Malleefowl Monitoring in Victoria: 2012/13

Report to the Victorian Malleefowl Recovery Group

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22 March 2012

Contents

Appendices

1. Monitoring effectiveness: how did we do?

Appendix A.1 shows a breakdown of the effectiveness of the monitoring effort and the overall result is, as usual, very impressive. The VMRG visited 1228 Malleefowl mounds during the 2012/13 breeding season (all 'sought and found', plus all 'new' mounds), including 17 newly listed mounds found at 11 sites.

A total of 16 regular mounds were not found during the 2012 season (Appendix A.2) and these were scattered through nine sites: most were not searched for and appear to have been forgotten. One of these mounds had been recorded as having been active in the past, but the mound (v07_69) is outside the bounds of a monitoring site and its activity status is not counted in comparisons across years.

Overall, we managed to find 98.7% of the mounds that we set out to monitor (excluding the 17 newly added mounds).

Optional mounds on the 5 year list were also well represented in the mound visits considering there was no obligation to inspect them this year; we visited these mounds in 2010 and don't have to revisit again until 2015. Nonetheless, monitors inspected 36 of the 80 mounds on the list this season, often by just taking a labelled photograph and not measuring the mound. This is a legitimate practice for these optional mounds as its better to have some information than none. As it turned out, one of these mounds was in fact active in the 2012/13 season and the monitors did end up measuring all the data for that particular mound (and of course it's been removed from the optional list), whereas the other optional mounds were inactive and unchanged from previous years. The message is that if you can visit these optional mounds, please do, even if it's only to take a photo and move on. You never know if the birds have returned to one of these old mounds unless you look.

New Sites

Apart from the established sites that were monitored, the VMRG also established some new sites: V40 'Iluka' to track the effects of the Iluka sand mine in a small mallee remnant; and V41 'Mali Dunes' to monitor the recolonisation by Malleefowl on a property used previously for farming but now being rehabilitated. In addition, v42 ' Nurcoung Farmers' has been set up on the database for data on scattered mounds in isolated small patches of remnant habitat south of the Little Desert that may one day become a corridor linking to the Little Desert. This year was also the first time that v37 'Wathe Burnt', now renamed 'Wisemans' in honor of Gwyn and Ron, has been monitored since it was searched in 2008. There are no active mounds in the site yet (it was burnt in 2007).

Reinstating sites v10, v17 and v22 to regular monitoring

Last year, three sites in the south eastern Sunset block were demoted to optional status, meaning that we would no longer be under pressure to visit all the mounds in these sites each year. This was because the birds seemed to have disappeared from these sites and we thought we would keep an eye on them by looking for footprints rather than inspecting every mound, every year.

As it turns out, Malleefowl returned to and are breeding in at least 2 of these sites this season! Peter Sandell visited a few of the mounds at v17 (One Tree Plain) and found one active, and those who monitored v22 (Dennying Channel) and also found

one active. Accordingly, all of these sites are back on the regular monitoring lists. I (JB) put my name down to do v17 this season but have been unable to complete the task until now, but it will be finished soon. Any mounds in v17 that were active in the preceding spring/summer should be very conspicuous as all the mounds were severely degraded when the site was burnt in 1996, and since then there has been no Malleefowl activity when the site has been monitored.

Big Desert Track Search

On the 30 June/1 July 2012 the VMRG teamed up again with the Victorian Mobile LandCare Group (VMLCG) to search sandy tracks in the Big Desert for Malleefowl prints, using a similar methods as the previous searches in the Little Desert. 41 volunteers spent a total of over 1,100 hrs and searched for prints along about 275km of tracks. Malleefowl prints were recorded in several areas and the possibility of establishing new monitoring sites in these areas is being considered.

2. Malleefowl Breeding numbers: a 'beautiful set of numbers'

Rainfall was extremely high across the northern mallee at the start of the year, as it was last year (but not as extreme), and late autumn and early winter were also drier than usual in many areas (Figure 1). However, good rains occurred in all areas by mid-winter, a critical time when Malleefowl are preparing their mounds and needing to lock in moisture to enable the leaf litter to decompose and produce heat for incubation. Thereafter, rainfall was below average through late winter and summer, but soil moisture was probably high due to the early downpours (and perhaps those last year), and may have provided an abundance of herbaceous foods at the start of the breeding season in August/September.

Of the 1288 mounds that were monitored in 2012/13, an astonishing 218 were active (204 of these were inside our regular sites, 14 were mounds outside the strict site boundaries; see Appendix A 3a-c). Figures 2-4 show the usual graphs that we produce each year to track the trends in breeding numbers in set areas where we have been monitoring the longest. The first set of sites comprises 7 sites that we have been monitoring since 1986 and it is clear that at these sites, mostly in the eastern Big Desert region, breeding numbers are the highest we have recorded. Figure 3 shows a similar trend for a larger set of sites over a shorter period (sites monitored since 1996), and Figure 4 shows the same data broken down into regions. Whereas breeding numbers in the Eastern Big Desert and the North-west in 2012 were clearly higher than any previous records for these sites, numbers in the North-east were no better than average for the past decade, although substantially higher than numbers that were recorded in the 1990s.

Not all monitoring sites excelled in breeding numbers. At Torpey's (v02), Menzies (v14) and Lowan (v20), breeding numbers were below long term averages, but these apparent declines were exceptions.

Elsewhere, for example in the Little Desert and Wychitella areas, we don't have enough data yet to talk meaningfully about trends because we have not been monitoring in these areas for very long. Breeding numbers in the three Little Desert sites and four Wychitella sites were similar to last year, although a little less than breeding numbers 2-3 years ago.

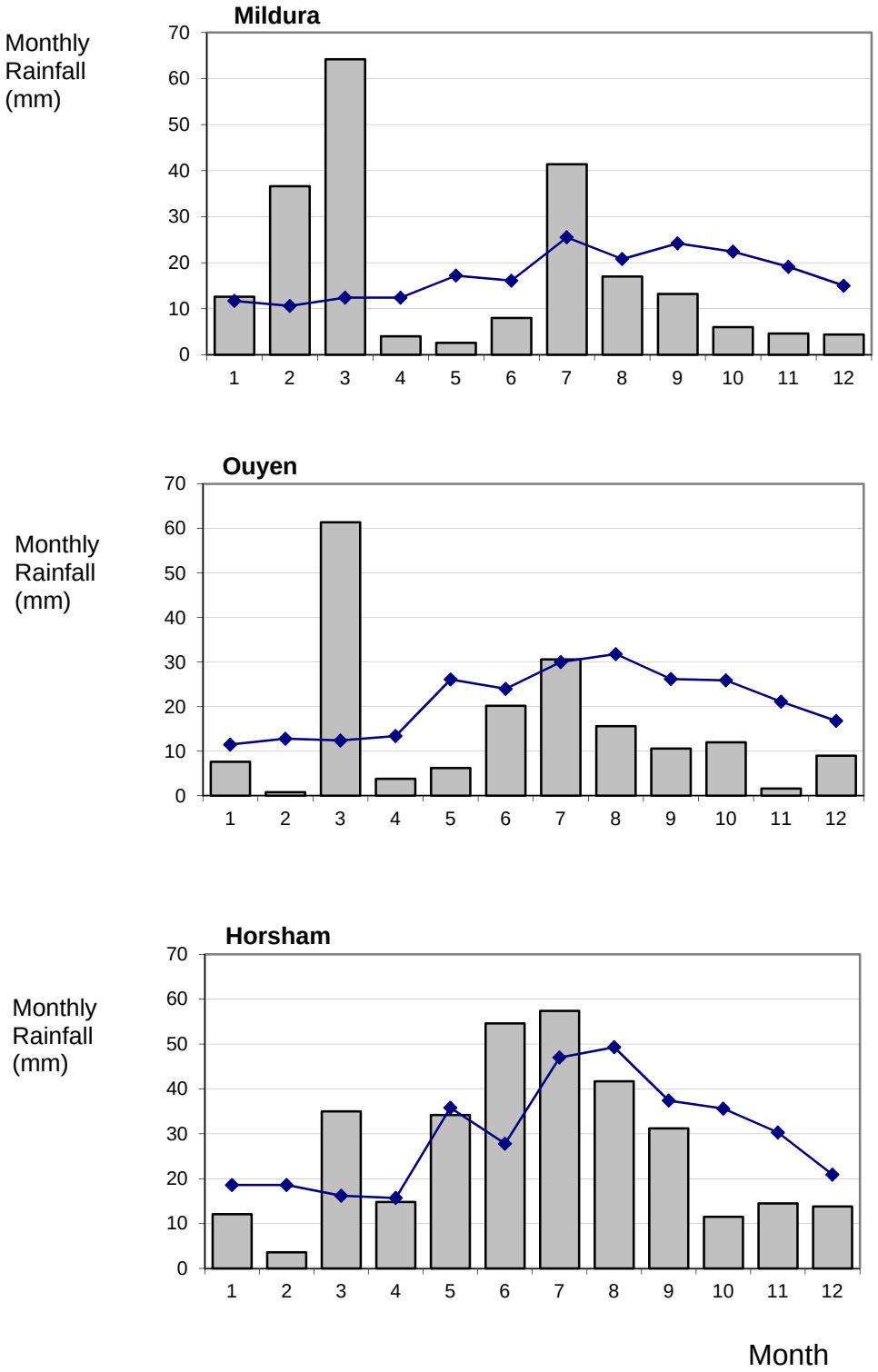


Figure 1. Rainfall at Mildura, Ouyen and Horsham in 2012 (bars) and median rainfall since early 1900s (line). Huge summer rainfall events affected all areas, while April to September totals were generally below the long term median. (Data from the Bureau of Meteorology website).

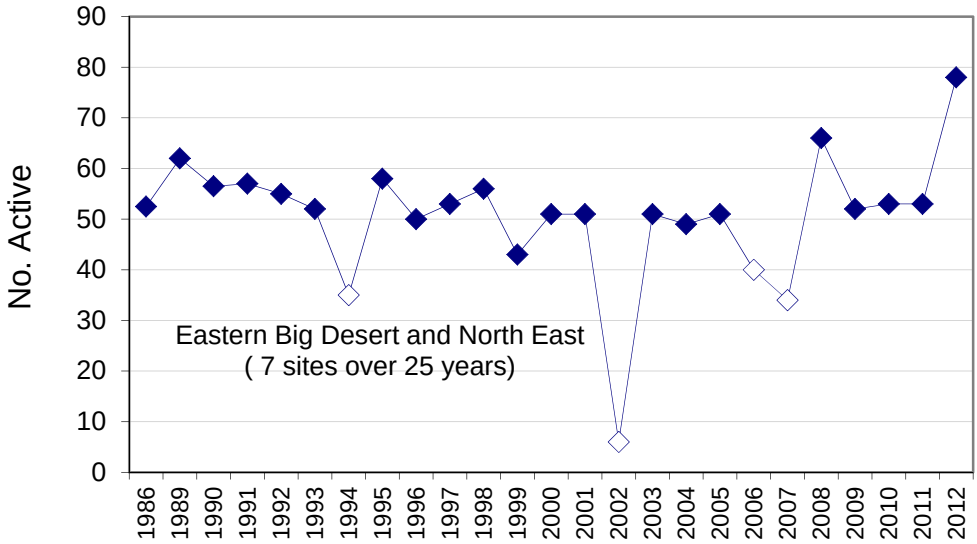


Figure 2. Trends in Malleefowl breeding numbers at 7 of the longest monitored sites over the past 25 years. 1994, 2002, 2006 and 2007 were major drought years (white points). Data comprise mounds in set areas across years in sites 01, 02, 03, 04, 07, 20 and 23.

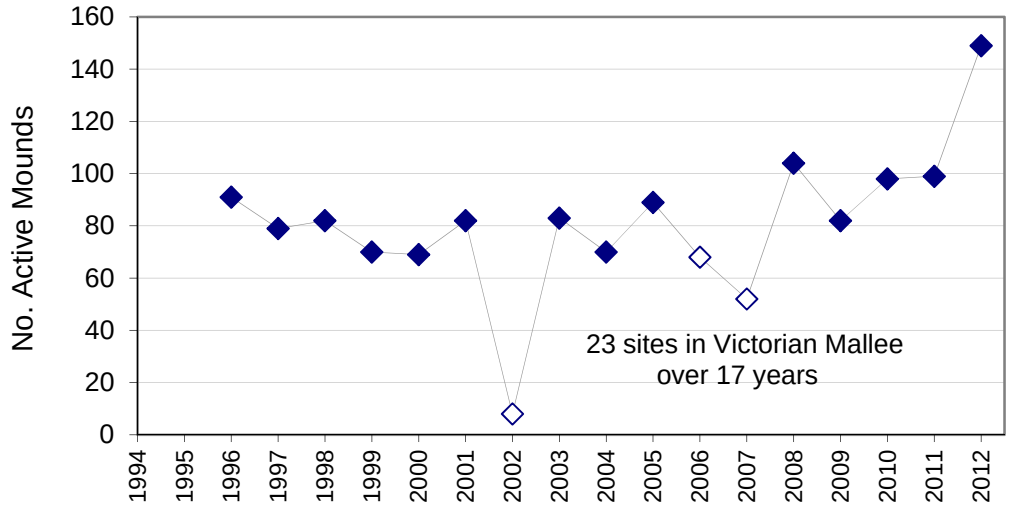


Figure 3. Trends in Malleefowl breeding numbers at 23 sites over the past 17 years shown as collective total. 1994, 2002, 2006 and 2007 were major drought years (white points). Data excludes mounds outside site boundaries. See figure 4 for regional breakdown.

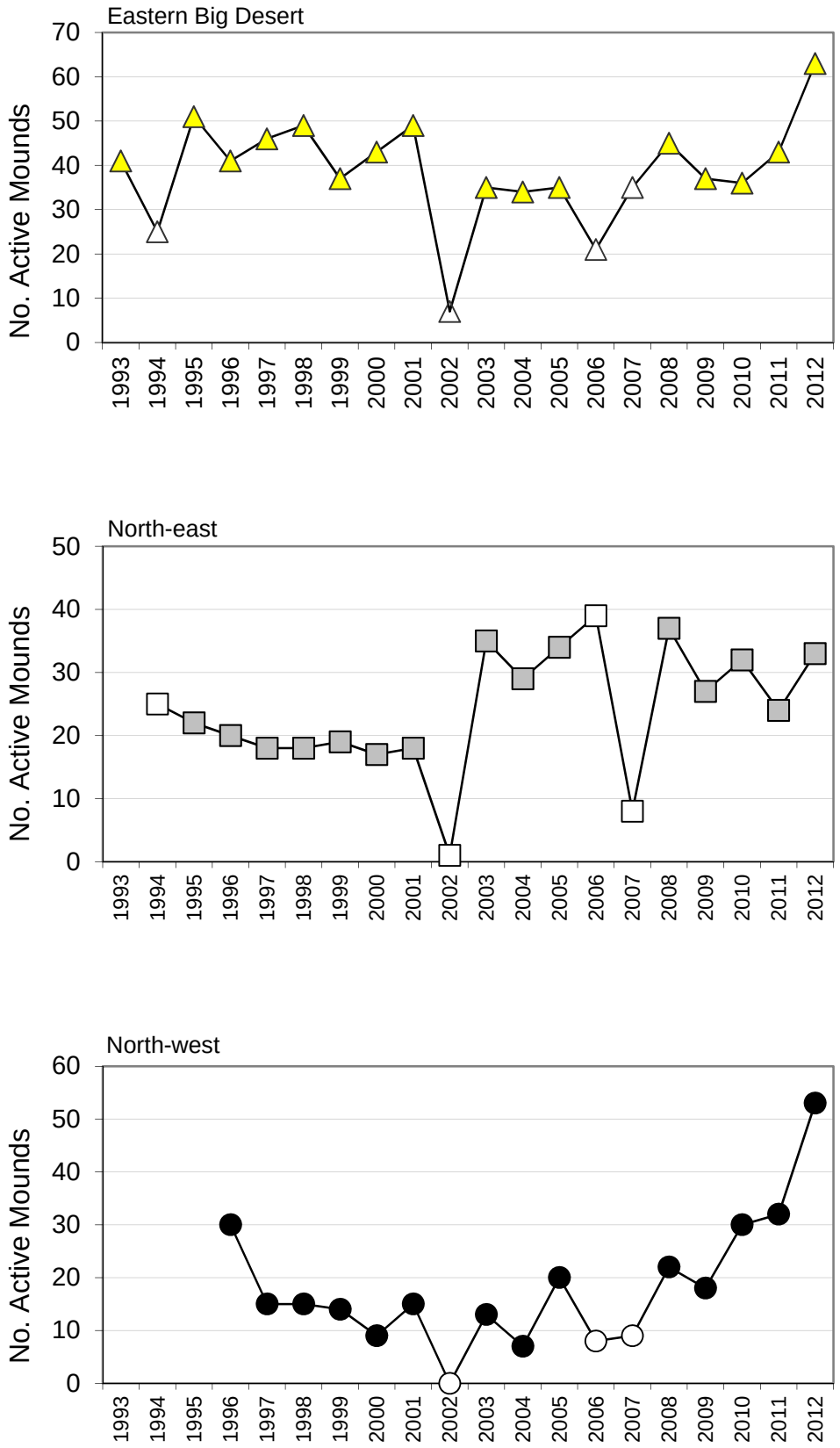


Figure 4. Trends in Malleefowl breeding numbers at 22 sites over the past 17-20 years shown by region. Eastern Big Desert comprise 6 sites over 20 years (triangles), North East comprise 4 sites over 19 years (shaded squares), and North West comprises 12 sites over 17 years (solid circles). 1994, 2002, 2006 and 2007 were major drought years in many areas. Data excludes mounds outside site boundaries.

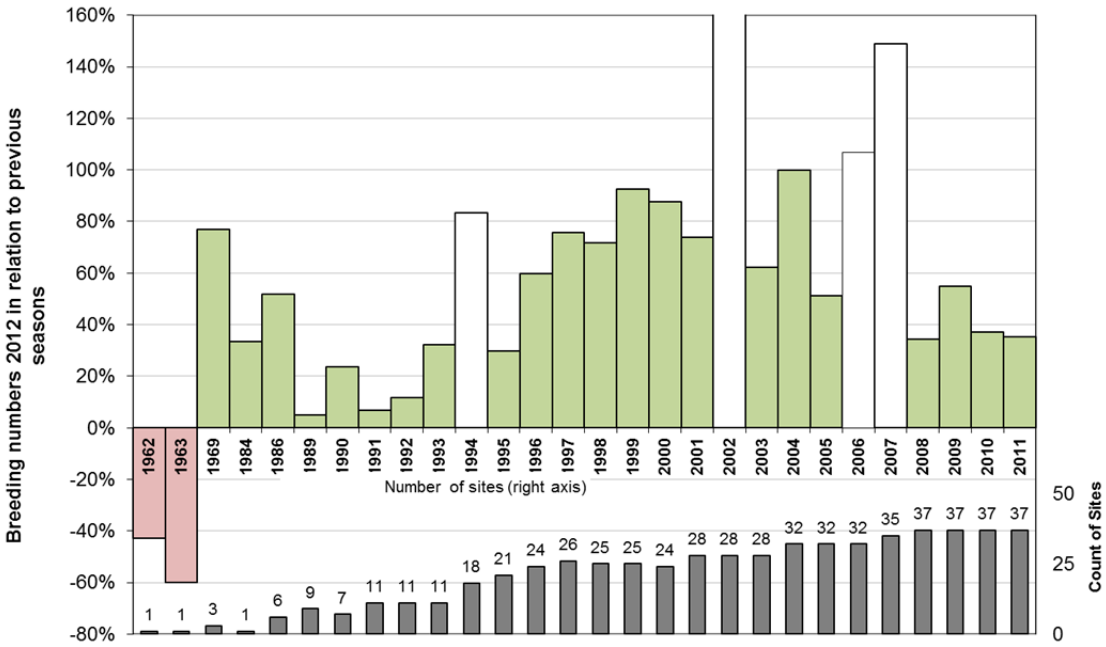


Figure 5. Breeding numbers of Malleefowl in the 2012 season compared with all previous seasons (upper chart) and the number of sites involved (lower chart). The zero line in the chart indicates no difference, whereas values above zero indicate that breeding numbers in the current season were above those in the past, and values below zero indicate a decline. For example, breeding numbers in 2012 were nearly 40% above those in 2011, only slightly higher than those in 1989, and 40% below those in 1962 when the late Angus Torpey searched his site in Wathe (later to become v02). The bottom chart shows the number of sites involved and provides an index of the reliability of the comparisons: the comparison with 2011 is based on 37 sites and is thus very reliable, whereas the comparisons with 1962/3 are based on only a single site and probably do not reliably reflect general trends. Drought years are indicated by unfilled columns; in the 2002 drought there was virtually no breeding in Victoria and the 2012 breeding number was more than 18 times (1825%) that recorded in 2002.

Finally, we're pleased to report that breeding Malleefowl have returned to the Dennying Channel reserve after an absence of a decade. This remnant is located north west of Ouyen and is separated from the Sunset Country by 2.4 km of cleared land. The last time breeding was recorded at the site was in 2001, and since then there has only been the occasional Malleefowl print noted on the mounds, indicating that at least one bird remained in this isolated patch, at least up to 2009 when prints were last noted. However, this past season there was at least one mound completed for breeding, and another six of the remaining 18 mounds showed clear signs that they had been dug out by Malleefowl although they were not completed for breeding.

Comparing 2012 results with previous seasons using all the data

Figures 2-4 have been produced and updated in every monitoring report and provide a simple way to show trends in Victoria, but they are a little unsatisfying in that they only use a portion of the data collected each year; in order to show trends we just look at those sites that have been monitored for the longest period, keeping the sites and thus mounds we examine constant across the years. For example, Figure 3 only represents 78 of the 218 active mounds we recorded in 2012. Another way of representing how the results of the current year measures up against previous monitoring efforts is to compare the 2012 results directly with each of the previous years on a site by site basis (Figure 5). This approach uses virtually all the data collected, including historical data, and provides a more comprehensive way of visualising how current numbers compare with those in the past. Breeding numbers in the 2012 season in Victoria are shown in the chart to be higher than virtually any previous year. The only exception was the comparison with numbers of breeding Malleefowl in the early 1960s when there was only one site to compare our 2012 results with: Torpey's site in Wathe Reserve had up to 10 active mounds in the early 1960s compared to only 4 in 2012. Breeding numbers at this site have fluctuated over the past two decades, but have shown a general decline since the mid-1990s; the reasons are uncertain. However, in general we should pay much more regard to data that involve multiple sites as they provide a more reliable basis for comparison. Using all available data, Figure 5 clearly shows that breeding numbers in 2012 in Victoria are higher than at any time in the past when multiple sites were monitored.

Reasons for the high breeding numbers in the 2012 season

2012 has proved to have been an exceptional season for Malleefowl breeding numbers, and it is appropriate to consider the reasons that may underlie this result. There seems little doubt that the dry conditions that prevailed from the mid-1990s to 2009 suppressed Malleefowl breeding, and that the above average rainfall since then has benefitted Malleefowl. Most likely, the breaking of the extended drought led to a surge in recruitment of chicks into the adult population and that we are only now seeing the results of this in the breeding population. That rainfall has profound effects on breeding populations with a lag of 2-3 years was shown by the trend analysis we undertook in 2005, and the monitoring results over the past few years is entirely consistent with this previous finding. Another factor may be that several sites that were burnt in the 1980s and 1990s have recovered and the vegetation has

matured, supporting increased numbers of Malleefowl. Rainfall and fire appear to be the main drivers behind Malleefowl population trends.

Individual Site trends

Appendix B shows the histograms of grid trends from historical records to 2012/13. For each site, the bar graph displays the number of active mounds within the same area across years. 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. Sites are represented in numerical order.

3. Changes to data recorded in the field

There were no major changes to the Cybertracker sequence this season. The Mobilemappers performed well for the majority of people but there were some problems, thankfully only a few people were affected.

There is at least one mobilemapper that is playing up and for the first time we actually lost data when the unit apparently wiped itself. Fortunately the photos were on a separate camera and the most important data could be reconstructed from these. Once we became aware of the issue we immediately set up the mobilemappers to record data onto the SD memory cards where it would safe from this sort of malfunction. It has not happened before, and it may not happen again, but if it does we will be able to retrieve the data from the CD card.

Graeme Tonkin (SA) and I have also tried our Cybertracker monitoring sequence on Android smartphones; Graeme has tried it on a $400 smartphone, and I (true to form) on an $80 'el cheapo'. Both performed well, but not without some issues. The Android version of Cybertracker is still in beta (i.e. under development) and we expect that all of the problems will be sorted out over the next few month. While not ruggardised like the mobilemappers, the smartphones are less than 10% the cost of mobilemappers and tend to be more powerful with a bigger screen and take much better photos. They may also be a bit easier to use. We will be continuing to investigate this alternative and may trial them in the field next season.

4. Lerp

This season was the seventh time we have recorded the occurrence of lerp (the sweet and nutritious casing of psillid sap-sucking insects that fall from leaves) on Malleefowl mounds, and there were some signs of a modest build up. Lerp were recorded at about 8% of mounds in 2012, more than twice the amount recorded over the past two years. Lerp were recorded at 20 sites, although they were common only at 4 sites (Appendix A VIII).

5. Fox scats

Fox scats were collected at 517 mounds in 2012 and weighed a total of 9.6 kg, 20% more than last season. However, some of this increase may be due to the fact that we also visited more mounds at more sites than last year. Figure 6 shows the

average weight of fox scats collected per mound monitored since the mid 1990s for the same set of 20 sites and provides a better comparison across years. As discussed in last year's report, the graph shows that there was a steep decline in fox scat weights between 1996 and 2000 which coincides with. and probably reflects. the decline of rabbits due to RHD and consequent adjustments to fox populations. But there is also a clear and increasing trend over the past decade suggesting that fox numbers are on the rise again, a trend certainly supported by anecdotal reports from various sources in the mallee. In fact the average fox scat weights per mound for these sites are approaching levels not seen for at least 15 years. Our analyses so far of long term trends suggest that fox numbers do not have a much impact on Malleefowl numbers; it's clear that foxes eat Malleefowl of all ages but this does not seem to impact on population levels. Nonetheless, the rise in fox numbers is of concern and we will be watching carefully, thanks to the collective efforts of lots of volunteers.

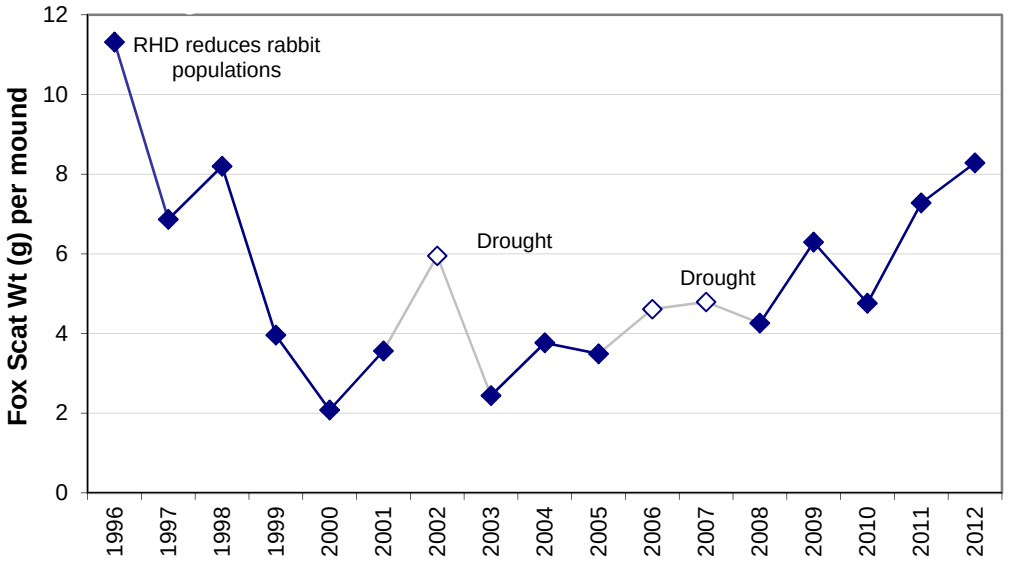


Figure 6. Trends in the average fox scat weight per mound at 20 sites over 17 years. No attempt has been made to control for biases due to variations in the proportion of active mounds (more likely to be marked with fox scats) or changes in the proportion of very old and inconspicuous mounds (less likely to be marked by foxes); values and patterns might change if these biases were considered (especially comparisons over large timeframes).

Our measures of fox activity (% mounds with scats, and scat weights) are not ideal, but they provide important information that is otherwise hard to obtain as well as other valuable information on fox diet as well (thanks to Peter Sandell's efforts). We will continue these efforts, and this year will be trialling the use of remote cameras to obtain alternative measures of fox abundance trends, as well as the trends in other species.

Which brings us, as always, to reiterate: *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.*

Table 1. The total weight of fox scats, the number of mounds at which fox scats were collected, for both 2012 and the previous year (italics). Malleefowl scats and feathers were also collected in 2012 but numbers have not been tabulated.

Grid	Name	Fox Scats			
		2012 Wt (g)	2012 Count	*2011 Wt (g)*	*2011 Count*
v01	Dattuck	321	15	*35*	*5*
v02	Torpeys	383	19	*214*	*17*
v03	Wathe SW	845	82	*818*	*35*
v04	Bronzewing	1377	65	*1326*	*62*
v05	Colignan	31	2	*54*	*6*
v07	Annuello	308	18	*498*	*23*
v08	Powerline	225	8	*77*	*4*
v09	Mt Hattah	106	7	*56*	*5*
v11	Mopoke	127	8	*193*	*11*
v12	Pheeneys	423	17	*302*	*19*
v13	Bambill	458	24	*432*	*22*
v14	Menzies	153	8	*170*	*11*
v15	Wandown	130	13	*335*	*27*
v16	South Bore	456	27	*242*	*16*
v18	Washing Machine	96	10	*213*	*15*
v19	Underbool	350	14	*130*	*8*
v20	Lowan	265	21	*241*	*23*
v21	Dumosa	176	19	*360*	*21*
v23	Moonah	1459	52	*1073*	*48*
v24	Kiata	107	7	*15*	*2*
v26	Hattah Tracks	295	16	*256*	*11*
v27	O'Brees	156	11	*134*	*8*
v28	Nurcoung	179	11	*53*	*9*
v29	Wedderburn	11	3	*55*	*4*
v30	Hattah South	37	5		*3*
v31	Skinners Flat	56	8	*68*	*5*
v32	Wychitella	30	2	*44*	*2*
v33	Korong Vale	49	4	*8*	*1*
v34	Paradise	606	35	*390*	*20*
v35	Broken Bucket	141	5	*85*	*4*
v36	Broughtons WH	0	0	*4*	*2*
V37	Wisemans	38	7		
v38	Tooan	40	3	*16*	*3*
V39	Oldfields	69	4		
V41	Mali Dunes	0	0		
		9,503	550	*7,897*	*452*

6. Concluding comments

The VMRG has once again made a critically important contribution to Malleefowl conservation by monitoring trends in Malleefowl breeding numbers and collecting important information on trends in numbers of foxes and other species, and foods such as lerp. The data collected is of excellent quality, and are being used to evaluate the trends and requirements of the species. In particular, the Adaptive Management project led by Drs Michael Bode, Cindy Hauser and Jose Lahoz-Monfort at Melbourne University is now gearing up to develop a program that will make the best use of the ongoing flow of monitoring data to better manage Malleefowl.

This past season we have had wonderful news from our efforts that has shown that Malleefowl numbers have bounced back and the conservation of the species is in a better position than it has been for the past two decades. Good rains and maturing habitats appear to underlie the high breeding numbers, and Malleefowl have clearly demonstrated that they have the resilience to make a comeback when conditions are favourable. This resilience is of the utmost importance, but we should not be complacent: the climate is known to be changing and fire management in the mallee has become a controversial and political issue in which state-wide burn quotas are given priority over ecological requirements of species. While we cannot do a great deal directly about rainfall, we can and should object to the scant regard politicians are giving to the ecology of our natural habitats in the mallee and to their insistence that the agencies burn large swathes of public land in order to attain arbitrary quotas. Current burn quotas in the mallee are politically driven, unsustainable and if effected, would pose the greatest risk to Malleefowl conservation (and a large number of other species) since the clearing of the last century. Please discuss this issue with your local member.

Finally, it is with great sadness that we note the passing of Ann Stokie. Ann made a profound and lasting contribution to the VMRG, guiding its development from the beginning and taking the lead on many important issues. She will be greatly missed.

Joe Benshemesh and Peter Stokie

March 2012

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

Appendix A 1. 2012/13 Mound Inspection Report for All Victorian Sites

Mounds that will be included in future annual lists.

	Sites	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Sought and found	1163	79	52	88	100	15	49	17	14		15	24	38	24	89	42		26	22	63	35	13	61	8	6	24	20	20	10	9	12	10	5	87	6	8	54	8	4	6		
New incidental	17				1				1				1					1			1	2		1										1				2		3	3
Sought, NOT found	5																											1								2	1		1		
NOT sought or found	11		1				3														1							2								1	2		1			
Total	1196	79	53	88	101	15	52	17	15		15	24	39	24	89	42		27	22	63	37	15	61	9	6	24	20	23	10	9	12	10	5	88	6	9	58	9	7	7	3	3

Mounds that have been PREVIOUSLY marked for checking every 5th year.

	Sites	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Sought and found	36	1	3	9	6			2											1		1	5	6					1			1											
New incidental																																										
Sought, NOT found	1																																			1						
NOT sought or found	43			4								2		2	6						4	1	1	8				1	1		6	3	3			1					
Total	80	1	3	13	6			2				2		2	6				1		5	6	7	8				2	1		7	3	3			2					

Mounds that have been NEWLY marked for checking every 5th year.

	Sites	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Sought and found	11				3									2	3			1												2											
New incidental																																										
Sought, NOT found																																										
NOT sought or found	11						1				1	1		2	4																1	1										
Total	22				3		1				1	1		4	7			1												2	1	1										

Mounds that will be omitted from annual lists (erronous records, and mounds well outside grid boundaries).

	Sites	1	2	3	4	5	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Sought and found	1			1																																						
New incidental																																										
Sought, NOT found	1			1																																						
NOT sought or found																																										
Total	2			2																																						

Grand Total	1300	80	56	103	110	15	53	19	15	0	16	27	39	30	102	42	0	28	23	63	42	21	68	17	6	24	20	25	11	11	20	14	8	88	6	11	58	9	7	7	3	3

Appendix A 2. 2012/13 Details of Mounds Not found, New, or Omitted

These mounds will be included in future annual lists.

Previously known mounds that were neither sought nor found.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
2	55			Missing record auto created and validated, no photo exists.
7	3			Missing record auto created and validated, no photo exists.
7	69			Missing record auto created and validated, no photo exists.
7	98			Missing record auto created and validated, no photo exists.
21	34			Missing record auto created and validated, no photo exists.
28	36			Missing record auto created and validated, no photo exists.
28	41			re-field notebook entry (pstokie email to jb 3/12/12): "Gil has searched for this mound for two years now since it was first identified in a search. I remember it as Gil describes, flat and full of gravel, rock hard, but was identifiable as a vague Mf mound, but barely distinguishable". Accordingly, have omitted it from future monitoring lists
36	11			Missing record auto created and validated, no photo exists.
37	12			Missing record auto created and validated, no photo exists.
37	43			Missing record auto created and validated, no photo exists.
39	5			Missing record auto created and validated, no photo exists.

Previously recorded and sought in monitoring, but not found.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
28	43	50m search no nest		No data, no photo, not found despite 50m search. May be wrong location?
37	13	no stakel No mound after search		
37	14	not found. n0 stake..clearing only.		
38	5	don't think it is a mound		Observer said 'not a mound' and i checked last year photo. Not much here! Record came from Peter Hawker and may not be at correct location. in any case, no reason to recheck this location
40	1			Area bulldozed, mound and habitat completely gone. Omitted from future monitopring

New mounds encountered incidentally during monitoring.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
13	40			
39	4			Location way off but ID confirmed by comparing photo with previous years
41	1			
41	2			
41	3			

These mounds have been marked for monitoring only every fifth year.

Previously known mounds that were neither sought nor found.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
3	5			5yr mound not due for monitoring
3	39			5yr mound not due for monitoring
3	60			5yr mound not due for monitoring
3	80			5yr mound not due for monitoring
7	102			5yr mound not due for monitoring
11	7			5yr mound not due for monitoring
12	19			5yr mound not due for monitoring
12	21			5yr mound not due for monitoring
12	26			5yr mound not due for monitoring
14	26			5yr mound not due for monitoring
14	30			5yr mound not due for monitoring
14	34			5yr mound not due for monitoring
14	36			5yr mound not due for monitoring
15	27			5yr mound not due for monitoring
15	223			5yr mound not due for monitoring
15	227			5yr mound not due for monitoring
15	228			5yr mound not due for monitoring
15	242			5yr mound not due for monitoring
15	243			5yr mound not due for monitoring
15	244			5yr mound not due for monitoring
15	266			5yr mound not due for monitoring
15	269			5yr mound not due for monitoring
15	270			5yr mound not due for monitoring
21	7			5yr mound not due for monitoring
21	33			5yr mound not due for monitoring
21	35			5yr mound not due for monitoring
21	36			5yr mound not due for monitoring
22	10			5yr mound not due for monitoring
23	47			5yr mound not due for monitoring
24	5			5yr mound not due for monitoring

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
24	6			Missing record auto created and validated, no photo exists
24	7			5yr mound not due for monitoring
24	8			5yr mound not due for monitoring
24	15			5yr mound not due for monitoring
24	16			5yr mound not due for monitoring
24	18			5yr mound not due for monitoring
24	99			5yr mound not due for monitoring
28	29			5yr mound not due for monitoring
29	4			5yr mound not due for monitoring
31	1			5yr mound not due for monitoring
31	2			5yr mound not due for monitoring
31	3			5yr mound not due for monitoring
31	5			5yr mound not due for monitoring
31	8			5yr mound not due for monitoring
31	11			5yr mound not due for monitoring
31	19			5yr mound not due for monitoring
32	1			5yr mound not due for monitoring
32	3			5yr mound not due for monitoring
32	7			5yr mound not due for monitoring
32	14			5yr mound not due for monitoring
33	4			5yr mound not due for monitoring
33	5			5yr mound not due for monitoring
33	8			5yr mound not due for monitoring
36	-99			5yr mound not due for monitoring

Previously recorded and sought in monitoring, but not found.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
36	5	onjjy yague position		

5yr optional mounds that were sought and found

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
1	32			
2	47			
2	52	5 year		data collector requested this mound be placed on 5yr list: ADDED TO 5YR after inspecting data, photos and history
2	59			
3	3			
3	4			
3	9			Location way off but ID confirmed by comparing photo with previous years
3	17	very old		
3	90	5 yr?		
3	98	5 yr?		
3	103			
3	105			
3	107			
4	16	No change		
4	33			
4	42			
4	48			
4	56	No change		
4	68			
4	95	No change		
4	113			
4	119	no stake OR tag -		
8	14			
8	17			
14	14			
14	15			
15	28			Photo exists but no data so Date, Sought and Found have been set to defaults. MM seems to have undergone hard reset and no backup. SEE IMAGE FOR DATE
15	200			Photo exists but no data so Date, Sought and Found have been set to defaults. MM seems to have undergone hard reset and no backup. SEE IMAGE FOR DATE. Stated active by observer on paper list
15	251			Photo exists but no data so Date, Sought and Found have been set to defaults. MM seems to have undergone hard reset and no backup. SEE IMAGE FOR DATE. Stated inactive by observer on paper list
18	17			No location but ID confirmed by comparing photo with previous years
19	23			Location way off but ID confirmed by comparing photo with previous years

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
22	5			
22	8			
22	11	flat as		
22	14			
22	18			
23	6	delete		
23	8			
23	53			
23	55			
23	56			
23	65			
28	38			
30	3			
30	4	suggest that this isn't nest		2012: psandell questioned whther this is a nest and looking at photos the faint mound that was there is now gone and becoming overgrown. Accordingly, there is nothing visible for mf to return to and the mound has been omitted from future lists.
31	17	is this a mound?.not sure it is . oval shape and Very deep . no stn		

These mounds will be omitted from future lists.

Previously known mounds that were neither sought nor found.

Previously recorded and sought in monitoring, but not found.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
3	123	does not exist. gps labeled 123 as 127		does not exist. since 2009 has been searched for but never found (when it has been recorded it has actually been 127). i have backdated delete to 2009 to avoid confusion, but left this record as a trace even though mound is deleted. note that photo for 123 from 2009 =mound 127

Other reasons.

Site	Mound	Monitor's Notes	Co-ordinator's Comments	Ecologist's Comments and Change Log
3	94	5 yr? Photo from south.		

Appendix A 3a. 2011/12 Activity by Site (Grid)

Site	Part	Total Mounds	Active	Not Active	Not Found	*Active Last Year*	change
1	A	53	**4**	49		*2*	↑
1	B	27	**2**	25		*1*	↑
2	A	55	**4**	50			
3	A	85	**11**	69	5	*9*	↑
4	A	55	**13**	42		*9*	↑
4	B	32	**11**	21		*8*	↑
5	A	15	**5**	10		*1*	↑
7	A	19	**3**	15	1	*1*	↑
7	B	8	**1**	7		*3*	↓
7	C	10	**3**	7		*2*	↑
8	A	18	**6**	12		*2*	↑
9	A	15	**2**	13		*0*	↑
11	A	16	**7**	8	1	*4*	↑
12	A	25	**6**	16	3	*4*	↑
13	A	39	**6**	33		*5*	↑
14	A	30	**6**	20	4	*5*	↑
15	A	42	**17**	23	2	*9*	↑
15	B	18	**6**	8	4	*6*	
15	C	26	**11**	14	1	*8*	↑
15	T	16	**3**	10	3	*2*	↑
16	A	42	**4**	38		*5*	↓
18	A	28	**4**	24		*6*	↓
19	A	23	**5**	18		*1*	↑
20	A	48	**2**	46		*2*	
20	B	15	**0**	15		*0*	
21	A	36	**7**	24	5	*4*	↑
22	A	17	**1**	15	1	*0*	↑
23	A	51	**16**	34	1	*8*	↑
24	A	17	**1**	9	7	*1*	
25	A	6	**1**	5		*1*	
26	A	25	**5**	20		*5*	
27	A	20	**3**	17		*1*	↑
28	A	25	**6**	15	4	*7*	↓
29	A	10	**0**	9	1	*0*	
29	T	1	**0**	1		*0*	
30	A	11	**3**	8		*1*	↑
31	A	20	**0**	13	7	*0*	
32	A	14	**1**	9	4	*1*	
33	A	8	**1**	5	3	*1*	
34	A	88	**12**	76		*11*	↑
35	A	6	**0**	6		*1*	↓
36	A	5	**0**	4	1	*0*	
36	B	5	**1**	3	1	*1*	
37	A	58	**1**	53	4		↑
38	A	9	**1**	7	1	*2*	↓
39	A	7	**0**	6	1	*2*	↓
40	A	7	**0**	7	1	*0*	
41	A	3	**1**	2			
42	A	3	**1**	2			
Totals		1212	**204**	943	67	*146*	

Appendix A 3b. 2012/13 Activity Out Of Site Boundaries

Site	Part	Total Mounds	Active	Not Active	Not Found	*Active Last Year*	
2	O	1	**0**	1	0	*0*	
3	O	18	**1**	17	0	*3*	↓
4	O	23	**6**	17	0	*3*	↑
7	O	16	**2**	11	3	*2*	
8	O	1	**0**	1	0	*0*	
12	O	2	**1**	1	0	*1*	
21	O	5	**1**	4	0	*1*	
22	O	2	**0**	2	0	*0*	
23	O	18	**3**	15	0	*2*	↑
24	O	1	**0**	0	1	*0*	↑
36	O	1	**0**	0	1	*0*	↑
Totals		88	**14**	69	5	*12*	

Appendix A 3c. 2011/12 Active Mound List

Site	Total Mounds	Mound #
v01	6	27
		35
		63
		68
		72
		75
v02	4	9
		11
		30
		63
v03	12	8
		20
		25
		27
		31
		33
		34
		41
		91
		121
		124
		129
v04	30	3
		6
		9
		11
		15
		17
		26
		30
		32
		34
		35
		39
		45
		52
		54
		59
		61
		66
		70
		73
		80
		81
		82
		85
		90
		92
		27

Site	Total Mounds	Mound
v04		94
		114
		116
		117
v05	5	1
		2
		4
		6
		12
v07	9	15
		16
		17
		20
		22
		24
		61
		99
		101
v08	6	1
		4
		6
		8
		9
		18
v09	2	4
		9
v11	7	3
		4
		6
		8
		10
		14
		16
v12	7	1
		2
		5
		8
		9
		17
		23
v13	6	3
		7
		8
		11
		27
		35
v14	6	12
		18
v24	1	3

Site	Total Mounds	Mound #
v14		21
		23
		28
		33
v15	37	8
		10
		14
		16
		23
		30
		38
		42
		61
		65
		83
		86
		87
		89
		91
		93
		94
		96
		103
		105
		107
		200
		203
		212
		215
		217
		222
		224
		229
		233
		245
		246
		248
		252
		262
		268
		272
v16	4	2
		18
		20
		24
v18	4	4
		7
		18
v34	12	6

Site	Total Mounds	Mound #
v19	5	5
		9
		11
		14
		27
v20	2	34
		37
v21	8	5
		8
		9
		11
		13
		15
		26
		43
v22	1	3
v23	19	3
		5
		10
		12
		13
		15
		18
		19
		30
		35
		37
		40
		43
		51
		52
		57
		58
		66
		72

Site	Total Mounds	Mound
v25	1	3
v26	5	4
		15
		17
		26
		27
v27	3	3
		16
		19
v28	6	1
		3
		4
		6
		16
		40
v30	3	1
		2
		7
v32	1	6
v33	1	9

Site	Total Mounds	Mound #
		11
		12
		16
		38
		47
		63
		67
		71
		81
		91
		97
v36	1	14
v37	1	48
v38	1	4
v41	1	1
v42	1	2

Appendix A 4. 2012/13 Nests Needing Tags or Stakes

Site	Mound	Note
v01 needs 0 stakes, 1 **tag:**	**v01_082**	Needs Tag
v02 needs 1 stake, 1 **tag:**	**v02_056**	Needs Stake & Tag
v04 needs 1 stake, 1 **tag:**	**v04_119**	Needs Stake & Tag
v15 needs 1 stake, 1 **tag:**	**v15_276**	Needs Stake & Tag
v20 needs 1 stake, 1 **tag:**	**v20_069**	Needs Stake & Tag
v22 needs 1 stake, 1 **tag:**	**v22_020**	Needs Stake & Tag
v23 needs 1 stake, 1 **tag:**	**v23_071**	Needs Stake & Tag
v25 needs 6 stakes, 6 **tags:**	**v25_001**	Needs Stake & Tag
	v25_002	Needs Stake & Tag
	v25_003	Needs Stake & Tag
	v25_004	Needs Stake & Tag
	v25_005	Needs Stake & Tag
	v25_006	Needs Stake & Tag
v26 needs 1 stake, 1 **tag:**	**v26_024**	Needs Stake & Tag
v29 needs 1 stake, 2 **tags:**	**v29_001**	Needs Tag
	v29_005	Needs Tag
	v29_010	Needs Stake
v31 needs 1 stake, 1 **tag:**	**v31_017**	Needs Stake & Tag
v34 needs 1 stake, 1 **tag:**	**v34_097**	Needs Stake & Tag
v36 needs 0 stake, 3 **tags:**	**v36_012**	Needs Tag
	v36_013	Needs Tag
	v36_014	Needs Tag
v37 needs 1 stake, 1 **tag:**	**v37_007**	Needs Stake & Tag
v39 needs 4 stake, 4 **tags:**	**v39_001**	Needs Stake & Tag
	v39_002	Needs Stake & Tag
	v39_003	Needs Stake & Tag
	v39_006	Needs Stake & Tag
v40 needs 2 stake, 3 **tags:**	**v40_003**	Needs Tag
	v40_005	Needs Stake & Tag
	v40_007	Needs Stake & Tag

Appendix A 6. 2012/13 Frequencies of Animal Scats at Mounds

Site	Average Date	Mounds	Malleefowl	Fox	Kangaroo	Rabbit	Goat	Sheep	Emu	Echidna	Human	Dog	Cat
1	15/10/2012	80	1%	20%	25%				3%				
2	16/10/2012	55	11%	33%	27%		4%		4%	2%			
3	16/12/2012	98	10%	41%	33%	2%			1%			1%	
4	17/11/2012	110	29%	65%	24%	2%			1%	1%			
5	7/11/2012	15	47%	13%	73%	13%							
7	25/10/2012	49	16%	45%	14%								
8	26/01/2013	19	26%	37%	47%		37%						
9	27/01/2013	15		47%	80%	13%	33%		7%				
11	18/10/2012	15	40%	47%	7%								
12	25/02/2013	24	38%	63%	8%	4%							
13	15/10/2012	39	31%	62%	5%							3%	
14	27/10/2012	26	42%	27%	19%								
15	19/12/2012	92	7%	3%									
16	27/10/2012	42	52%	69%	76%		19%						
18	1/12/2012	28	25%	36%	29%		25%						
19	16/10/2012	23	22%	65%	26%		4%						
20	8/12/2012	63	11%	33%	52%	10%							
21	2/12/2012	36	44%	56%	50%	8%			3%				
22	14/01/2013	18	22%	6%	17%			11%	6%				
23	10/02/2013	68	41%	76%	75%	1%	3%						
24	17/11/2012	10	20%	60%	50%				10%				
25	3/11/2012	6	33%		50%								
26	23/01/2013	25	44%	68%	32%	8%							4%
27	1/12/2012	20	25%	55%	70%	10%							5%
28	21/11/2012	21	19%	38%	48%				5%				
29	29/11/2012	10		20%	80%	10%							
30	28/10/2012	11	9%	45%	82%		9%		9%				
31	28/10/2012	13		69%	92%								
32	20/10/2012	10		20%	80%								
33	30/11/2012	5	20%	###	80%								
34	27/11/2012	88	10%	39%	2%	1%			1%			7%	
35	9/01/2013	6	17%	83%	17%								
36	5/03/2013	8			88%								
37	18/10/2012	54	7%	13%	61%	2%			7%			2%	
38	15/11/2012	8		38%	25%	13%							
39	20/02/2013	6		83%	67%				17%				
40	13/01/2013	6	33%	50%	17%	33%							
41	21/01/2013	3	67%			33%							
42	28/11/2012	3			33%								
Totals		**1228**	**20%**	**42%**	**35%**	**2%**	**3%**	**0%**	**1%**	**0%**		**1%**	**0%**

Appendix A 7. 2012/13 Frequencies of Animal Prints at Mounds

Site	Average Date	Mounds	Malleefowl	Fox	Kangaroo	Rabbit	Goat	Sheep	Emu	Echidna	Human	Dog	Cat
1	15/10/2012	80	18%	3%	38%		0.01		6%		0.08	0.01	
2	16/10/2012	55	20%	15%	22%		5%		4%				
3	16/12/2012	98	33%	16%	20%				4%			1%	1%
4	17/11/2012	110	63%	25%	5%	5%			1%				
5	7/11/2012	15	60%	13%	27%				13%				
7	25/10/2012	49	59%	10%	6%								
8	26/01/2013	19	47%	21%			21%		5%				
9	27/01/2013	15	0.4	7%	33%		13%		13%				
11	18/10/2012	15	80%	27%			27%						
12	25/02/2013	24	29%	46%	8%		4%		4%				
13	15/10/2012	39	38%	26%	18%		18%						
14	27/10/2012	26	62%	31%	35%					12%			
15	19/12/2012	92	16%	7%	0.04								
16	27/10/2012	42	40%	10%	10%		5%						
18	1/12/2012	28	25%	11%	4%								
19	16/10/2012	23	30%	13%	9%		13%						
20	8/12/2012	63	14%	5%	22%				5%		2%		
21	2/12/2012	36	19%	11%	14%								
22	14/01/2013	18	11%	11%	39%								
23	10/02/2013	68	78%	32%	43%		1%		6%				
24	17/11/2012	10	50%	20%	30%								
25	3/11/2012	6	33%		50%								
26	23/01/2013	25	56%	24%	24%				4%				
27	1/12/2012	20	15%	25%	20%								
28	21/11/2012	21	48%	14%	67%				5%	5%			
29	29/11/2012	10			10%								
30	28/10/2012	11	27%		55%				9%				
31	28/10/2012	13		8%	38%	15%				31%			
32	20/10/2012	10			10%					30%			
33	30/11/2012	5											
34	27/11/2012	88	45%	8%	14%				8%	1%		3%	
35	9/01/2013	6	33%	17%									
36	5/03/2013	8	0.25	0.13	88%					13%			
37	18/10/2012	54	2%	4%	44%				2%	2%			
38	15/11/2012	8				13%				13%			
39	20/02/2013	6			67%	17%							
40	13/01/2013	6	17%										
41	21/01/2013	3	67%	0.33		33%							
42	28/11/2012	3	0.33										
Totals		**1228**	**35%**	**14%**	**21%**	**1%**	**2%**		**3%**	**1%**	**1%**	**0%**	**0%**

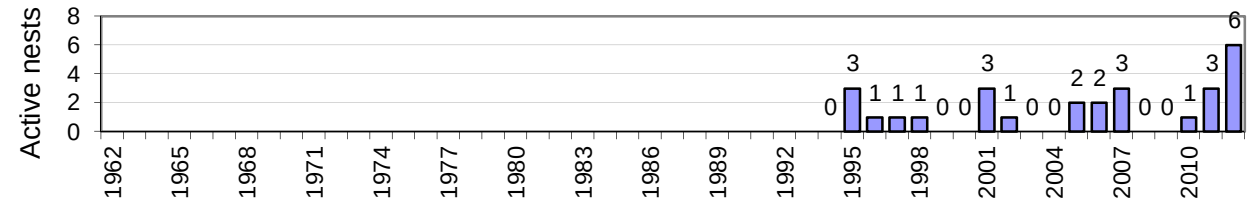
Appendix A 8. 2012/13 Lerp on Malleefowl Mounds

Site	Average Date	Mounds	None	Some	Lots	Any %	Some %	Lots %
v01	15/10/2012	80	76	4		5%	5%	0%
v02	16/10/2012	55	53	1		2%	2%	0%
v03	16/12/2012	98	97	1		1%	1%	0%
v04	17/11/2012	110	83	26	1	25%	24%	1%
v05	7/11/2012	15	12	2	1	20%	13%	7%
v07	25/10/2012	49	32	16		33%	33%	0%
v08	26/01/2013	19	19			0%	0%	0%
v09	27/01/2013	15	15			0%	0%	0%
v011	18/10/2012	15	14	1		7%	7%	0%
v012	25/02/2013	24	22	1		4%	4%	0%
v013	15/10/2012	39	38	1		3%	3%	0%
v014	27/10/2012	26	23	3		12%	12%	0%
v015	19/12/2012	92	18	3		3%	3%	0%
v016	27/10/2012	42	42			0%	0%	0%
v018	1/12/2012	28	26			0%	0%	0%
v019	16/10/2012	23	22	1		4%	4%	0%
v020	8/12/2012	63	62	1		2%	2%	0%
v021	2/12/2012	36	29	4	2	17%	11%	6%
v022	14/01/2013	18	18			0%	0%	0%
v023	10/02/2013	68	68			0%	0%	0%
v024	17/11/2012	10	9			0%	0%	0%
v025	3/11/2012	6	5		1	17%	0%	17%
v026	23/01/2013	25	25			0%	0%	0%
v027	1/12/2012	20	7	8	5	65%	40%	25%
v028	21/11/2012	21	21			0%	0%	0%
v029	29/11/2012	10	10			0%	0%	0%
v030	28/10/2012	11	11			0%	0%	0%
v031	28/10/2012	13	10	2	1	23%	15%	8%
v032	20/10/2012	10	6	2	2	40%	20%	20%
v033	30/11/2012	5	4	1		20%	20%	0%
v034	27/11/2012	88	87	1		1%	1%	0%
v035	9/01/2013	6	6			0%	0%	0%
v036	5/03/2013	8	8			0%	0%	0%
v037	18/10/2012	54	52			0%	0%	0%
v038	15/11/2012	8	7	1		13%	13%	0%
v039	20/02/2013	6	6			0%	0%	0%
v040	13/01/2013	6	3			0%	0%	0%
v041	21/01/2013	3	3			0%	0%	0%
v042	28/11/2012	3	3			0%	0%	0%
Totals	**28/11/2012**	**1228**	**1052**	**80**	**13**	**8%**	**7%**	**1%**

Appendix B Site Trends

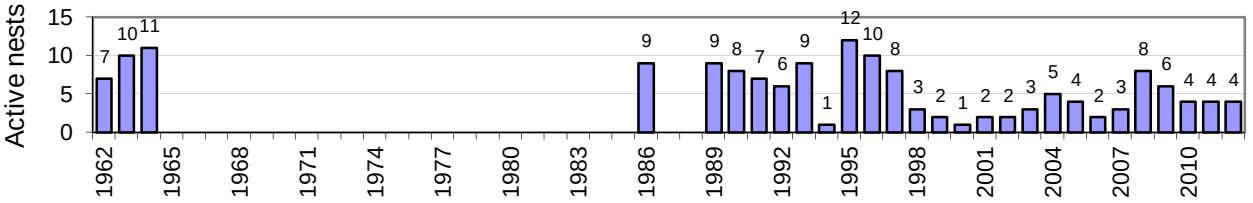
01 Dattuck

Eastern Big Desert



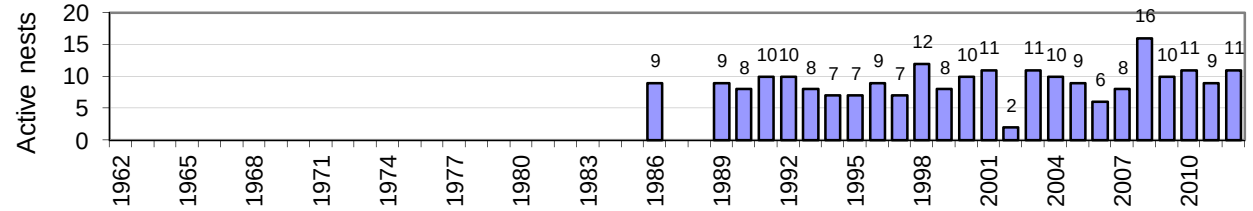
02 Torpey's

Eastern Big Desert



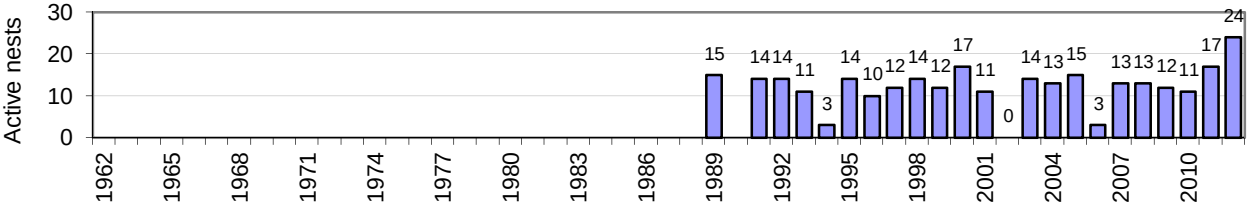
03 Wathe SW

Eastern Big Desert



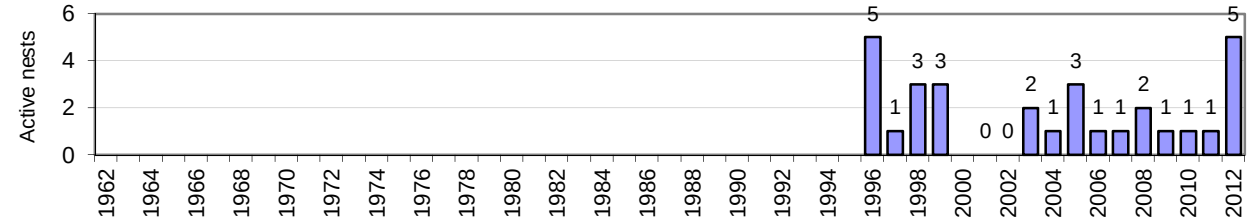
04 Bronzewing

Eastern Big Desert



05 Colignan

North West



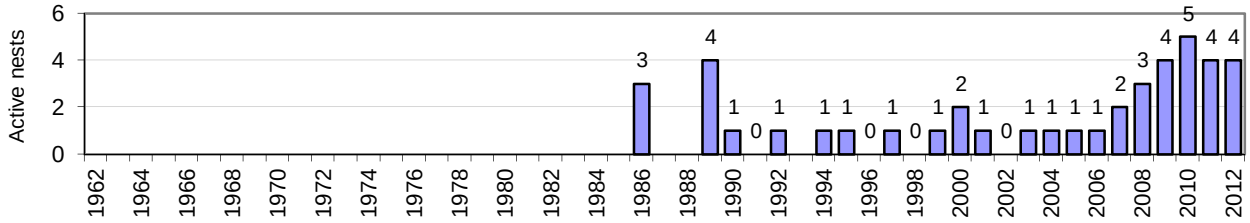
Season

Appendix B Site Trends

07 Annuello

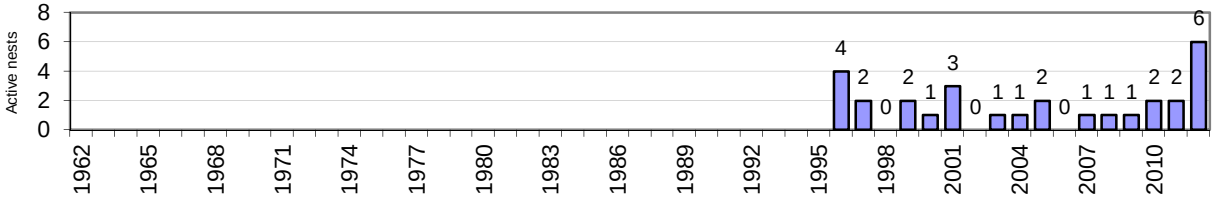
Note: active mounds in 07 part C not shown

North East



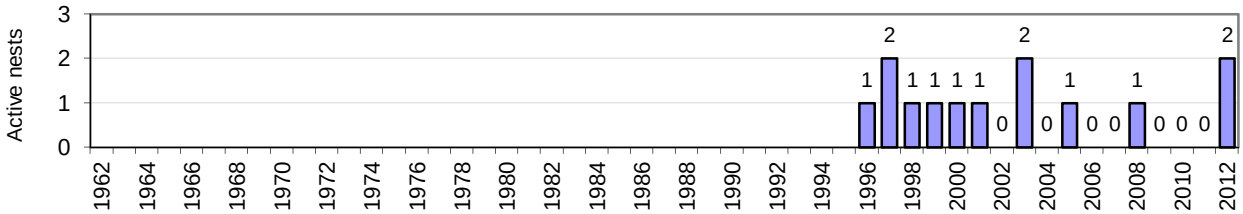
08 Powerline

North West



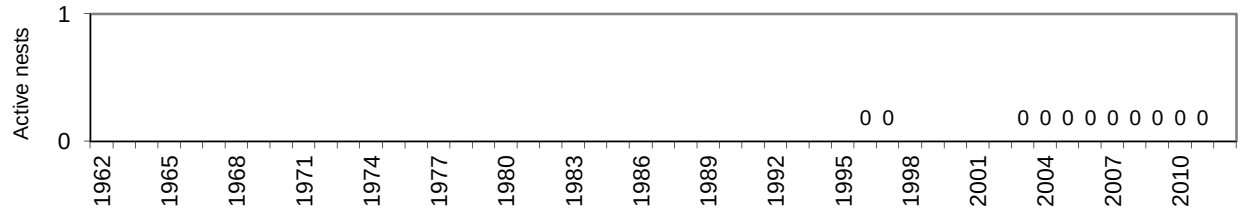
09 Mt Hattah

North West



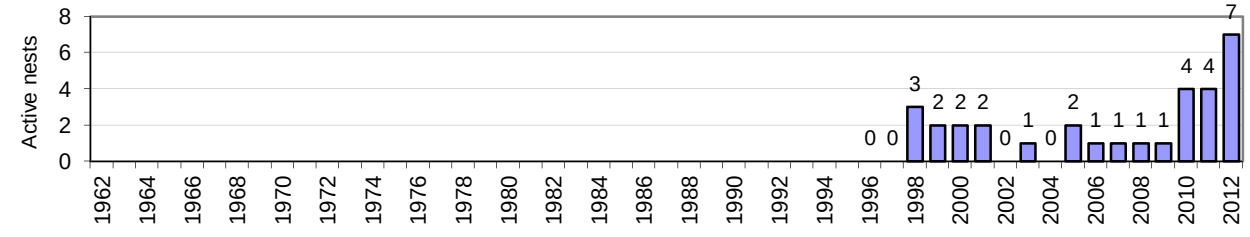
10 1 Tree BNT

North West



11 Mopoke

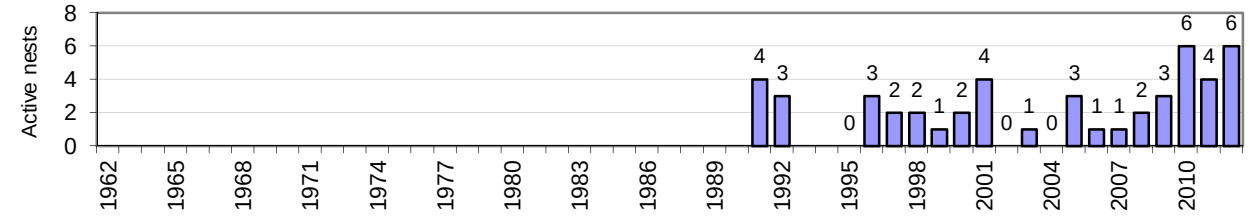
North West



Appendix B Site Trends

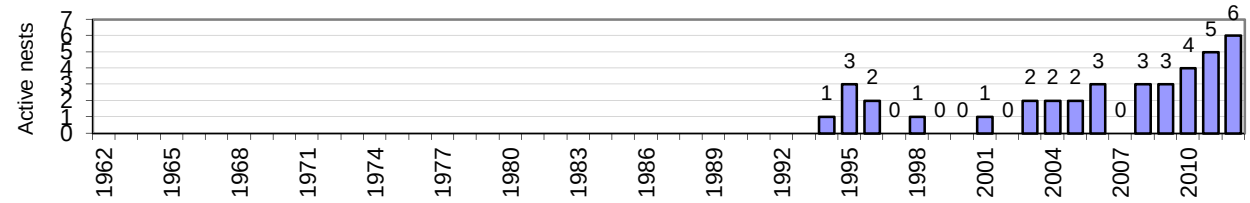
12 Pheeneys

North West



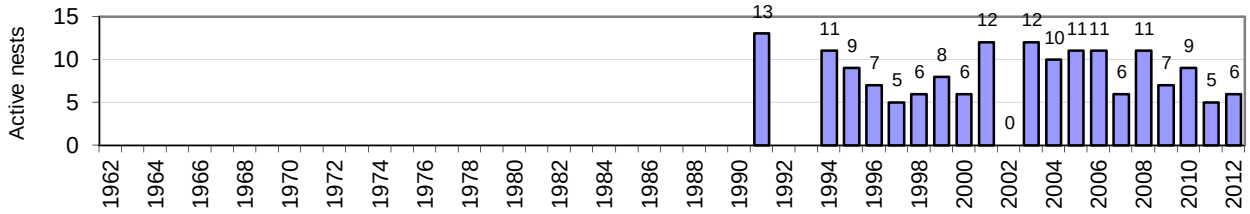
13 Bambill

North West



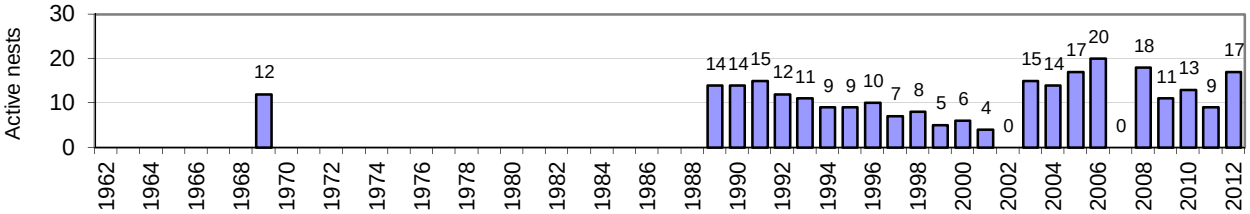
14 Menzies

North East



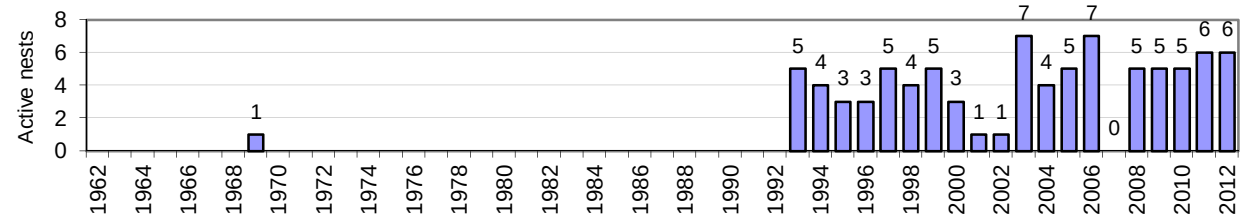
15 Wandown Part A

North East



15 Wandown Part B

North East



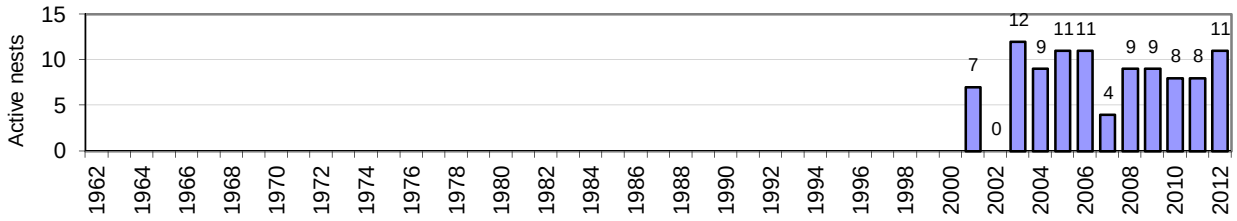
Season

Appendix B Site Trends

15 Wandown Part C

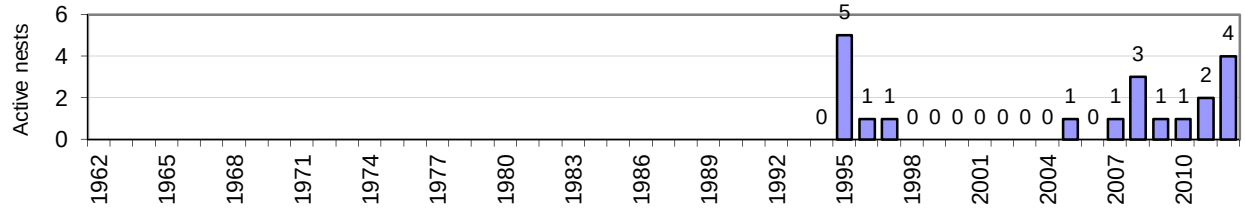
Note: active mounds in 15 part D not shown

North East



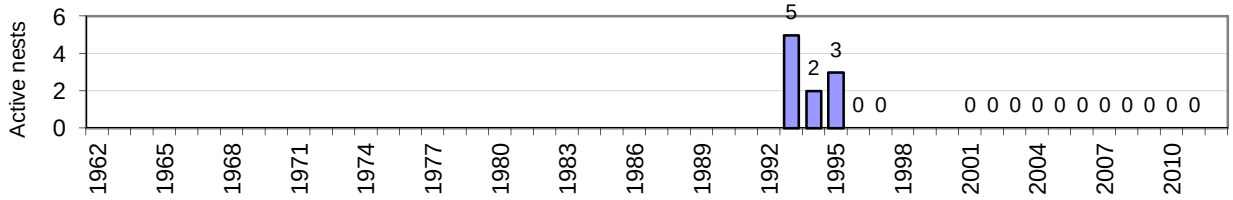
16 South Bore

North West



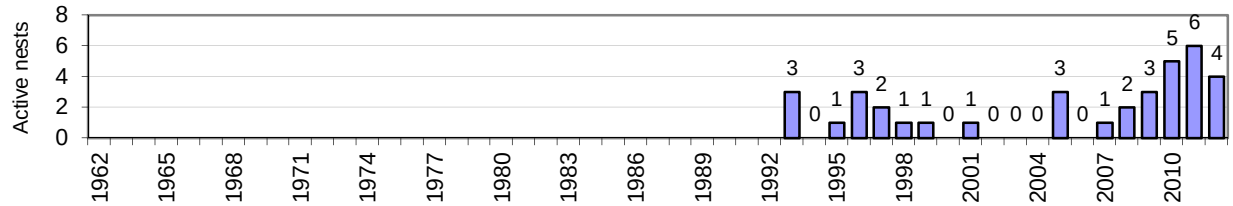
17 One Tree Plain

North West



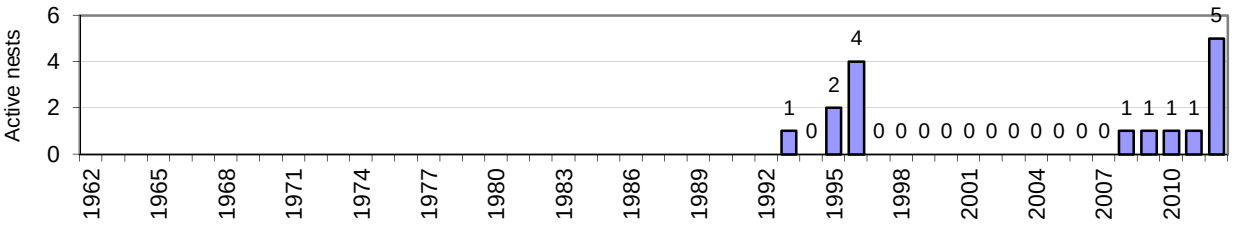
18 Washing Machine

North West



19 Cowangie/Underbool

North West

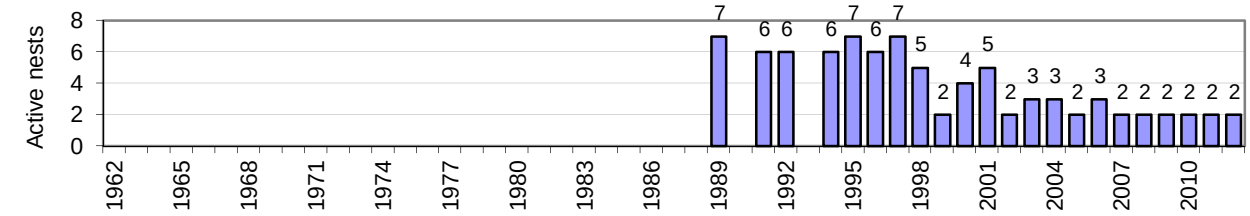


Season

Appendix B Site Trends

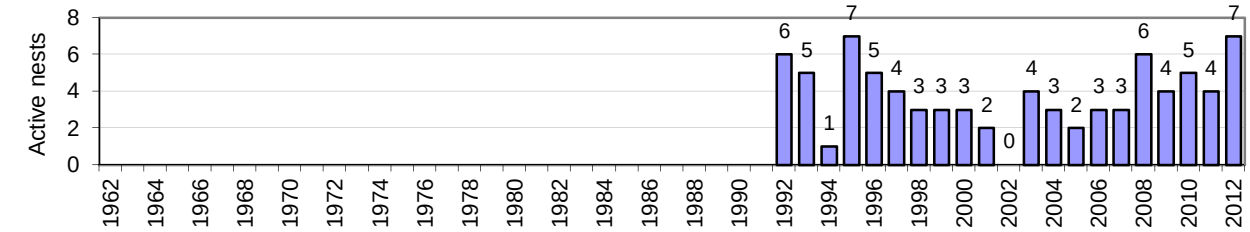
20 Lowan

Eastern Big Desert



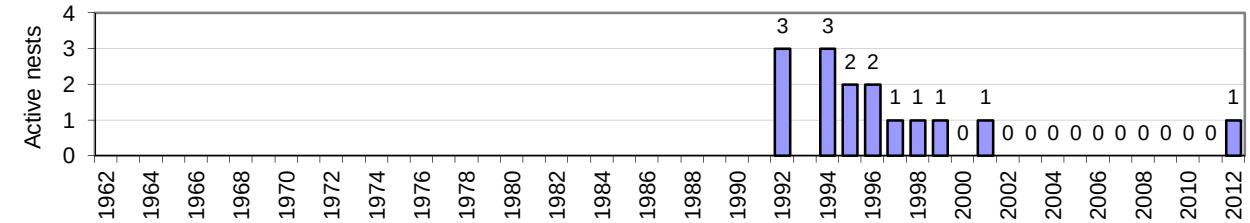
21 Dumosa

North West



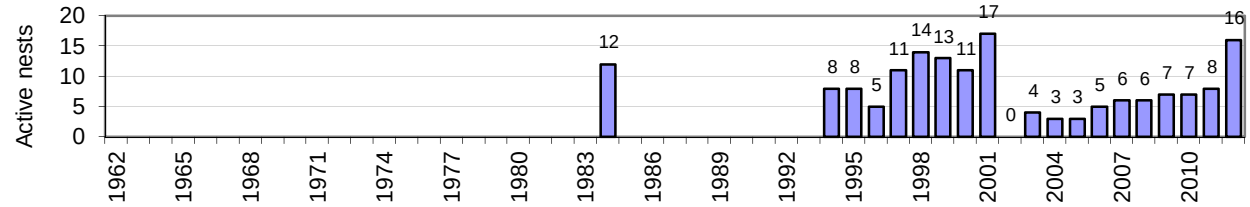
22 Denning

North West



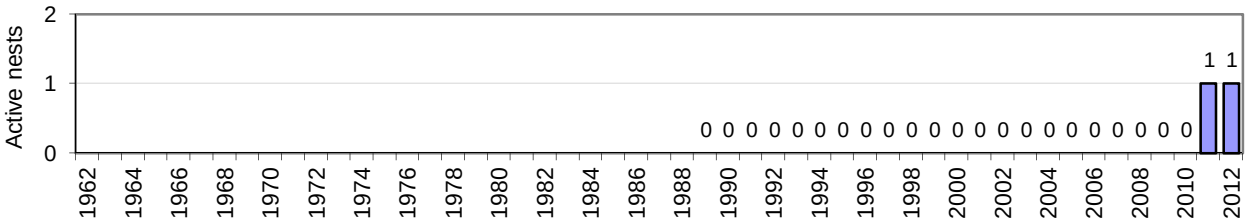
23 Moonah

Eastern Big Desert



24 Kiata

North East



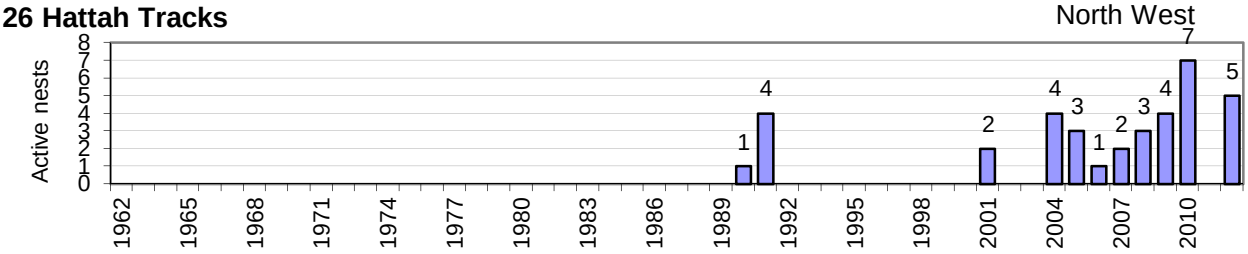
v25 does not exist

Season

Appendix B Site Trends

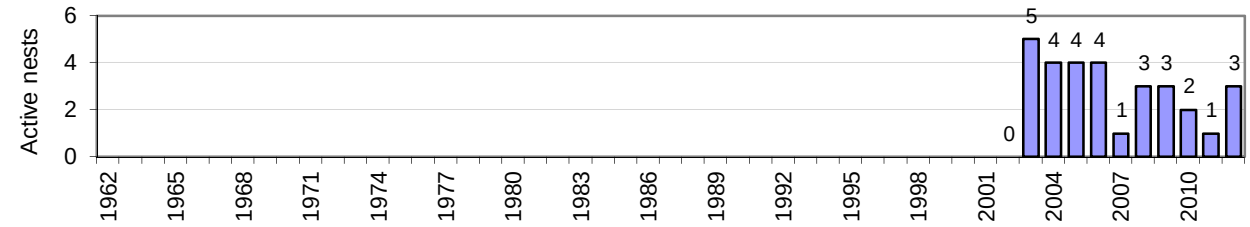
26 Hattah Tracks

North West



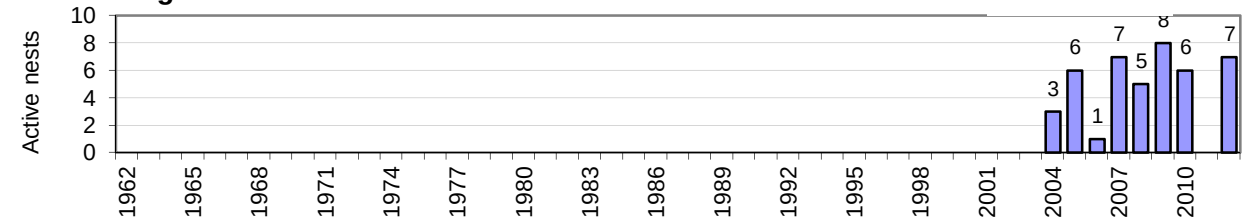
27 O'Brees

North East



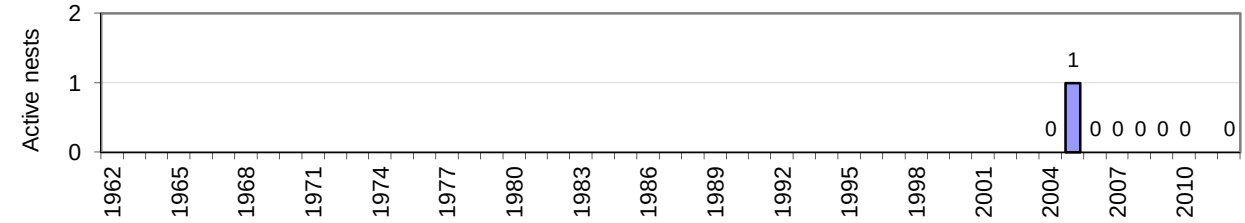
28 Nurcoung

Little Desert



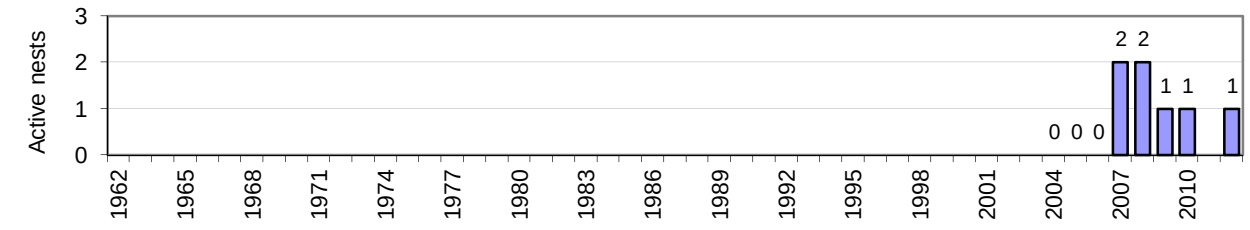
29 Wedderburn

Wychitella NCR



30 Hattah South

North West

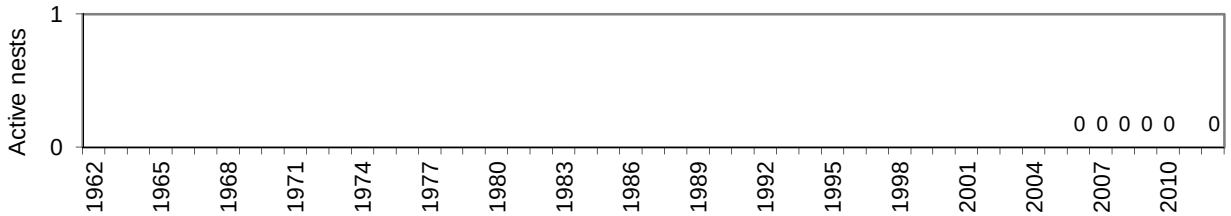


Season

Appendix B Site Trends

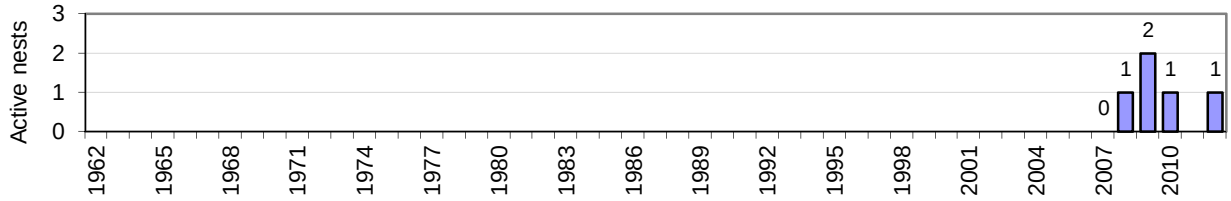
31 Skinners Flat

Wychitella NCR



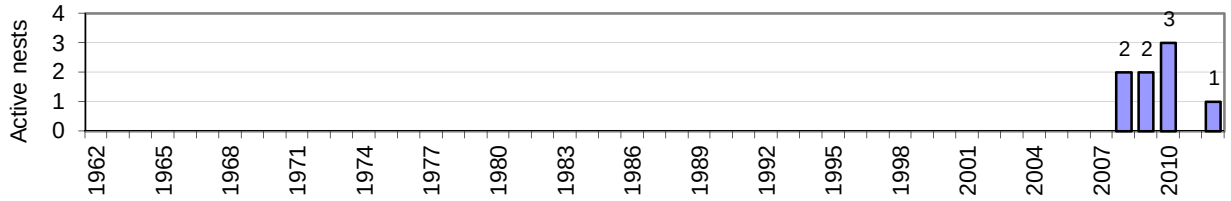
32 Wychitella

Wychitella NCR



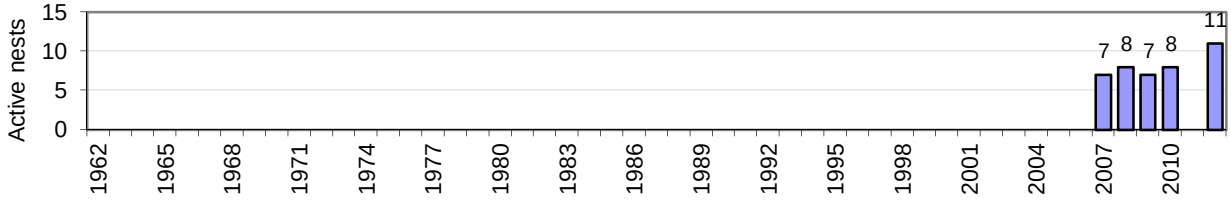
33 Korong Vale

Wychitella NCR



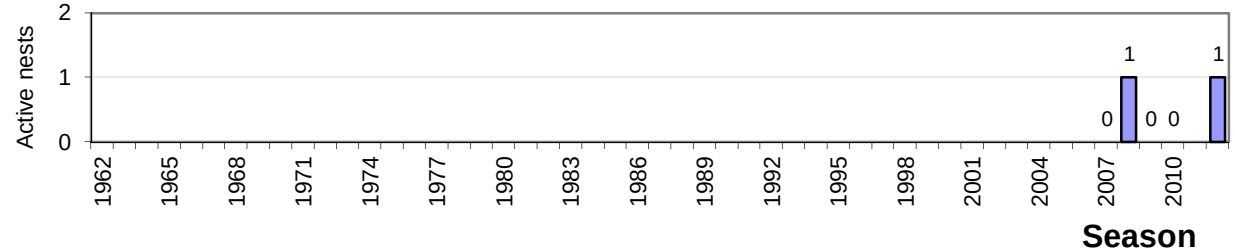
34 Paradise

Eastern Big Desert



35 Broken Bucket

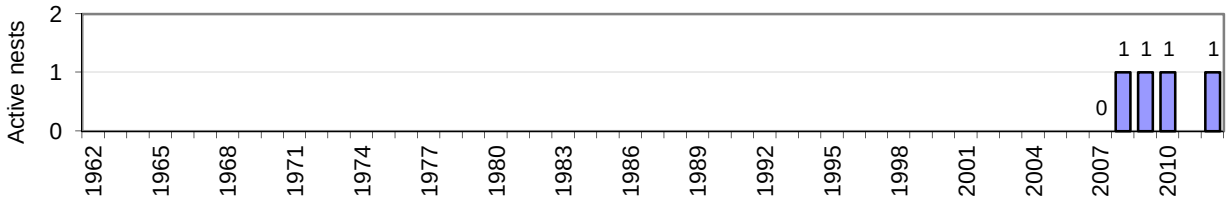
Western Big Desert



Appendix B Site Trends

36 Boughtons WH

Little Desert



Season