferred to PC and to the on-line database.

Another change that occurred was that the VMRG, in conjunction with the APYLM (Anangu-Pitjantjatjara Yankunytjatjara Land Management; in central Australia), commissioned Steventon Consulting (USA) to develop a GPS emulator within the Cybertracker program we use for collecting our monitoring data. This development means that it will no longer be necessary to use a separate GPS to navigate to mounds. Previously we have always had to carry a GPS with the Palms and the new Magellans, even though the Magellans have an inbuilt GPS that we use to record the location of mounds. Now we will be able to navigate to all the mounds from within the

Cybertracker program, and it's all very simple and easier than on a separate GPS. In addition to being a benefit in the field, the development also brings many advantages behind the scenes, increases the security of mound locations, and streamlines the annual preparations for the monitoring.

Next season we intend to train people on how to use the Magellans before they monitor, and to provide a simple user-manual for the use of the devices for the monitoring.

The new database

The on-line database that has been developed for our monitoring by Richard and Margaret Alcorn (initially funded by DEWHA) has performed very well and is proving to be an invaluable tool for processing, storing and accessing the large volume of data we currently obtain.

This season has provided a good work-out for the database and we are working through various tweaks and changes. We also have yet to load historical data and photos, and have been teaching Malleefowl monitoring colleagues in other States how to use the database and vet their data.

So far, only a select few have been using the database in each State, but the database is being designed for everyone involved in the monitoring. This is where you will be able to see the records you collect, add comments you forgot to add in the field, check mound photos over the past few years, keep tabs on the progress in vetting and finalising the data, and access trend graphs and other information.

Richard and Margaret have built a very robust system that will provide a firm foundation for these and other developments. We have ideas on how to improve the database in terms of data processing and management, but would like to hear about features that everybody else wants. So now is a good time to get onto the database; have a look and a think and let us know how we can get the data you collect back to you in the form that you want it in. Note that for security reasons you will need to obtain a user name and password to log onto the database, but these are easily obtained by contacting one of us.

4. Lerp

This season was the fourth time we recorded the occurrence of lerp (the sweet and nutritious casing of psyllid sap-sucking insects that fall from leaves) on Malleefowl mounds, but there were very few to count. Lerp were recorded at about 1% of mounds in 2009 (Appendix A VIII), compared to only 7% last season and 5% in 2007/8. The low count may have been due to the heavy rains in September and November, but is not unusual. Lerp become significant food resources for Malleefowl when there are psyllid outbreaks and the fallen casings are abundant. In most years they are in low abundance and of less importance. Given the low numbers of lerp on mounds during this season's monitoring, there is no need to conduct more intensive lerp surveys this autumn.

5. Fox scats

Fox scats were collected at 427 mounds in 2009/10 and weighed a total of over 7 kg. This is an increase over last year in which there was a total of 378 mounds with fox scats, weighing a total of 4.8 kg (similar to the year before; Table 1). Thus, the number of mounds with scats increased by 13%, whereas the weight of fox scats found on mounds increased by nearly 50%. These increases suggest that fox numbers may be also be increasing, possibly benefitting from the good rains in the past couple of years. Malleefowl feathers have been forwarded on to Taneal Cope who is conducting the genetics study at Melbourne University.

Grid	Name	Fox Scats				MfFeather	MfScat
		2009Wt (g)	<i>2008 Wt (g)</i>	2009 Count	<i>2008 Count</i>	2009 Count	2009 Count
v01	Dattuck	39	<i>65</i>	3	<i>6</i>	0	1
v02	Torpey's	464	<i>237</i>	28	<i>17</i>	3	4
v03	Wathe SW	867	<i>374</i>	38	<i>29</i>	2	13
v04	Bronzewing	1195	<i>565</i>	60	<i>58</i>	9	27
v05	Colignan	75	<i>189</i>	6	<i>10</i>	0	0
v07	Annuello	257	<i>176</i>	16	<i>13</i>	0	7
v08	Powerline	19	-	2	-	0	1
v09	Mt Hattah	44	<i>4</i>	3	<i>2</i>	0	0
V10	One Tree Plain BNT	0	-	0	-	0	0
v11	Mopoke	143	<i>148</i>	9	<i>8</i>	0	6
v12	Pheeneys	283	<i>151</i>	16	<i>14</i>	0	6
v13	Bambill	340	<i>158</i>	21	<i>14</i>	1	9
v14	Menzies	179	<i>44</i>	11	<i>4</i>	2	5
v15	Wandown	256	<i>144</i>	28	<i>19</i>	2	9
v16	South Bore	113	<i>145</i>	12	<i>16</i>	0	18
v17	One Tree Plain	0	<i>4</i>	0	<i>1</i>	0	0
v18	Washing Machine	52	<i>30</i>	4	<i>3</i>	0	0
v19	Underbool	90	<i>107</i>	4	<i>9</i>	0	3
v20	Lowan	341	<i>213</i>	26	<i>22</i>	2	2
v21	Dumosa	214	<i>334</i>	15	<i>20</i>	3	12
v22	Denning	21	<i>67</i>	2	<i>4</i>	0	0
v23	Moonah	641	<i>683</i>	36	<i>41</i>	5	7
v24	Kiata	24	<i>117</i>	3	<i>4</i>	0	0
v26	Hattah Tracks	165	<i>43</i>	16	<i>5</i>	5	11
v27	O'Brees	72	<i>74</i>	8	<i>8</i>	3	3
v28	Nurcoung	49	<i>67</i>	6	<i>8</i>	7	8
v29	Wedderburn	29	<i>121</i>	5	<i>6</i>	0	0
v30	Hattah South	67	<i>20</i>	5	<i>6</i>	0	0
v31	Skinners Flat	13	<i>13</i>	3	<i>3</i>	0	0
v32	Wychitella	24	<i>54</i>	1	<i>3</i>	0	0
v33	Korong Vale	55	<i>29</i>	2	<i>1</i>	2	2
v34	Paradise	847	<i>354</i>	34	<i>22</i>	2	10
v35	Broken Bucket	25	<i>24</i>	3	<i>2</i>	0	0
v36	Boughtons WH	4		1		1	1
TOTAL		7007	4754	427	378	49	165

Table 1. The total weight of fox scats, the number of mounds at which fox scats were collected, for both 2009 and the previous year (*italics*). The number of mounds at which Malleefowl scats and feathers were collected is also shown.

May we remind everyone once again of the importance of being very systematic with fox scat collection. We must search the mound surface very carefully for a full minute to be to absolutely sure that we get all the scats, as emphasised in the manual and during the training weekends.

6. Concluding comments

The VMRG has completed another excellent year of monitoring and the data are of a very high standard once again. While the breeding numbers this year have not been as stellar as those last year, the monitoring is suggesting stable populations in most areas, a result which is likely to be due at least in part to the good rains that occurred during the autumn-winter period.

There have been many changes to the monitoring system, although only a few of these have directly affected those of us that collect data in the field. Most notably we began using the new Magellan mobilemappers, and although there have been various teething problems, these proved very successful. The database has been given the most thorough testing and is now being used to upload, store and access Malleefowl monitoring data from throughout Australia. These developments will continue and it is now time for people who monitor to start using the database and provide us with feedback regarding the sorts of facilities they would like to see developed.

Progress is also occurring in the field where the VMRG managed to re-search two sites. More re-searches are planned for 2010, as are further surveys of the reserves in the Wedderburn area.

We are now also planning to apply for an ARC Linkage grant to fund the development of an adaptive management (AM) project for Malleefowl. The project would fund a post-doc at Melbourne University to build mathematical models that would allow us to measure the success or failure of management actions aimed at benefitting Malleefowl. The monitoring information collected by the VMRG and other groups around Australia is fundamental to the AM project and will provide the data that is essential to assessing the success of actions. The AM project is ambitious in its aims of providing a synthesis of monitoring, management, and research, but would develop the full potential of the monitoring program as a means of conserving Malleefowl in the future.

Once again, we are very appreciative of the effort made by people in collecting the high quality data, helping to keep the program running, and providing the sort of feedback we need to improve the program for volunteers and Malleefowl.

Joe Benshemesh and Peter Stokie

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NOTE if you notice any likely errors in this report or the Appendices, or numbers that disagree with your recollections, please let us know!
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