



# **Malleefowl Monitoring in Victoria: 2008/9**

*Report to the Victorian Malleefowl Recovery Group*

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## **1. Monitoring effectiveness**

The VMRG visited 1169 Malleefowl nests during the 2007/8 breeding season, including 8 newly recorded mounds scattered among six sites. Appendix A.1 shows a breakdown of the effectiveness of the monitoring effort and the overall result is once again very impressive (as always!). A total of 8 mounds could not be found and while most of these were probably just forgotten, two of these have been omitted from future lists as they were bogus or duplicate records, and one mound has been added to the “5-year list” (detailed in Appendix 2). Thus, there were only five mounds that we should have visited but did not, meaning that 99.6% of mounds were successfully monitored; another remarkably good effort, yet hardly exceptional by the high VMRG standards!

The VMRG also organised a thorough search of a new site at Wathe FFR that was burnt in the wildfire that ripped through the reserve in November 2007. The new site is v37 and is temporarily named ‘Wathe Burnt’ and was set up to sample this habitat before regrowth obscures all. 58 mounds were located in the 400 ha search (2km by 2km) and by all accounts the search was thorough and was well organised by Ron Wiseman. These mounds have yet to be permanently marked, monitored and photographed, but we expect that this will happen over the next few weeks. There is no great rush as there would not have been any breeding activity at the site since it was burnt, but it is very important to get an idea of how many of these mounds were active at the time of the fire so that we have a benchmark for recovery. After these mounds are marked and documented, we plan for this site to be monitored only every five years until some signs of Malleefowl are observed.

Three other attempts were made to search sites in 2008. The Mid Murray Field Naturalists successfully searched those portions of Wandown v15 that have not previously been searched (at least not since 1970 when the MMFN searched most of the reserve) so that now we have information covering the entire reserve. Students from Bendigo TAFE attempted to search Powerline v08 but only completed a portion of this site. And the Land Rover Owners' Club Victoria Mobile Landcare Group and VMRG valiantly attempted Washing Machine v18 (a difficult site for various reasons) but were thwarted by heavy rain and reluctantly had to abandon the effort.

## **2. Malleefowl Breeding numbers**

Of the 1169 mounds that were monitored in 2008/9, an astonishing 151 were active (143 of which were in the Common Set; see Appendix IIIc) which is by far the highest total count of active mounds we have ever observed (see Appendix 2 for individual site trends). This result is in stark contrast to last year when a total of only 80 active mounds were recorded (75 of which were within the Common Set; see Appendix IIIc). There were several contributing factors to this high breeding count:

- 1) New sites. Several new sites were added to the monitoring over the past year or two, such as Paradise v34, Korong Vale v33, Broughton’s v35 and Broken Bucket v36. Collectively, there were 12 active mounds in these four sites that have only been monitored for one to two years.
- 2) Burnt sites. Wildfires burnt most of the Wathe FFR in November 2007 and substantial parts of our monitoring sites in this reserve (Torpey’s v02 and Wathe SW v03). Breeding numbers within the two monitoring sites increased markedly in 2008 to 24 active mounds compared with an average of about 12 over the previous 5 years, even though the amount of available habitat

remaining within these sites decreased. The likely reason for this increase is that many Malleefowl survived the fire but were left homeless and have moved into the limited unburnt habitat where they have bred. Thus, increases at Wathe represent a shift of breeding birds rather than an intrinsic increase as such. Similarly, Annuello v07 showed a large increase from an average of about two active mounds over the past five years to six active mounds in 2008. Breeding numbers in v07 may have been affected by a fire in January 2007 that burnt several hundred hectares immediately south of the monitoring site. Although breeding numbers did not increase markedly in Annuello v07 last season, it was a very dry year and this may have hidden an influx of breeding birds until the current season. In total, it seems likely that the fires at Wathe and Annuello have pushed as many as 18 extra breeding pairs into our monitoring sites in these areas than we would ordinarily expect.

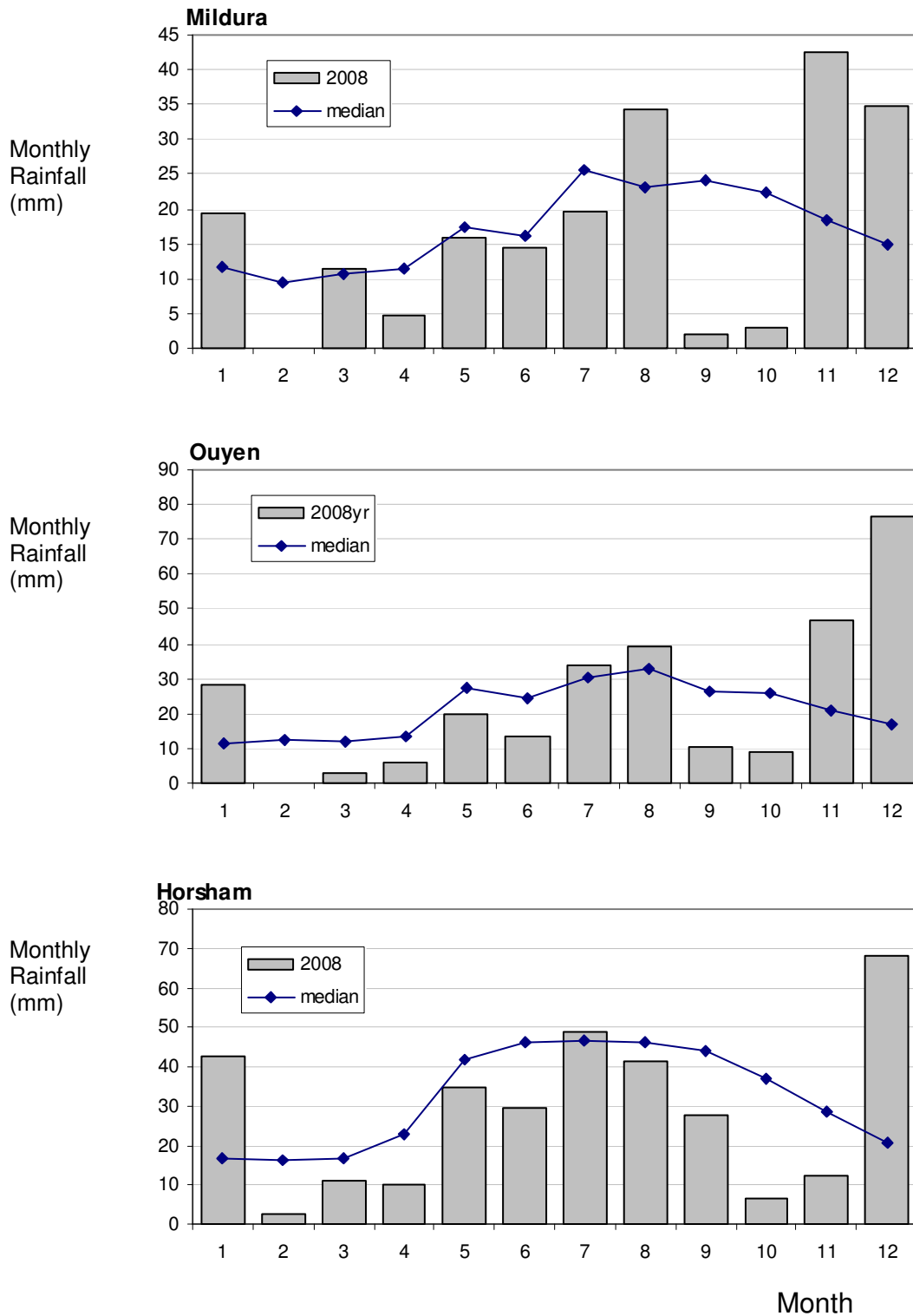
Such increases in breeding numbers following nearby fires or other large habitat disturbances are not unusual. Following the fires that razed the northern half of Wandown in the early 1990s, Malleefowl breeding densities increased in the unburnt parts of the reserve. This effect was, however, short lived and breeding densities returned to more typical levels following a drought. It is likely that breeding densities in the unburnt sections of the Wathe sites will also decline to what has proved to be historically more typical and sustainable in due course.

- 3) General increase: the new sites and effects of nearby fires do not fully account for the increased breeding numbers observed in the 2008/9 season, and there appears to have been a general increase of about 17% at other sites over typical numbers in previous years (since 1990). The most obvious explanation for this increase is the generally good rains that occurred in winter 2008, especially in the critical July and August period immediately before mounds are completed. While the annual rainfall for 2008 in mallee areas was still 15-25% below typical values of the last century, the relatively normal winter rainfall appears to have benefitted Malleefowl this season (Figure 1), whereas it has been well below average over the past few years.

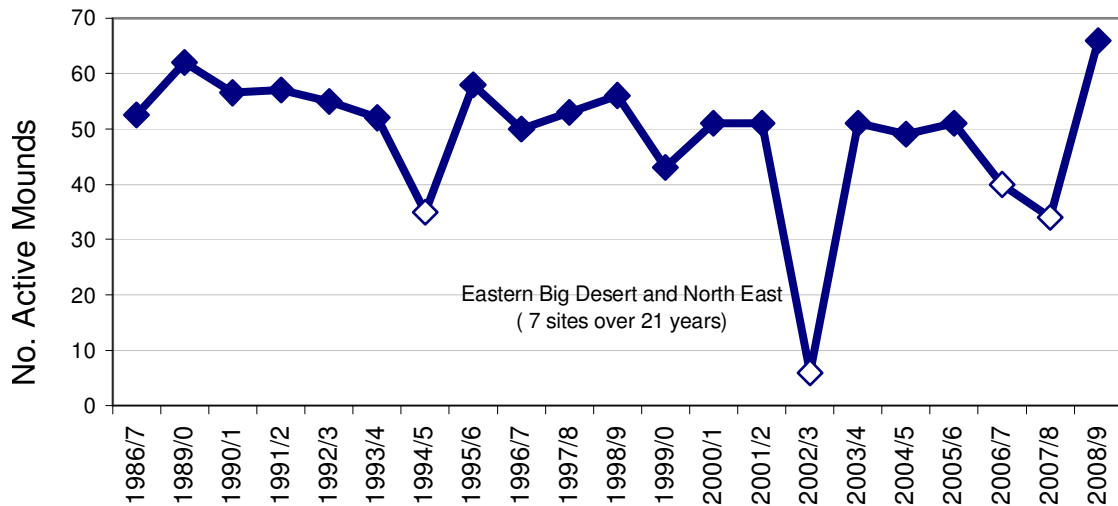
Figures 2 and 3 show some of these monitoring results graphically. In terms of the seven key monitoring sites that have been tracked for the past 21 years (Figure 2), the 2008 result was the highest recorded, although several of these sites were affected by nearby fires which I suspect caused an influx of breeding birds. I estimate that this influx may account for perhaps 12-14 of the breeding pairs within the common sets for these sites, suggesting that without this influx only 52-54 breeding pairs may have been counted for these sites. This number is close to the long term non-drought average for these sites over the past 21 years.

Regional Malleefowl breeding trends over the past 13-16 years also showed positive trends (Figure 3), but were also affected by influxes of breeding birds due to nearby fires. For example, in the Eastern Big Desert, breeding numbers were possibly elevated by up to 12 pairs, suggesting that without these influxes breeding numbers may have been on par with numbers typical of the early 2000s, but nonetheless below those in the 1990s. On a more positive note, aggregated breeding numbers in the North West (primarily Sunset Country and Hattah) were the highest since 1996/7, while high breeding numbers were maintained in the North East where numbers jumped suddenly upwards immediately following the 2002 drought.

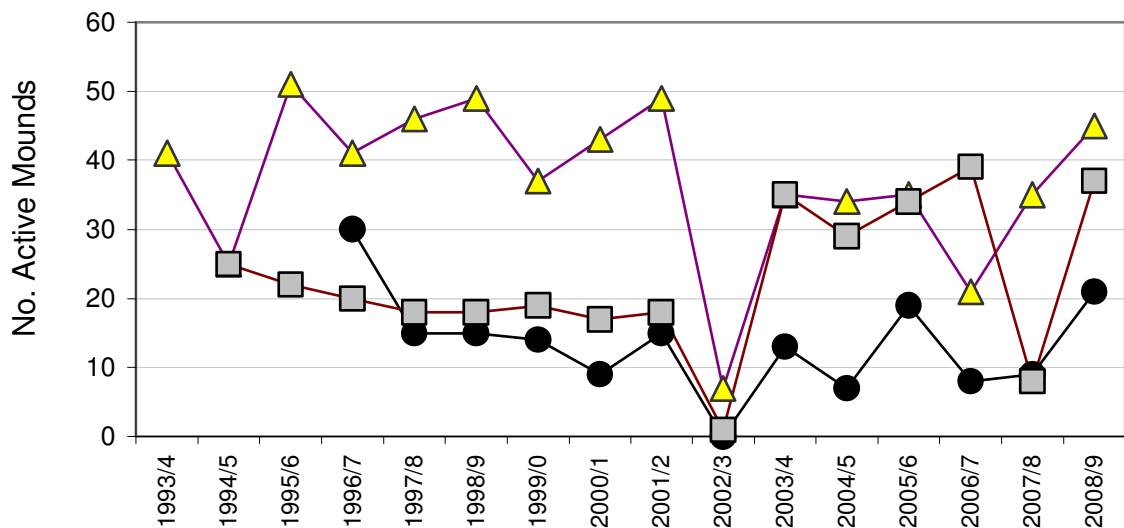
**Figure 1.** Rainfall at Mildura, Ouyen and Horsham in 2008 (bars) and median rainfall since early 1900s (line). Rainfall through the winter was typical for these areas in 2008, and especially in the two months immediately before the commencement of egg laying (i.e. July and August), although conditions dried in September and October after the birds were already using their mounds for breeding. (Data from the Bureau of Meteorology website).



**Figure 2.** Trends in Malleefowl breeding numbers at 7 set sites over the past 21 years. 1994/5, 2002/3, 2006/7 and 2007/8 were major drought years (white points). Data comprise the common sets for sites 01, 02, 03, 04, 07, 20 and 23. Note that fires near sites 02, 03 and 07 appeared to precipitate an influx of breeding birds into these sites and we suspect breeding numbers may have been increased by 12 -14 pairs in the common sets for these sites in 2008/9 due to these nearby fires (see text for details).



**Figure 3.** Trends in Malleefowl breeding numbers at 22 set sites over the past 13-16 years. Eastern Big Desert comprise 6 sites over 16 years (triangles), North East comprise 4 sites over 15 years (shaded squares), and North West comprises 12 sites over 13 years (solid circles). 1994/5, 2002/3, 2006/7 and 2007/8 were major drought years in many areas. Note that an influx of breeding birds into Wathe sites 02 and 03 due to nearby fires may have elevated 2008/9 breeding numbers in by up to 12 pairs in the common sets for sites in the Eastern Big Desert, and similarly breeding numbers may have been elevated by up to 2 pairs in the common set for Annuello 07 in the North East (see text for details).



### **Individual Grid trends**

Appendix B shows the histograms of grid trends from historical records to 2008/9. 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 2008/9, although there were a few cases where the mound identity was incorrectly recorded. These errors can be avoided by 1) checking the site/nest numbers entered at the top of the Cybertracker screen, and 2) making sure that each record is finalised while you are still at the nest in question (ie press the down-arrow on the thankyou screen). (If you are unsure about either of the points, please ask!).

There were however, big changes behind the scenes as we moved to a completely new version of Cybertracker, and began work on a new on-line database (see below). Some of you may have noticed some subtle changes in the appearance of the Cybertracker sequence on the palms, but you are forgiven if you did not notice as the new sequence was designed to emulate the old one. The big difference is that the new sequence will work on any number of new devices and allow us to update our equipment to take advantage of these modern technologies. This change is timely, because the old palms are increasingly failing and causing problems (and frustration) in the field. We have our eye on one new device in particular (Magellan Mobilemapper6) that is ruggedised (shock/dust/water proof), has a GPS and camera on board (no more cables!), has great battery life, is small and light, and also decreases the chance of data loss. The only downside is that they are costly (about \$1600 each – and we will need 10!) but this is a small price to pay considering the improvements to data collection and the tremendous service the volunteers make to the conservation of Malleefowl.

We trialled the new units with the new sequence at the Moonah (v23) site and collected all the monitoring information at this site without any problems. Hopefully, by next season we will have found the funds required to purchase these units to make them available to everyone. I expect this would greatly improve the data and the monitoring experience for everyone.

### **A new database**

The Commonwealth Department of the Environment, Water, Heritage and the Arts provided the VMRG with funds last year to develop a new database for the national Malleefowl monitoring effort, and we were lucky enough to secure the services of Richard and Margaret Alcorn to undertake the development. The idea of the new database is to have an online system which will allow all contributors to view and even contribute data, while at the same time providing a central repository for these data so that we never again need to spend months tracking it down (as we did in 2007 for the analysis of monitoring data). Keeping the data in order and accessible is even more important now that we are preparing for adaptive management experiments for Malleefowl as the monitoring is a crucial and very central part of this initiative.

The design of the database recognises four roles:

1. 'contributors' who collect the data and have the ability to upload monitoring data onto the database and view data from specified sites (as specified by the coordinator);
2. 'coordinators' who organise the contributors, download data, set-up palms etc (e.g. Peter Stokie (Vic), Sharon Gillam (SA), Dave Setchell (SA), and Carl Danzi (WA) have all undertaken this service for the past few years and will probably keep doing so for the next year or two);
3. 'ecologists' who vet the data that have been uploaded, document and make necessary changes to original data, and prepare the data for annual reporting and analysis (e.g. Joe Benshemesh has been doing this for Vic data, and Sharon Gillam and Dave Setchell for SA data); and the
4. 'administrator' whose role is basically just to change people's roles and access rights as the need arises and act on any problems or issues arising.

Within this system, everyone can add notes and comments to the data they are permitted to view. For example, a contributor may see that their data has an error (perhaps a mound was erroneously recorded as active, or they realise that they incorrectly labelled a mound), or an error may be spotted and noted by the coordinator, but only the ecologist is allowed to actually change any data and then they need to justify and document these changes.

We think this system, and the database generally, will greatly improve and streamline data management. Security and access will also be enhanced. For example, the administrator can control who can access records from each monitoring site, while those who do have access will be able to view data not only from the current year, but also data going back many years (although we have not yet finished the rather big task of migrating tens of thousands of records from past years onto the new database). Moreover, contributors will be able to view photos of each mound for the past five years as well as. Contributors won't be able to see the actual mound locations, but when they view newly uploaded data they will be able to see how far the specified mound is from previous location (this is very useful for error checking and also provides feedback for contributors).

Online, we have developed a simple reporting tool for contributors and land managers, and we have plans to further develop this aspect of the database. All the data you see represented in this report has in fact gone through the new database where all the vetting and checking has been accomplished, although the reporting tables you see attached to this report have in fact been produced by exporting the data into the old juggernaut of a database. In time we hope to replicate all the tables in this report in the new database, although this will depend on the availability of funds to pay for more development, and the support of various organisations.

Finally, it should be noted that apart from the development of the new database, all the work involved in processing the data each year relies on voluntary contributions. While the field work will remain voluntary as it always has been to keep costs down, we will be pursuing funds for those nominated as coordinators, ecologists and administrators in recognition of the extra service that these folk provide (these people typically also voluntarily collect data in the field as contributors).



### **An exciting new competition...no more!**

The “exciting new competition” announced last year has, alas, become ‘collateral damage’ to all the other exciting new things happening in the past year. This is an obtuse way of saying that with the new database I simply did not get around to working out who was closest to the mark with their GPS locations. In any case, all the location data seemed pretty good this year and I did not have nearly as much trouble as I have had in past years. So, perhaps everyone should share the prize (a bottle of wine). We can, of course, reinstate the competition next year if people so wish. But the recommendation for providing great location data remains:

- Make sure you have the correct mound and site numbers
- Finalise your records while standing at the same spot each season
- Check that the GPS has a good signal (our new sequence will actually do this for you by waiting until a signal is good before finalising the record)

### **4. Lerp**

This season was only the third time we recorded the occurrence of lerp on Malleefowl mounds. Lerp were recorded at 7% of mounds in 2008/9 (Appendix A VIII), compared to only 5% last season and 3.5% in 2006/7. At some sites more than a quarter of mounds showed at least some lerp (sites v04, v14, v15 and v20).

Given these results and the potential significance of lerp outbreaks to Malleefowl recruitment we think it would be very valuable to obtain more data on lerp abundance over the next month at these sites in particular (but there are others of interest too if there are people keen to take some measurements). People who are interested in revisiting the mallee for this purpose during April should contact Peter Stokie as a matter of urgency!

For the record, it takes only 2-3 hours to collect lerp data; not a huge effort for such valuable data.

### 5. Fox scats

Fox scats were collected at 377 mounds in 2008/9 and weighed a total of 4.8 kg. This is similar to the total last year (352 nests and 5.1 kg). The following table shows the total weight of fox scats collected at each monitoring site, and the number of mounds with fox scats, for both 2008 and the previous year.

Grid	Name	2008 Wt (g)	2008 No. Nests	2007 Wt (g)	2007 No. Nests
v01	Dattuck	65	6	17	1
v02	Torpey's	237	17	428	21
v03	Wathe SW	374	29	431	19
v04	Bronzewing	565	58	456	31
v05	Colignan	189	10	98	10
v07	Annuello	176	13	165	11
v08	Powerline	-	-	25	3
v09	Mt Hattah	4	2	31	2
V10	One Tree Plain BNT	-	-	-	-
v11	Mopoke	148	8	86	9
v12	Pheeney's	151	14	184	15
v13	Bambill	158	14	198	14
v14	Menzies	44	4	108	4
v15	Wandown	144	19	448	28
v16	South Bore	145	16	243	18
v17	One Tree Plain	4	1	13	1
v18	Washing Machine	30	3	43	6
v19	Underbool/Cowangie	107	9	21	3
v20	Lowan	213	22	383	25
v21	Dumosa	334	20	98	12
v22	Denning	67	4	27	1
v23	Moonah	683	41	828	48
v24	Kiata	117	4	62	6
v26	Hattah Tracks	43	5	17	2
v27	O'Brees	74	8	129	11
v28	Nurcoun	67	8	93	10
v29	Wedderburn	121	6	59	5
v30	Hattah South	20	6	84	5
v31	Skinners Flat	13	3	58	4
v32	Wychitella	54	3	31	4
v33	Korong Vale	29	1	-	-
v34	Paradise	354	22	209	20
v35	Broken Bucket	24	2	26	3
TOTAL		4754	378	5099	352

*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 again. This year, we can delight in the very positive results, such as the highest number of active mounds ever recorded and signs of general recovery following some good winter rains, especially in the dryer regions of the State.

We can also celebrate 2008 as the first year we have managed to monitor all the known mounds in the constellation of reserves in the Wedderburn area where three active mounds were recorded (including one in an area that was searched by VMRG members and locals), although it should also be stated that, with the exception of the small search conducted, we have only a poor idea of what Malleefowl are doing in these reserves and for the most part are reliant on the information provided by Peter Watts and the late Bob Johnson who found many of the mounds that we now monitor. How many more there are in these reserves is hard to say, but it is likely that there are several other pairs yet to be found. Systematically searching the thicker habitats of the Wedderburn reserves is certainly a difficult task, as the VMRG and Wedderburn locals found out in 2004, but this is precisely what is needed if we are to really know what the population is doing in these isolated reserves. Given that the Wedderburn Conservation Management Network has recently received funds from Caring for Country (the replacement for NHT), monitoring the population in these reserves is now even more important as the benefits to Malleefowl from these management actions need to be demonstrated in order to assess the success of actions and to strengthen the case for further investment.

2008 also marks the year that we prepared to move from the old palm handhelds with a new monitoring sequence that can (and has) been used on new devices that have GPS and cameras inbuilt, and the year that we (finally) moved on from my clunky and primitive old database to a sleek online facility that is designed to be useful for everyone while providing security for data and for the birds we monitor.

Finally, the year has also brought progress toward plans for adaptive management of Malleefowl. Drs Charles Todd, Dave Forsythe, and David Ramsey from the Arthur Rylah Institute (DSE), in collaboration with the VMRG, the Applied Environmental Decision Analysis research hub (AEDA), and others, have developed a general framework for adaptively managing Malleefowl using the monitoring sites as a primary source of information for understanding how Malleefowl respond to various management techniques. Plans are now underway for applying for funding with which to employ a mathematical ecologist to develop the plans further. This will be a national program that builds on all of our past and current successes.

All these exciting developments notwithstanding, our main role and purpose is to continue the high standard of monitoring of our sites and improve these data where we can. The possibility that a lerp outbreak may be underway provides some urgency to this objective.

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

1 April 2009

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. 2008/9 Mound Inspection Report for All Victorian Sites

27-Mar-09

Table 1. Page 1 of 1  
2008/9 Malleefowl Monitoring Report

## Updated records

► Mounds that will be included in future annual lists

	Grid	01	02	03	04	05	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	30	31	32	33	34	35	36	37
Sought and found	1136	80	57	87	103	15	37	16	14	3	16	26	38	30	99	42	31	27	23	60	35	18	66	12	22	20	19	8	11	13	11	3	85	5	4	
New incidental	8					1	2							2						1	1			1												
Sought, NOT found	1																							1												
NOT sought or found	4				1	2																													1	
Total	1149	80	57	87	104	15	40	18	14	3	16	26	38	30	101	42	31	27	23	61	36	18	66	12	24	20	19	8	11	13	11	3	85	6	4	

► Mounds that will be checked every 5th year

	Grid	01	02	03	04	05	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	30	31	32	33	34	35	36	37	
Sought and found	16			4																			1	2				1			4		3			1	
Sought, NOT found	1							1																													
Prev. 5yr listed*	22				4											6				5			5		1											1	
Total	39			4	4			1								6				5		5	1	7		1	1			4	1	3				1	

► Mounds that will be omitted from annual lists (erroneous records, and nests well outside grid boundaries)

	Grid	01	02	03	04	05	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	26	27	28	29	30	31	32	33	34	35	36	37		
Sought and found	9											1	2	1																							1	4
Sought, NOT found	1							1																														
NOT sought or found	1																									1												
Total	11							1				1	2	1												1										1	4	

Grand Total 1199 80 57 91 108 15 40 20 14 3 16 26 39 32 102 42 37 27 23 61 41 18 67 19 25 20 20 9 11 17 12 7 89 6 5

\* This row shows mounds previously listed on 5yr list and thus not visited this season.

Note: Grid 06 and 07 were combined in 1997 into one grid named Annuello 07.

End

## Appendix A 2. 2008/9 Details of Mounds Not found, New, or Omitted

2008/9 Malleefowl Monitoring Report

Grid_nest	General notes
<b><u>These mounds will be included in future ANNUAL lists:</u></b>	
● Previously known mounds that were Niether Sought, Nor Found	
04 40	JB2009: not visited
07 10	JB2009: not visited
07 85	JB2009: not visited
35 5	"Wrong gps; will find later in the season when we have correct gps location"
● Previously recorded and Sought in monitoring, but Not Found	
26 24	"Searched to 300m south dumosa tk intersection; not found" JB2009: found last year (no loc) by FPM and yr before (with loc) by ASH. More details need to be provided next season to relocate this mound
● New mounds encountered incidentally during monitoring	
07 89	JB2009: Original location was for next mound in sequence (v07_20) so i have taken coords from last mound in sequence which describe a new location and assume this to be the relevant location for this new mound
08 18	"New mound for 08-09 monitoring season.Mound is in burnt area. Low sandy mound."
08 19	"New mound for 08-09 monitoring season. Mound is in burnt area. Large low sandy mound on the west side of high sand dune"
15 13	"Very old roos using" JB2009:refound by keith Willis in oct 2008- checked against orig MMFN map (1969) and confirmed as #13
15 60	JB2009:refound by keith Willis in oct 2008- checked against orig MMFN map (1969) and confirmed as #60
20 68	"Our big excitment possible activity and an uncharted mound!" JB2009:confirmed as new mound
21 44	JB2009: confirmed as new mound
26 27	JB2009: new mound apparently chanced across during monitoring

### **These mounds will be omitted from future lists:**

● Previously known mounds that were Niether Sought, Nor Found	
26 13	"On stokies grid did not monitor thos year" JB2009:Same mound as v05n01; accordingly this record omitted from future lists (but 05n01 retained)
● Previously recorded and Sought in monitoring, but Not Found Again	
08 20	"No mound at this spot." JB2009: omitted from future lists
● Other reasons	
13 37	"Was this ever a mound?"
14 4	"Nest is no longer visible in dam" JB2009:omit
14 32	"NOT A MOUND PLEASE DELETE" JB2009:ok
15 236	"Very old" JB2009:xxxxx
33 6	"Found site but decided not a mound." Coord: not a mound DELETE; JB2009:ok
34 3	"Not a nest" Coord: Les and Ron confirm this is not a mound. Photo taken 089 JB2009:omit
34 10	Coord: Les and Ron confirm this is not a mound. Photo taken 089 JB2009:omit
34 34	Coord: Les and Ron confirm this is not a mound. Photo taken 089 JB2009:omit
34 80	"Not a nest" Coord: Les and Ron confirm this is not a mound. Photo taken 089 JB2009:omit

### **These mounds have been marked this season for monitoring only every FIFTH year**

● Previously recorded and Sought in monitoring, but Not Found	
08 2	"GPS waypoint is in rhe middle of dozer line and stake and tag found 10 meters to the west in pjle of Mallee stems." JB2009: removed by dozer, thus omitted from future lists
● Other reasons	
03 5	JB2009: photo only (data taken from photo)
03 60	JB2009:photo only (data taken from photo)
03 80	JB2009:photo only (data taken from photo)

Grid_nest	General notes
● Other reasons	
03 103	JB2009:photo only (data taken from photo)
23 53	JB2009:added to 5 yr omit in 2007/8
24 5	"Add to the 5 year list" JB2009:ok
24 21	"Not a mound" JB2009:Added to the 5 year list
29 4	"Add to the 5 year list" JB2009:ok
31 1	Coord2009: Put on 5 year list JB2009:ok
31 2	Coord2009: Put on 5 year list JB2009:ok
31 3	Coord2009: Put on 5 year list JB2009:ok
31 5	Coord2009: Put on 5 year list JB2009:ok
33 4	"Visit only every 5years;very old nest"
33 5	"Check every 5 years"
33 7	"Visit every 5 years"
36 5	"Very old mound; or not a mound; visit every five years"

**These mounds were not visited as they were previously marked for monitoring every FIFTH year**

● Previously known mounds that were Niether Sought, Nor Found	
04 16	no change. could be deleted
04 42	not active in over 20 years. suggest deleting from database.
04 68	old, flat, candidate for deletion.
04 113	Not worth visiting, delete please.
17 10	open sandy site, no litter surrounds; recommend delete,
17 16	reccommend delete. see comments in field notes. 2 photos
17 22	open sandy site, little surface litter; recommend to bypass next year.
17 27	a sandy shallow hollow; on exposed se slope of dune. WAS IT EVER A NEST
17 28	recommend delete- see field note book. No measurements- too indistinct in open andy dune slope.
17 31	recommend delete. see extended comments in my note book.
21 7	No activity 15 years. Possible deletion.
21 14	Very old nest - consider deletion.
21 33	Recommend deletion. Barely recognisable as nest.
21 35	Very old nest - possible delete?
21 36	Recommend delete
24 8	not for annual visit
24 9	no longer looks like a malleefowl mound, cannot distinguish outer or inner rim, suggest either removing or visiting occasionally
24 18	not changed for many years, recommend visit in a few years
24 20	defidentily not worth anual visit
24 22	not worth annual visit
28 36	Not a nest. Maybe a practice scrape. No litter under centre. In corner where firebreak cleared and windrows burnt.
32 7	alredy tagged 40n14. recommend visit occassionally.

*Printed on 27-Mar-09*

## Appendix A 3a. 2008/9 Activity by Site (Grid)

Printed on 13-Mar-09

2008/9 Malleefowl Monitoring Report

Grid		Total nests	Active (y)	Not Active (n)	Not Found (o)	Active Last Year	Area (ha)	Active density (per km sq)
01	A	53	0	53	0	2	300	-
01	B	27	0	25	0	1	300	-
02		56	8	46	0	3	400	2.0
03		72	16	55	0	8	324	4.9
04	A	53	8	45	0	9	270	3.0
04	B	29	5	23	1	4	270	1.9
05		15	2	13	0	1	400	0.5
07	A	18	2	15	1	1	150	1.3
07	B	7	1	6	0	1	150	0.7
07	C	8	3	5	0	0		
08		18	1	17	0	1	400	0.3
09		14	1	13	0	0	400	0.3
10		3	0	3	0	0	400	-
11		16	1	15	0	1	400	0.3
12		24	2	22	0	1	400	0.5
13		38	3	35	0	0	400	0.8
14		30	11	19	0	6	380	2.9
15	Ab	12	6	6	0	0	115	5.2
15	Au	31	12	19	0	0	325	3.7
15	B	19	5	14	0	0	440	1.1
15	Cb	18	8	10	0	4	660	1.2
15	Cu	4	1	3	0	0	370	0.3
15	D	15	2	13	0	0		
16		42	3	39	0	1	400	0.8
17		31	0	31	0	0	400	-
18		27	2	25	0	1	400	0.5
19		23	1	22	0	0	400	0.3
20		47	2	45	0	2	282	0.7
21		33	5	27	0	3	400	1.3
22		16	0	16	0	0	542	-
23		49	6	43	0	6	400	1.5
24		12	0	12	0	0	210	-
26		24	3	20	0	2		
27		20	3	17	0	1	290	1.0
28		19	5	12	0	7		
29		8	0	8	0	0		-
30		11	2	9	0	2	400	0.5
31		13	0	13	0	0		-
32		11	1	9	0	0		
33		3	2	1	0	0		
34		85	8	75	0	7		
35		6	1	5	0	0		
36		4	1	3	0	0		
<b>Totals</b>		<b>1064</b>	<b>143</b>	<b>907</b>	<b>2</b>	<b>75</b>	<b>11378</b>	<b>1.3*</b>

\* Over a total area of 113.8 km sq (excluding sites with as yet undetermined areas)

Page 1 of 1

## Appendix A 3b. 2008/9 Activity of nests that were OUT OF GRID (OOG)

Printed on 02-Apr-09

2008/9 Malleefowl Monitoring Report

<b>Grid</b>		<b>Total nests</b>	<b>Active (y)</b>	<b>Not Active (n)</b>	<b>Not Found ()</b>	<b>Active Last Year</b>
<b>02</b>	oog	1	0	1	0	0
<b>03</b>	oog	15	1	14	0	0
<b>04</b>	oog	22	4	18	0	3
<b>07</b>	oog	7	0	6	1	0
<b>12</b>	oog	2	0	2	0	0
<b>21</b>	oog	3	0	3	0	0
<b>22</b>	oog	2	0	2	0	0
<b>23</b>	oog	17	3	14	0	2
<b>Totals</b>		<b>69</b>	<b>8</b>	<b>60</b>	<b>1</b>	<b>5</b>

Page 1 of 1



## Appendix A 3c. 2008/9 Active Nests List

+ nests that have been newly added to the monitoring program

\* nests that are not included in the Common Sets for each grid

<b>02:</b> 8 active nests	04_64 B	14_19	15_249 Cb
02_2	04_70 A	14_21	15_252 Cu
02_10	04_73 oog	14_23	15_261 D
02_11	04_87 oog	14_27	15_272 D
02_15	04_92 oog	14_28	
02_28	04_98 oog	14_29	<b>16:</b> 3 active nests
02_33	04_105 B	14_33	16_2
02_34	04_107 B		16_25
02_38		<b>15:</b> 34 active nests	16_28
	<b>05:</b> 2 active nests	15_6 Cb	<b>18:</b> 2 active nests
<b>03:</b> 17 active nests	05_9	15_8 Au	18_7
03_14	05_12	15_11 B	18_18
03_20	<b>07:</b> 6 active nests	15_14 Ab	<b>19:</b> 1 active nests
03_21	07_15 A	15_23 Au	19_9
03_25	07_16 A	15_30 Ab	<b>20:</b> 2 active nests
03_27	07_22 C	15_34 Ab	20_34
03_32	07_24 C	15_38 Au	20_37
03_34	07_62 B	15_45 Au	
03_41	07_89 + C	15_61 Cb	<b>21:</b> 5 active nests
03_49	<b>08:</b> 1 active nests	15_65 Cb	21_5
03_52	08_4	15_66 Cb	21_12
03_53	<b>09:</b> 1 active nests	15_86 B	21_15
03_56	09_6	15_91 Cb	21_16
03_82	<b>11:</b> 1 active nests	15_93 Ab	21_43
03_86 oog	11_3	15_96 Au	<b>23:</b> 9 active nests
03_88	<b>12:</b> 2 active nests	15_105 Cb	23_5
03_104	12_5	15_107 Au	23_13
03_113	12_7	15_202 Au	23_19
<b>04:</b> 17 active nests	<b>13:</b> 3 active nests	15_203 Ab	23_26 oog
04_9 A	13_7	15_204 Au	23_29
04_13 A	13_8	15_212 Ab	23_31 oog
04_17 A	13_28	15_216 Au	23_37
04_26 B	<b>14:</b> 11 active nests	15_217 Au	23_51
04_28 B	14_8	15_221 Au	23_62 oog
04_45 A	14_9	15_224 Au	<b>26:</b> 3 active nests
04_53 A	14_12	15_229 B	26_3
04_55 A	14_18	15_230 B	26_15
04_63 A		15_233 B	26_27 +
		15_248 Cb	

## Appendix A 3c. 2008/9 Active Nests List

Page 2 of 2  
Malleefowl Monitoring Database

+ nests that have been newly added to the monitoring program

\* nests that are not included in the Common Sets for each grid

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**27:** 3 active nests

27\_7

27\_10

27\_19

---

**28:** 5 active nests

28\_1

28\_4

28\_16

28\_34

28\_39

---

**30:** 2 active nests

30\_1

30\_7

---

**32:** 1 active nests

32\_9

---

**33:** 2 active nests

33\_1

33\_3

---

**34:** 8 active nests

34\_4

34\_6

34\_12

34\_16

34\_38

34\_56

34\_58

34\_61

---

**35:** 1 active nests

35\_3

---

**36:** 1 active nests

36\_2

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Printed on 13-Mar-09

## Appendix A 4. 2008/9 Nests Needing Tags or Stakes

All 26 nests listed here require tags (asterisks denote tags that are available but not yet placed in the field).

<b>Grid</b>	<b>Nest</b>	<b>Need...</b>	<b>Note</b>	<b>Grid</b>	<b>Nest</b>	<b>Need...</b>	<b>Note</b>
<i>Grid 01 needs 0 stake, 1 tag:</i>				<b>32</b>	<b>_ 11</b>		Needs Stake
	<b>01</b>	<b>_ 82</b>	Needs Tag				
<i>Grid 02 needs 1 stake, 1 tag:</i>							
	<b>02</b>	<b>_ 20</b>	Needs Stake & Tag				
<i>Grid 03 needs 1 stakes, 3 tags:</i>							
	<b>03</b>	<b>_ 111</b>	Needs Tag				
	<b>03</b>	<b>_ 114</b>	Needs Tag				
	<b>03</b>	<b>_ 117</b>	Needs Stake & Tag				
<i>Grid 04 needs 0 stake, 0 tag:</i>							
	<b>04</b>	<b>_ 40</b>	? (need to confirm)				
<i>Grid 05 needs 0 stake, 1 tag:</i>							
	<b>05</b>	<b>_ 18</b>	Needs Tag				
<i>Grid 07 needs 2 stakes, 2 tags:</i>							
	<b>07</b>	<b>_ 10</b>	? (need to confirm)				
	<b>07</b>	<b>_ 85</b>	? (need to confirm)				
	<b>07</b>	<b>_ 87</b>	Needs Stake & Tag				
	<b>07</b>	<b>_ 88</b>	Needs Stake & Tag				
<i>Grid 16 needs 0 stake, 1 tag:</i>							
	<b>16</b>	<b>_ 25</b>	Needs Tag				
<i>Grid 17 needs 1 stake, 1 tag:</i>							
	<b>17</b>	<b>_ 40</b>	Needs Stake & Tag				
<i>Grid 22 needs 1 stake, 1 tag:</i>							
	<b>22</b>	<b>_ 20</b>	Needs Stake & Tag				
<i>Grid 23 needs 4 stakes, 4 tags:</i>							
	<b>23</b>	<b>_ 67</b>	Needs Stake & Tag				
	<b>23</b>	<b>_ 68</b>	Needs Stake & Tag				
	<b>23</b>	<b>_ 69</b>	Needs Stake & Tag				
	<b>23</b>	<b>_ 70</b>	Needs Stake & Tag				
<i>Grid 28 needs 0 stake, 1 tag:</i>							
	<b>28</b>	<b>_ 39</b>	Needs Tag				
<i>Grid 29 needs 0 stake, 1 tag:</i>							
	<b>29</b>	<b>_ 5</b>	Needs Tag				
<i>Grid 30 needs 0 stakes, 3 tags:</i>							
	<b>30</b>	<b>_ 4</b>	Needs Tag				
	<b>30</b>	<b>_ 8</b>	Needs Tag				
	<b>30</b>	<b>_ 11</b>	Needs Tag				
<i>Grid 32 needs 3 stakes, 0 tags:</i>							
	<b>32</b>	<b>_ 2</b>	Needs Stake				
	<b>32</b>	<b>_ 6</b>	Needs Stake				

## Appendix A 6. 2008/9 Frequencies of Animal Scats at Nests

13-Mar-09

Note: New observers collected data at several grids. Scat frequencies at these grids are not comparable with frequencies recorded in previous years or by other observers.

Grid	AvgDate	Total	MF	Fx	K	R	G	E	H	D	C
01	23/10/2008	80	1%	6%	46%	3%	1%	-	-	-	-
02	9/11/2008	57	5%	30%	35%	14%	-	-	-	-	-
03	11/12/2008	87	11%	33%	20%	-	-	-	-	-	-
04	9/11/2008	103	32%	56%	45%	3%	-	-	-	-	-
05	6/11/2008	15	20%	67%	67%	7%	-	-	-	-	-
07	3/12/2008	38	21%	34%	37%	-	-	-	-	-	-
08	21/12/2008	18	6%	0%	61%	-	11%	-	-	-	-
09	21/12/2008	14	0%	14%	93%	-	14%	-	-	-	-
10	22/02/2009	3	0%	0%	67%	-	-	-	-	-	-
11	14/10/2008	16	31%	50%	63%	-	-	-	-	-	-
12	18/12/2008	26	27%	54%	12%	-	-	-	-	-	-
13	8/11/2008	38	26%	37%	66%	-	-	-	-	-	-
14	23/10/2008	30	43%	13%	20%	-	-	-	-	-	-
15	25/10/2008	101	40%	19%	43%	-	-	2%	-	-	-
16	21/12/2008	42	26%	38%	81%	-	2%	-	-	-	-
17	22/02/2009	31	0%	3%	81%	3%	6%	-	-	-	-
18	11/11/2008	27	7%	11%	37%	-	-	-	-	-	-
19	16/10/2008	23	35%	39%	74%	-	-	-	-	-	-
20	24/11/2008	61	3%	36%	56%	8%	-	2%	-	-	-
21	15/11/2008	36	36%	56%	47%	-	3%	6%	-	-	-
22	21/02/2009	18	0%	22%	89%	11%	6%	-	-	-	-
23	10/02/2009	66	20%	61%	89%	3%	-	2%	-	-	-
24	8/11/2008	12	0%	33%	75%	-	-	17%	-	-	-
26	28/01/2009	23	13%	22%	43%	-	-	-	-	-	-
27	6/12/2008	20	20%	40%	75%	-	-	-	-	-	-
28	15/11/2008	19	11%	42%	79%	-	-	5%	-	-	-
29	9/12/2008	8	0%	63%	75%	-	-	-	-	-	-
30	8/11/2008	11	27%	55%	18%	-	27%	-	-	-	-
31	30/11/2008	13	8%	23%	85%	-	-	-	-	-	-
32	26/10/2008	11	0%	27%	82%	-	-	-	-	-	-
33	9/12/2008	3	67%	33%	100%	-	-	-	-	-	-
34	6/11/2008	85	16%	25%	13%	-	-	-	-	2%	-
35	8/11/2008	5	0%	40%	40%	-	-	-	-	-	-
36	21/02/2009	4	0%	25%	75%	-	-	-	-	-	-
<b>3/12/2008</b>		<b>1144</b>	<b>18.5%</b>	<b>32.8%</b>	<b>49.4%</b>	<b>2.1%</b>	<b>1.1%</b>	<b>0.8%</b>	<b>0.0%</b>	<b>0.2%</b>	<b>0.0%</b>

K= Kangaroo, R= Rabbit, G= Goat, E= Emu, H= Human, D= Dog, C= Cat

## Appendix A 7. 2008/9 Frequencies of Animal Prints at Nests

13-Mar-09

Note: New observers collected data at several grids. Print frequencies at these grids are not comparable with frequencies recorded in previous years or by other observers.

Grid	AvgDate	Total	MF	Fx	K	R	G	E	H	D	C
01	23/10/2008	80	3%	3%	46%	-	5%	5%	-	-	-
02	9/11/2008	57	23%	4%	42%	2%	2%	-	-	2%	-
03	11/12/2008	87	30%	10%	25%	-	-	-	-	-	-
04	9/11/2008	103	39%	12%	34%	1%	-	2%	-	-	-
05	6/11/2008	15	7%	20%	60%	-	13%	20%	-	-	-
07	3/12/2008	38	34%	8%	16%	-	-	-	-	-	-
08	21/12/2008	18	11%	22%	17%	-	-	-	-	-	-
09	21/12/2008	14	7%	14%	21%	-	14%	-	-	-	-
10	22/02/2009	3	-	-	67%	-	-	-	-	-	-
11	14/10/2008	16	13%	13%	44%	6%	31%	-	-	-	-
12	18/12/2008	26	15%	15%	8%	-	-	-	-	-	-
13	8/11/2008	38	13%	3%	32%	-	3%	-	-	-	-
14	23/10/2008	30	73%	10%	17%	-	-	-	-	-	-
15	25/10/2008	101	64%	19%	34%	-	-	2%	1%	-	-
16	21/12/2008	42	7%	2%	10%	-	-	-	-	-	-
17	22/02/2009	31	-	13%	84%	-	3%	-	-	-	-
18	11/11/2008	27	11%	11%	30%	-	7%	4%	-	-	-
19	16/10/2008	23	13%	4%	57%	-	-	-	-	-	-
20	24/11/2008	61	2%	2%	20%	-	2%	5%	-	2%	-
21	15/11/2008	36	33%	19%	53%	-	3%	-	-	-	-
22	21/02/2009	18	-	44%	83%	11%	-	-	-	-	-
23	10/02/2009	66	38%	15%	61%	-	-	21%	-	-	2%
24	8/11/2008	12	-	-	25%	-	-	-	-	-	-
26	28/01/2009	23	39%	13%	30%	4%	4%	9%	9%	-	9%
27	6/12/2008	20	30%	20%	55%	-	-	15%	-	-	-
28	15/11/2008	19	32%	-	37%	-	-	-	-	-	-
29	9/12/2008	8	-	13%	-	-	-	-	-	-	-
30	8/11/2008	11	9%	18%	-	-	9%	-	-	-	-
31	30/11/2008	13	8%	8%	15%	-	-	-	-	-	-
32	26/10/2008	11	-	-	18%	-	-	-	-	-	-
33	9/12/2008	3	-	-	-	-	-	-	-	-	-
34	6/11/2008	85	27%	9%	24%	-	-	1%	-	-	-
35	8/11/2008	5	40%	-	20%	-	-	-	-	-	-
36	21/02/2009	4	75%	50%	50%	-	-	-	-	-	-
<b>3/12/2008</b>		<b>1144</b>	<b>25.7%</b>	<b>10.7%</b>	<b>34.4%</b>	<b>0.5%</b>	<b>1.9%</b>	<b>3.1%</b>	<b>0.3%</b>	<b>0.2%</b>	<b>0.3%</b>

K= Kangaroo, R= Rabbit, G= Goat, E= Emu, H= Human, D= Dog, C= Cat

## Appendix A 8. 2008/9 Lerp on Malleefowl Nests

13-Mar-09

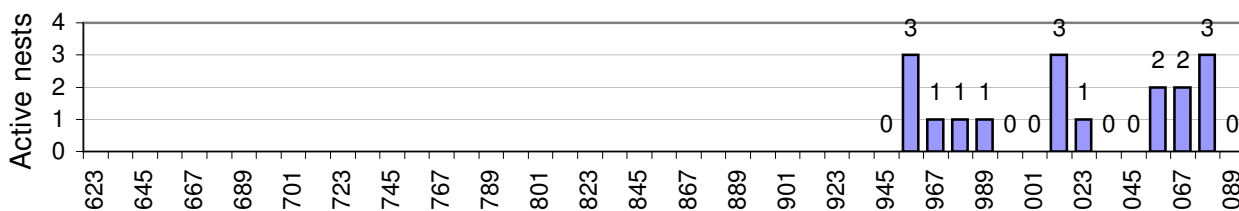
Note: Lerp on nests recorded as None (none), Some (1-10 lerp) or Lots (more than 10 lerp on the nest)

Grid	AvgDate	NUMBERS			FREQUENCIES (%nests)			
		Total	none	some	lots	Any Lerp	some	lots
01	23/10/2008	34	28	3	3	18%	9%	9%
02	9/11/2008	56	55	0	1	2%	-	2%
03	10/12/2008	87	86	1	0	1%	1%	-
04	9/11/2008	103	73	27	3	29%	26%	3%
05	6/11/2008	15	15	0	0	-	-	-
07	3/12/2008	38	29	9	0	24%	24%	-
08	21/12/2008	18	18	0	0	-	-	-
09	21/12/2008	14	14	0	0	-	-	-
10	22/02/2009	3	3	0	0	-	-	-
11	14/10/2008	16	15	1	0	6%	6%	-
12	18/12/2008	26	26	0	0	-	-	-
13	8/11/2008	39	39	0	0	-	-	-
14	23/10/2008	32	21	11	0	34%	34%	-
15	25/10/2008	102	72	27	3	29%	26%	3%
16	21/12/2008	42	42	0	0	-	-	-
17	22/02/2009	31	31	0	0	-	-	-
18	11/11/2008	27	27	0	0	-	-	-
19	16/10/2008	23	20	2	1	13%	9%	4%
20	24/11/2008	61	41	13	7	33%	21%	11%
21	15/11/2008	36	33	2	1	8%	6%	3%
22	21/02/2009	18	18	0	0	-	-	-
23	10/02/2009	67	67	0	0	-	-	-
24	8/11/2008	14	12	1	1	14%	7%	7%
26	28/01/2009	23	22	1	0	4%	4%	-
27	6/12/2008	20	19	1	0	5%	5%	-
28	15/11/2008	19	19	0	0	-	-	-
29	9/12/2008	9	9	0	0	-	-	-
30	8/11/2008	11	10	1	0	9%	9%	-
31	30/11/2008	17	17	0	0	-	-	-
32	26/10/2008	11	11	0	0	-	-	-
33	9/12/2008	6	6	0	0	-	-	-
34	6/11/2008	89	89	0	0	-	-	-
35	8/11/2008	5	5	0	0	-	-	-
36	21/02/2009	5	5	0	0	-	-	-
	3/12/2008	1117	997	100	20	6.8%	6%	1%

# Appendix B Site Trends

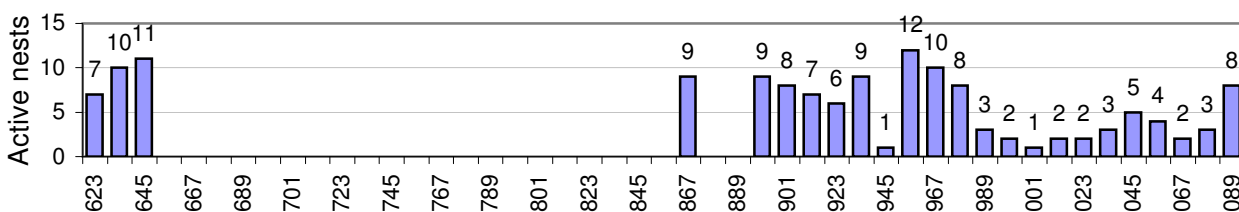
## 01 Dattuck

Eastern Big Desert



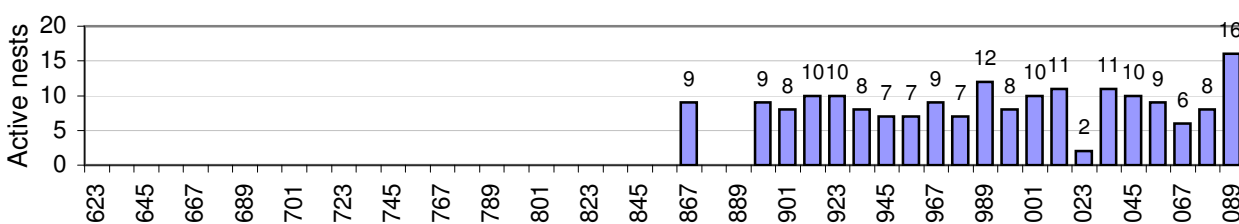
## 02 Torpey's

Eastern Big Desert



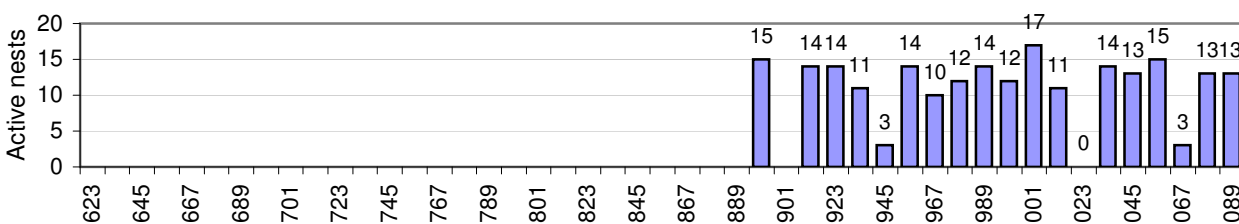
## 03 Wathe SW

Eastern Big Desert



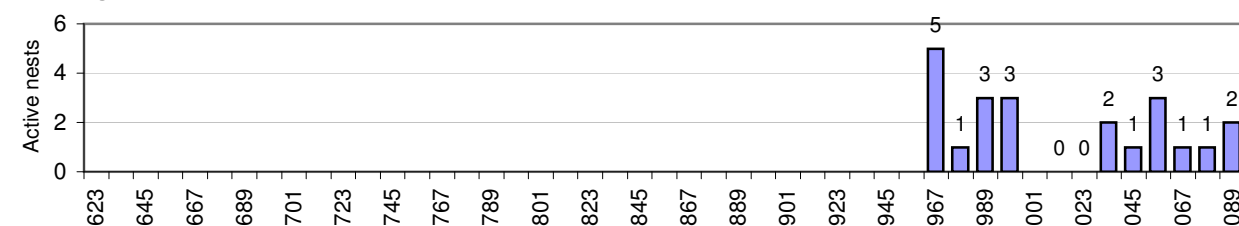
## 04 Bronzewing

Eastern Big Desert



## 05 Colignan

North West



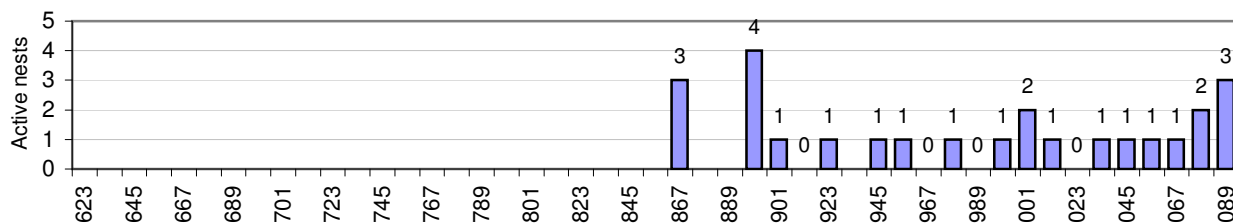
Season

# Appendix B Site Trends

Page 2 of 8

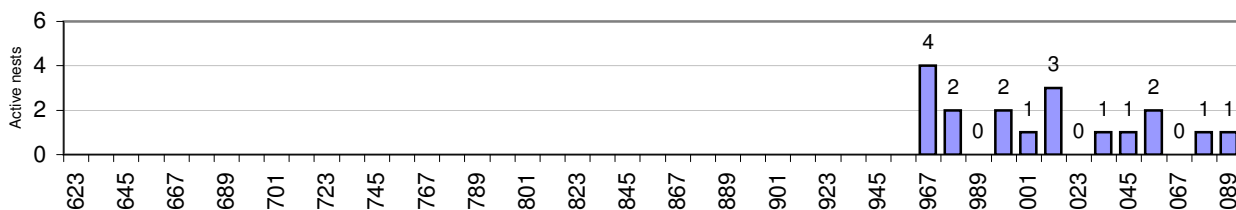
## 07 Annuello

North East



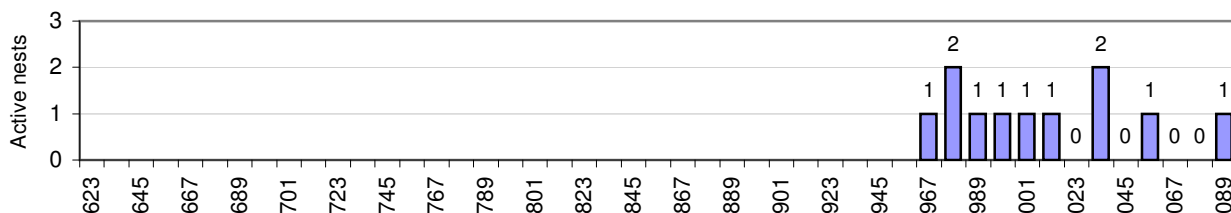
## 08 Powerline

North West



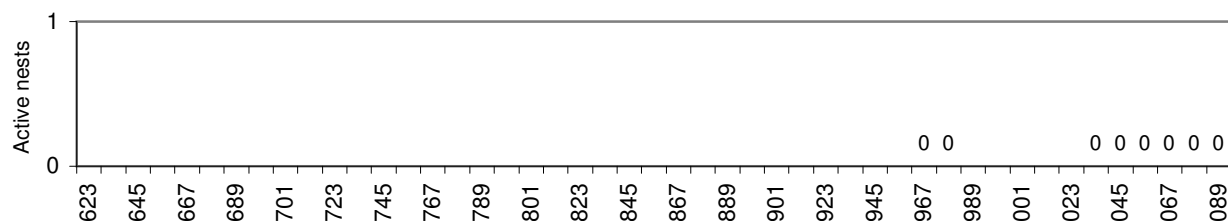
## 09 Mt Hattah

North West



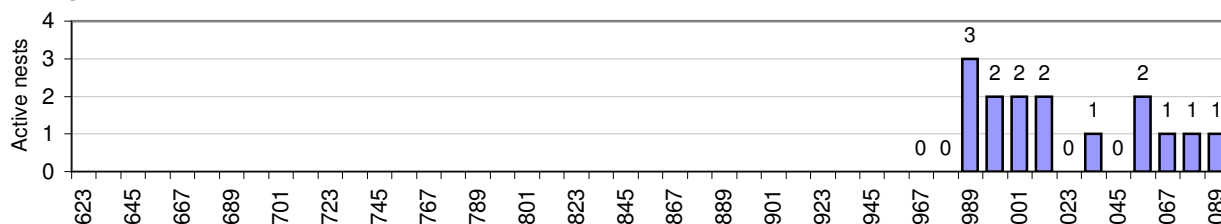
## 10 1 Tree BNT

North West



## 11 Mopoke

North West



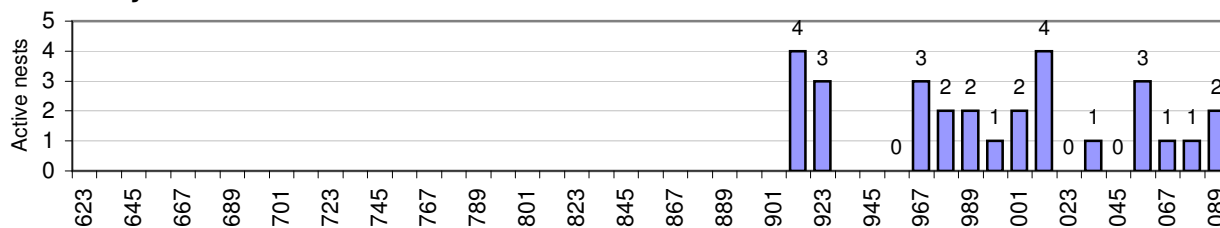
Season



# Appendix B Site Trends

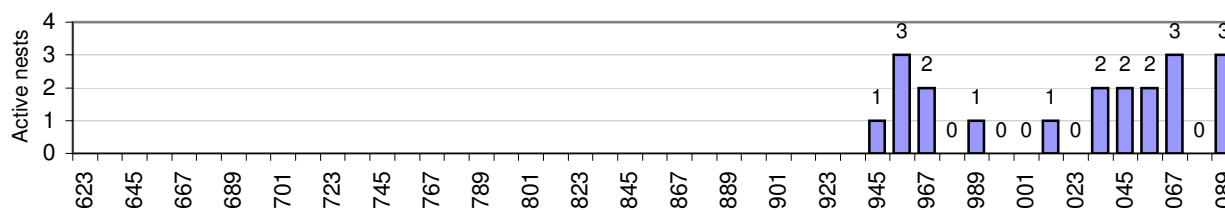
## 12 Pheeneys

North West



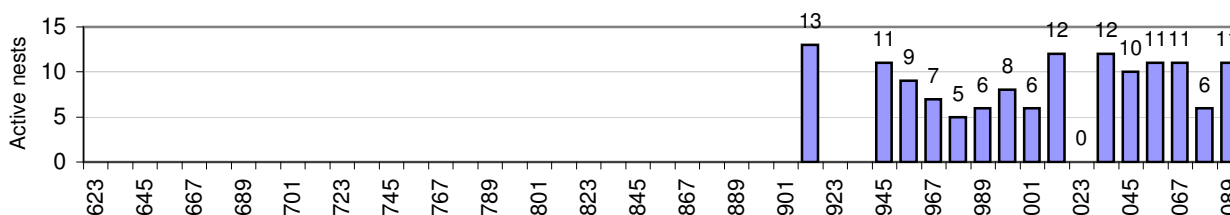
## 13 Bambill

North West



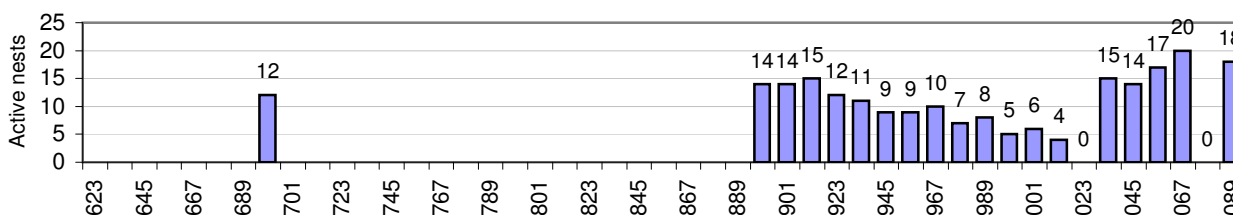
## 14 Menzies

North East



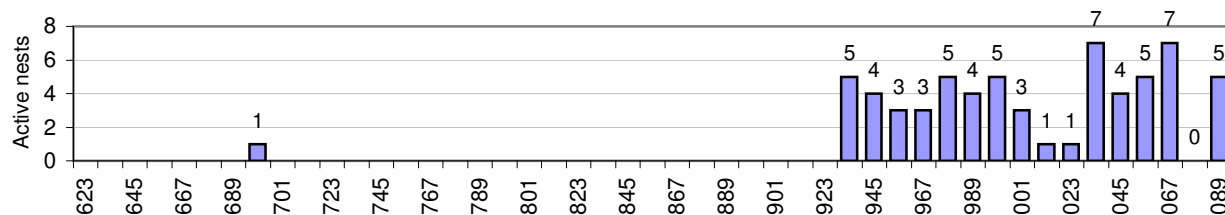
## 15 Wandown Part A

North East



## 15 Wandown Part B

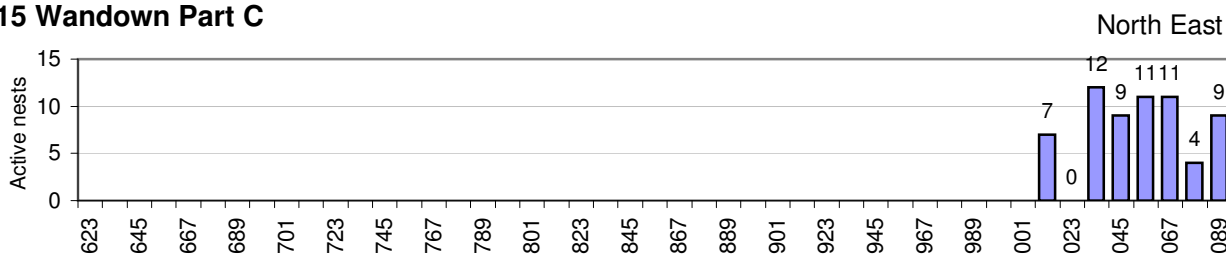
North East



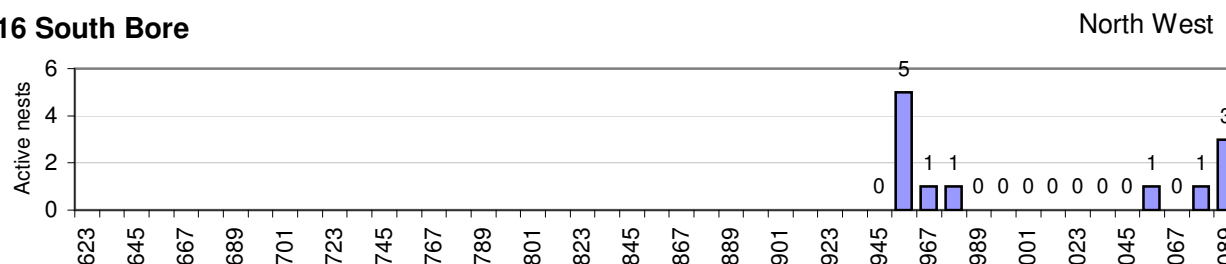
Season

# Appendix B Site Trends

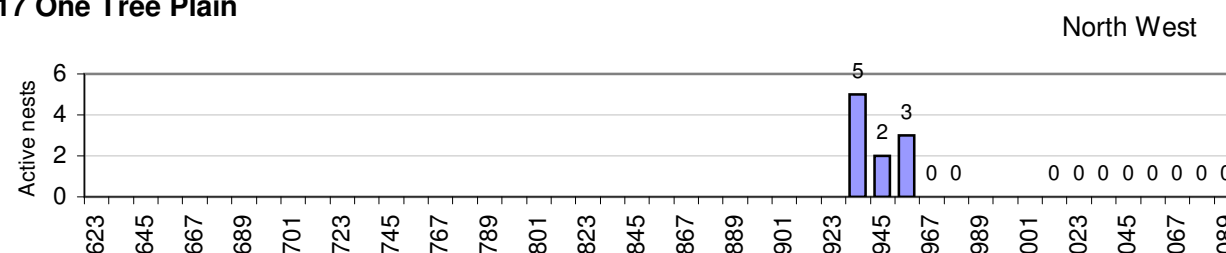
## 15 Wandown Part C



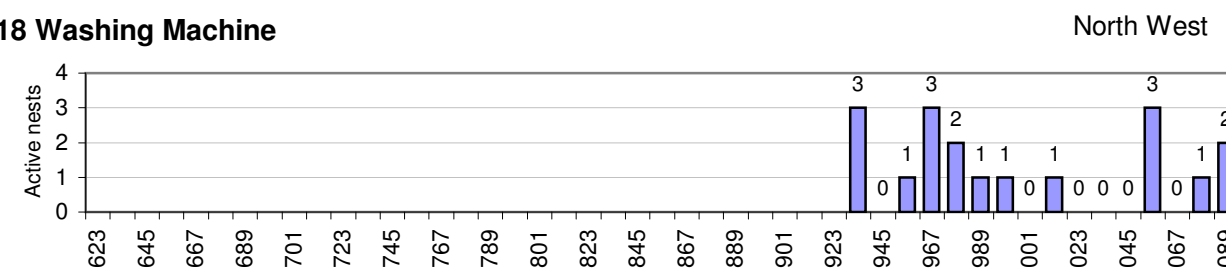
## 16 South Bore



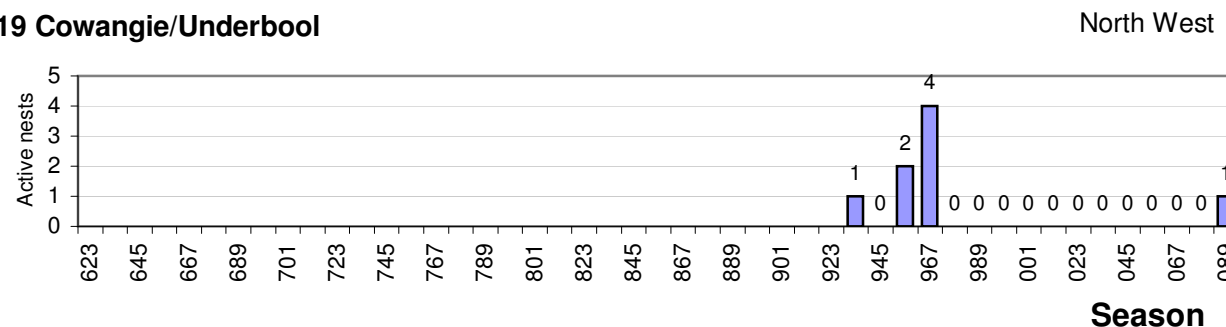
## 17 One Tree Plain



## 18 Washing Machine



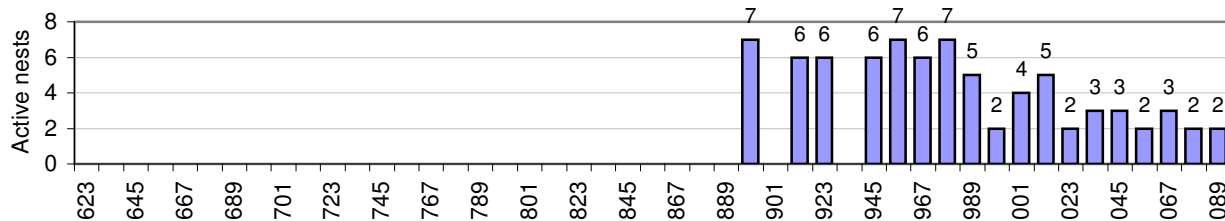
## 19 Cowangie/Underbool



# Appendix B Site Trends

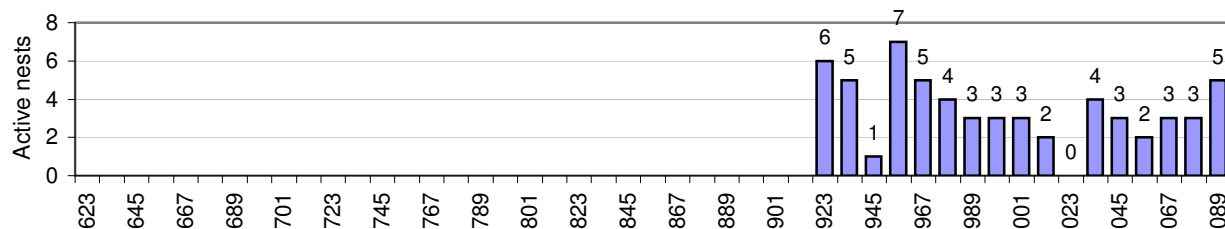
## 20 Lowan

Eastern Big Desert



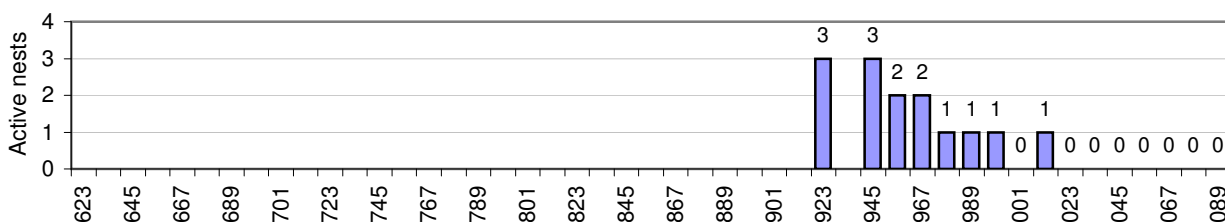
## 21 Dumosa

North West



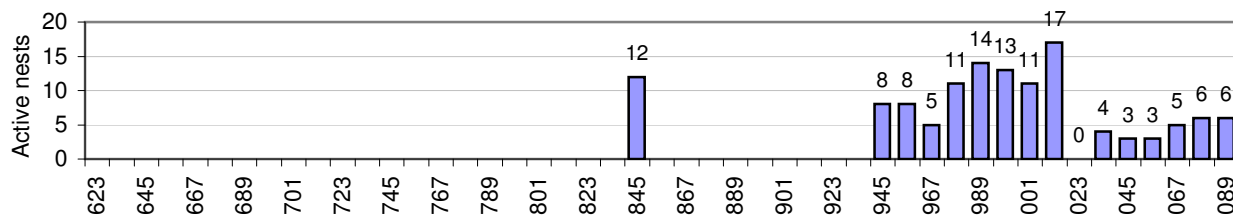
## 22 Denning

North West



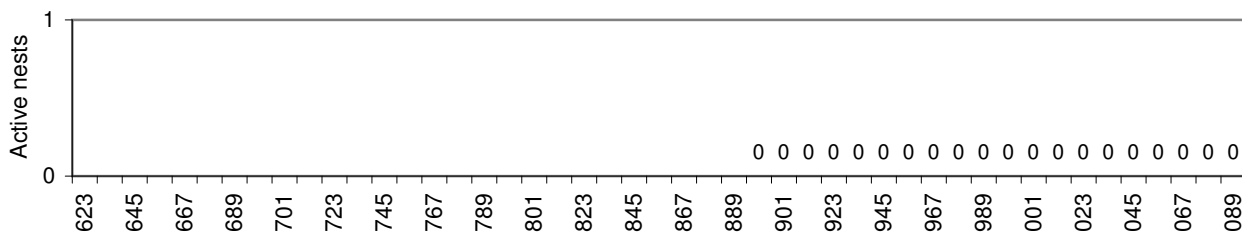
## 23 Moonah

Eastern Big Desert



## 24 Kiata

North East



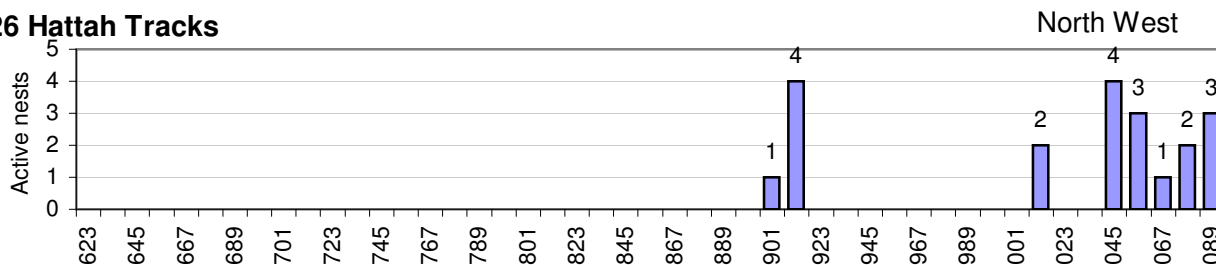
v25 does not exist

Season

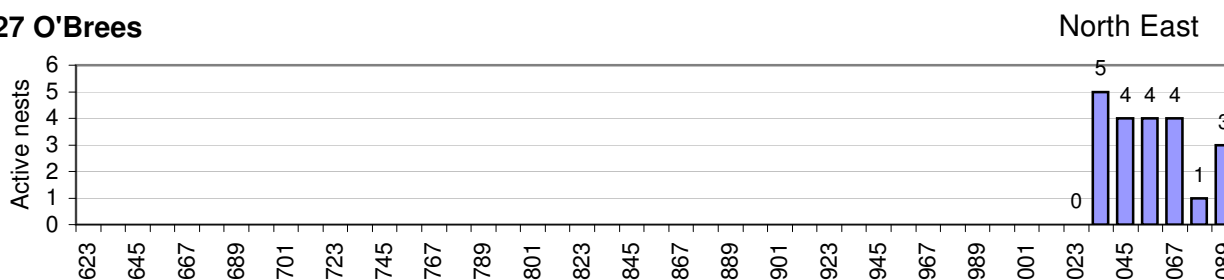
# Appendix B Site Trends

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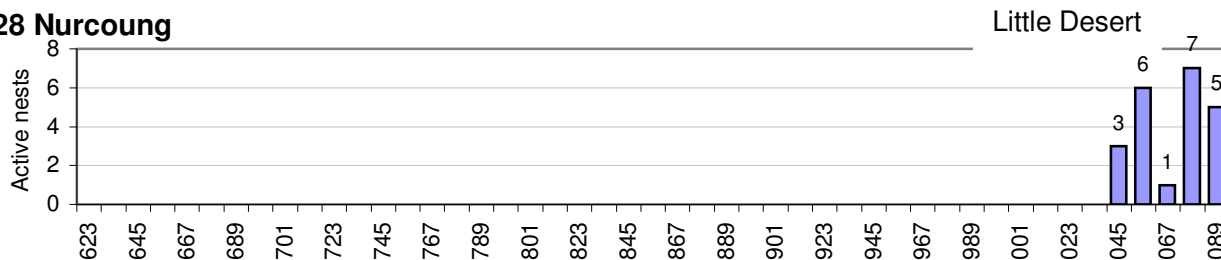
## 26 Hattah Tracks



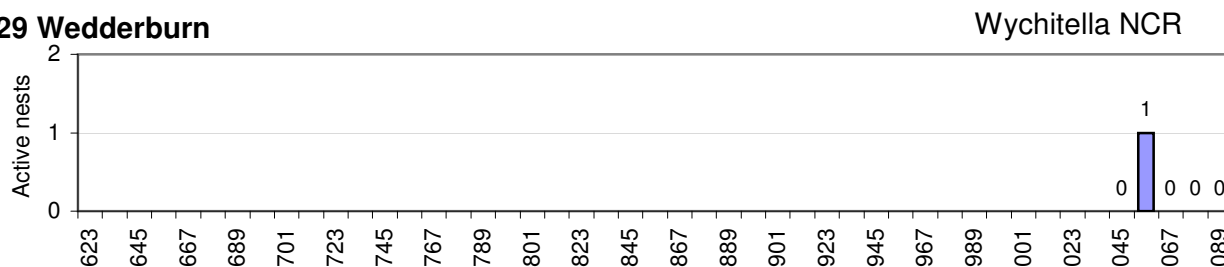
## 27 O'Brees



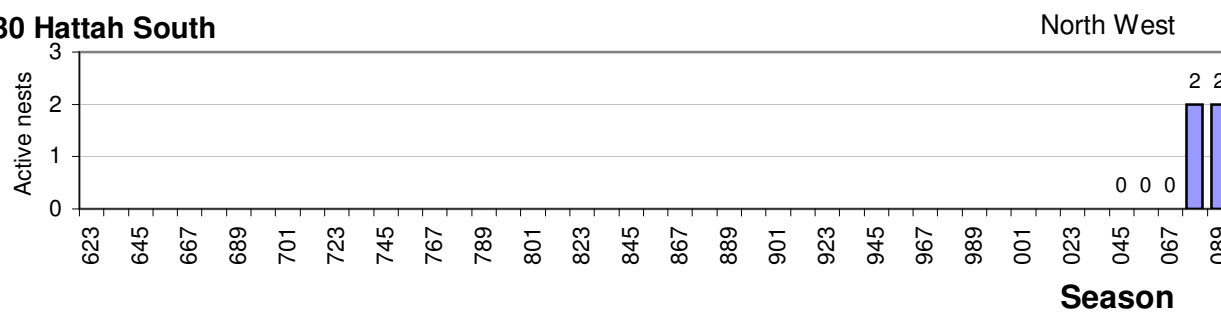
## 28 Nurcung



## 29 Wedderburn



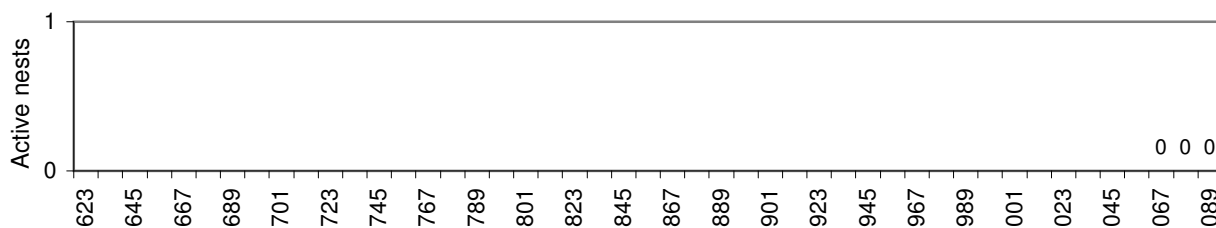
## 30 Hattah South



# Appendix B Site Trends

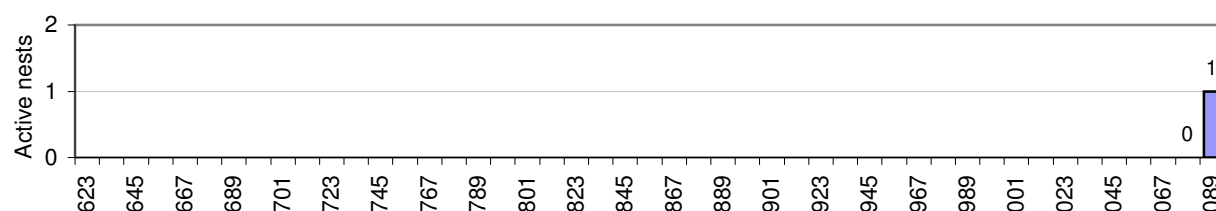
## 31 Skinners Flat

Wychitella NCR



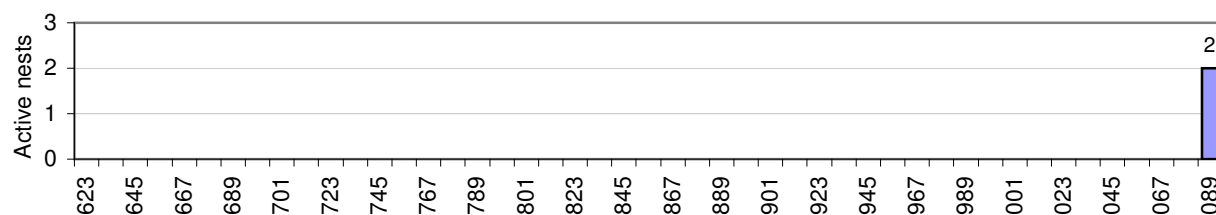
## 32 Wychitella

Wychitella NCR



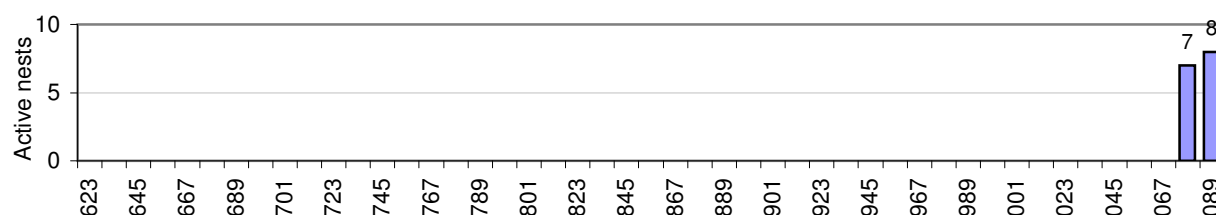
## 33 Korong Vale

Wychitella NCR



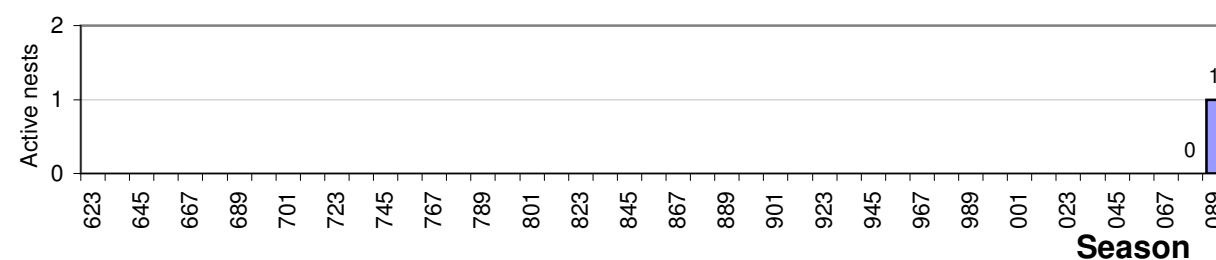
## 34 Paradise

Eastern Big Desert



## 35 Broken Bucket

Western Big Desert



# Appendix B Site Trends

## 36 Boughtons WH

## Little Desert

