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## 3.4. Population trends – spatial patterns of woylie decline

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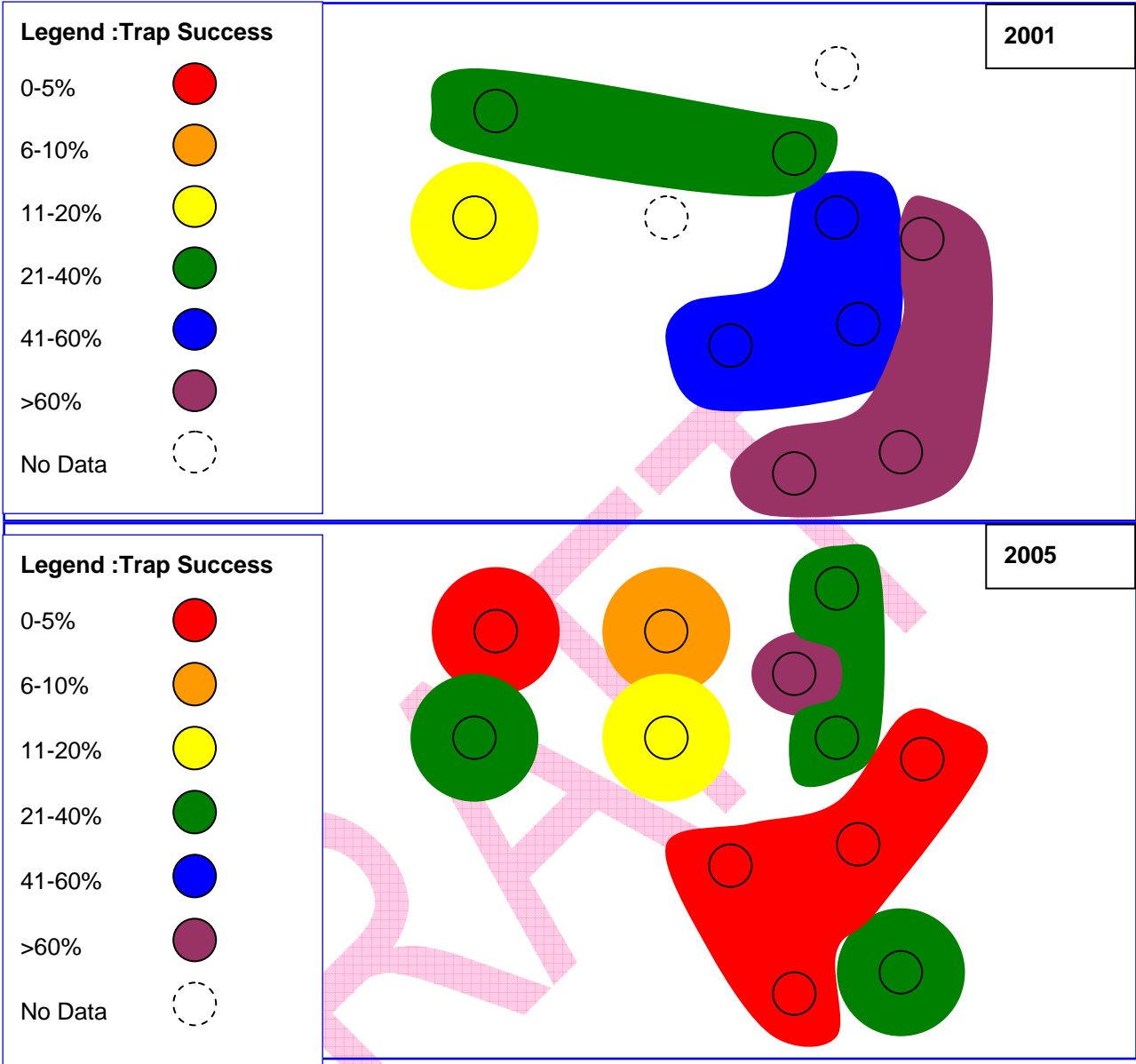
Spatial characterisation of the woylie declines is considered an important form of evidence that may be particularly powerful in assisting in the identification of key agents of decline. A rigorous spatial analysis has not yet been conducted. Expert assistance in spatial analysis is being sought to assist with this.

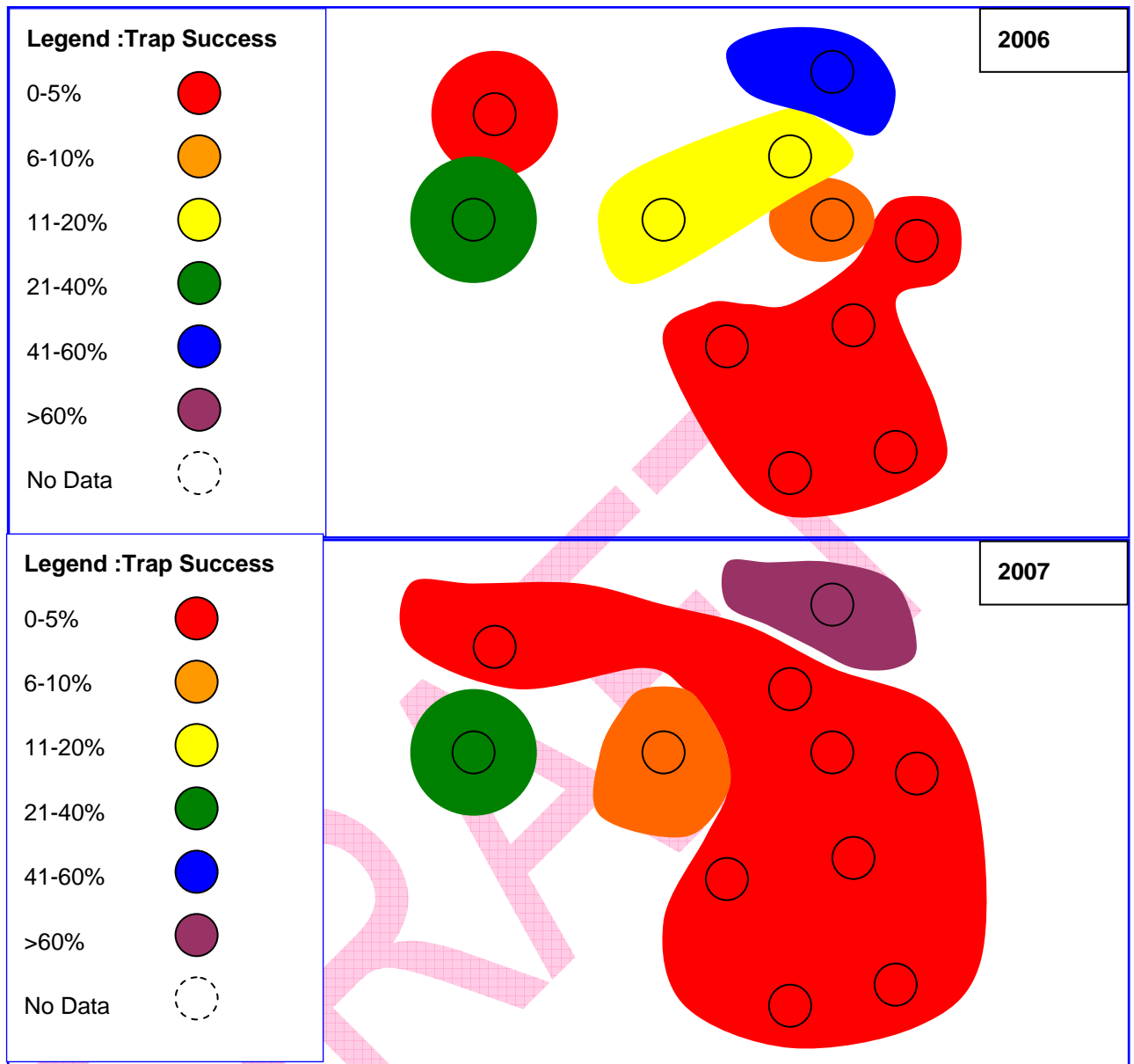
A superficial exploration of the data reveals the potential for a striking pattern to the declines. There appears to be a spatial progression of the decline, indicative of a front progressing through the region. The rate of spread appears somewhat limited, which if substantiated, could provide evidence that the agent(s) of decline may have some limited mobility.

Three central sites (Moopinup, Yackelup and Camelar) were the first sites to repeatedly catch no woylies, where previously high capture rates had been observed. The Perup Ecology Centre is approximately central to these sites (i.e. potentially “ground zero”). The declines roughly expanded outwards from this area, first to the south and then to the north. Winnejup is the exception to this pattern, declining relatively sooner than would be expected based on a declining radiation from a single point. Based on the patterns observed, the declines at Balban were predicted to occur in 2006/2007, 6-12 months before they happened. The opportunity of the anticipated declines was realised by incorporating this site in the PCS study (Chapter 4). It is also predicted on the same basis that Keninup will undergo a similar decline in 2008.

In some cases the declines began after the capture rates of woylies were particularly high. It is, therefore, also possible that there may be a density-dependency relationship associated with the declines.

A more rigorous analysis of the spatial, temporal and density characteristics of the declines are clearly needed to establish whether the speculation derived from anecdotal observations can be verified. In the meantime, Figure 3.4.1 provides a crude and preliminary attempt to graphically depict the spatial and temporal pattern of the declines within the Upper Warren region. This does not however, effectively show the complete and true nature of the patterns of declines.





**Figure 3.4.1. Rough depiction of the spatial and temporal characteristics of the woylie decline in the Upper Warren region (2001 - 2007). Circles symbolise the Upper Warren Fauna Monitoring trapping transects used to measure the trap success of woylies.**