4.7. Venus Bay Peninsula (SA) woylie summary

David Armstrong

Department of Environment and Heritage, South Australia

4.7.1. When and where the woylie decline was first noticed and how quickly it spread.

Monitoring showed a steady decline in the lower half of the peninsula from early 2005. This appeared to gradually extend into the northern half, and a sudden massive decline occurred between March/April 2006 and early July 2006.

Three types of monitoring are carried out approximately quarterly

- 12 km spotlight transect down the peninsula, commenced in 1992, with some variation in method and frequency over that time. In particular the introduction of an oat trail to assist in counting woylies from January 2002. Animals observed are collated in 500 m intervals.
- 4.5 km spotlight transect along an oat trail around the first paddock inside the fence, started in January 2005. This was principally intended to assess bilby numbers, which were and still are concentrated in this paddock.
- Sample trapping started late 2005. Four sets of ten traps at 100 m intervals. Two trap sets in the upper and two in the lower peninsula.

The 12 km spotlight transect figures show a steady decline in woylie numbers in the lower half of the peninsula from a peak in early 2005 (Figure 4.7.1). This is supported by the limited trapping figures (Table 4.7.1) available from November 2005 onward, which show a sudden decline in March 2006 for the southern half of the peninsula. However, although the woylie count in the top paddock transect (Table 4.7.2) had peaked at 345 in June 2005, they were still over 100 in March 2006. When the number dropped to 15 by early July 2006, it was clear something dramatic had happened. The 12 km transect and sample trapping were completed as soon as possible following the initial concern created by the shorter transect results and both confirmed a sudden decline in woylie numbers in the northern half of the peninsula also.

The drop in numbers in the lower peninsula first, followed later by a drop in the northern half, corresponds with the way in which the population initially expanded up the peninsula from the 1994 release sites in the south. It was only early in 2002 that woylies were first seen in the northern half above the blown out sand dune and cleared paddock. It seemed as though they were reluctant to cross the open area for some time, until forced to by competition for food and nesting territories. The numbers in the northern half then increased rapidly over about the first year, until in 2003-05 it was common to see woylies feeding in the open up to 500 metres from any sheltered areas of scrub. On a number of occasions woylies were seen emerging from or retreating down rabbit or bilby burrows. Both these behaviours are extremely unusual behaviour for woylies, and are attributed to high population stress.

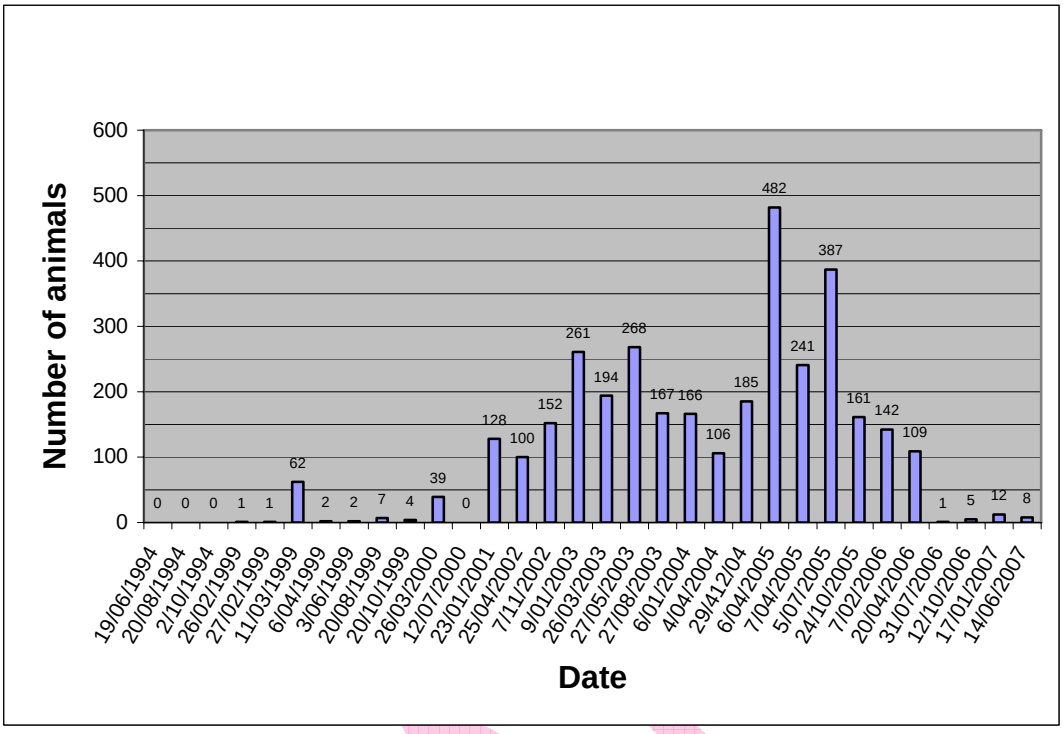

Figure 4.7.1. Venus Bay woylie population trends from 12 km spotlight transect.

Table 4.7.1. Woylie captures from ten traps at 100 m intervals along vehicle tracks, four traplines (A,B, C+D).

DATE	A	B	C	D	Total
22/11/05	5	4	5	3	17
2/3/06	7	2	0	2	11
4/7/06	1	2	0	0	3
26/1/07	1	2	0	5	8
17/5/07	4	1	4	6	15
5/9/07	2	2	2	4	10

20 woylies were re-released at the other end of the paddock containing trapline A (approx 2.0 km away) on 20/12/06. A further 10 woylies were re-released in the area of trapline A on 4/6/07.

Table 4.7.2. Results of 4.5 km spotlight transect along oat trail around perimeter track of top paddock inside Venus Bay Conservation Park fenced area.

DATE	BILBIES	WOYLIES	RABBITS
31/1/05	21	137	33
20/3/05	19	124	38
8/6/05	33	345	15
12/9/05	37	159	18
16/1/06	28	166	11
15/3/06 (a)	20	118	3
15/3/06 (b)	26	157	2
4/7/06	20	15	21
23/7/06 (a)	18	0	20
23/7/06 (b)	21	0	5
12/10/06	5	0	12
23/11/06	11	0	19
30/1/07	32	7	43
20/3/07	22	2	6
16/5/07	24	5	12
25/8/07	3	7	11

20 woylies were re-released in this area on 20/12/06 followed by another 10 woylies on 4/6/07.

4.7.2. Estimated level of decline in woylie population

The number of woylies observed on both spotlight transects has dropped significantly. The drop on the 12 km transect, from a peak of over 300 two years ago, to 12 and eight for the last two counts, and from over 300 for the 4.5 km transect, to five and seven clearly illustrate this. However, the current situation is slightly better than about 12 months ago when 53 woylies were removed temporarily to Monarto. Thirty have since been returned. It should also be taken into consideration that the peak numbers from two years ago were abnormally high and obviously totally unsustainable.

Unfortunately monitoring by sample trapping was not underway at the time of the population peak indicated by spotlight counts in mid 2005, having started later that year. Trapping showed a drop from 17 from 40 traps in November 2005, to three from 40 at the time the dramatic reduction in spotlight counts numbers took place in mid 2006, then a rise to ten from 40 traps this month (September 2007). The trap results are not as graphic as the spotlight counts in showing the drop in woylie numbers, but woylie trappability is high and traps are effective for the whole night. The distance woylies are attracted to the oat trail used in the spotlight counts are not known. Considering these factors, it is still thought that the population decline is in excess of 90%.

4.7.3. Possible cause of the decline

Woylie numbers began to fall in the lower half of the peninsula about mid 2005, initially due to exhaustion of principle food resources resulting from over population. When the numbers declined past a critical point where woylie reproduction was not exceeding cat predation, the cat predation would have created an accelerated decline. This combination of reduced food availability and a higher percentage of animals being lost to predation were probably gradually expanding up the peninsula. But, the final blow for the population was a series of six frosts in a week in June 2005. Frosts are infrequent in the area, with only one recorded over three previous winters. A combination of limited food resources, cat predation and this severe weather event is currently the most logical explanation available for the extreme population decline.

It was not possible to test the theory that severe frosts may have caused the sudden deaths of a large number of woylies for several reasons. Their bodies would not be obvious as they would have been in their carefully concealed nests beneath low shrubs. The only way to locate them would have been with dogs, which could have detected the decomposing bodies by scent. Unfortunately, due to the large number of 1080 baits throughout the area, a well-trained, muzzled and reliable dog would have been required and the time to carry out this task was limited. No such dog was readily available and the frosts were several weeks before the drop in numbers was known.

4.7.4. When the woylies were sent to Monarto

The spotlight count which first alerted to the decline in woylie numbers was carried out on 4/7/06. The decision to move animals to Monarto was made on 6/7/06. Between 6/7/06 and 11/7/06 at total of 53 (32 males, 21 females) were transported to Monarto for safekeeping and health checks. Twenty of these (12 males, 8 females) were returned on 20/12/06 and released in the general area of their initial capture. Another ten (eight males, two females) were returned and released in the same area on 4/6/07. Of these, four were pouch-young born and/or raised at Monarto. Monitoring of ten of the first group of 20 by radio tracking showed all ten survived until transmitters were removed in mid to late April 2007. All but one of the other ten were trapped at least once post release.