Despite the observed statistical differences in the leukocytes, these do not clearly identify a distinct disease process and may be due to confounding influences on the leukocyte profile (such as 'stress' or excitement).

**Table 5.5.1. Summary of analyte values for Perup [Upper Warren region] and Karakamia Wildlife Sanctuary.**

| Variable | Karakamia | | Perup | | p |
|---|---|---|---|---|---|
| | Mean | Range | Mean | Range | |
| WBC | 3.44 | 1.5-7.8 | 5.35 | 1.3-11.5 | <0.001 |
| Lymph | 1.53 | 0.4-4.1 | 2.45 | 0.3-7.8 | <0.001 |
| Mono | 0.083 | 0.0-0.2 | 0.15 | 0.0-0.6 | 0.002 |
| Eos | 0.05 | 0.0-0.4 | 0.17 | 0.0-1.0 | 0.007 |
| MCH | 15.34 | 13.3-19.9 | 14.23 | 11.1-19.9 | <0.001 |
| MCHC | 318 | 287-367 | 300 | 267-406 | <0.001 |

## 5.5.3. Haematology update for 2007 in brief

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### 5.5.3.1. Introduction

This section follows on from ongoing work continued from a report by Dr Phil Clark (Murdoch University) from 2006.

### 5.5.3.2. Methods

Blood samples were collected from woylies following techniques as described in the WCRP Operations Handbook (Volume 3), and were examined using the standard haematological practices of Murdoch University Veterinary Hospital Clinical Pathology Laboratory. Samples were analysed by Dr Phil Clark and his associates. Samples were assessed for standard haematological parameters – packed cell volume (PCV, %), red blood cell count (RBC, cells $x10^{12}$/ml), haemoglobin concentration (Hb, mg/dl), white blood cell count (WCC, cells $x10^{9}$/ml), differential white blood cell count (heterophils, eosinophils, basophils, monocytes, lymphocytes, cells $x10^{9}$/ml) and platelets. Morphology of cells, including examination for red blood cell parasites, was also assessed. Samples examined included whole blood mixed with anticoagulant (EDTA) and air dried blood smears stained with Wright's/Giemsa stain.

### 5.5.3.3. Results

A total of 222 samples were analysed for haematology over the last twelve months, from samples collected in the Upper Warren region, PCS sites, Dryandra, Tutanning, Batalling and South Australia. (i.e. grand total of 511 samples from March 2006 to December 2007). Reference range information has previously been reported from a limited number of specimens by Dr Phil Clark (see Section 5.5.2. Haemotology Report 2006). This more recent data will be added to the haematology database and analysed in the near future to contribute to the strength of this reference information.

Further investigations regarding haemoparasites has been undertaken and is discussed elsewhere in this report.

### 5.5.3.4. Discussion

Reference haematological ranges are of value to investigate for evidence of clinical illness in sick and injured woylies, as well as to investigate possible subclinical effects of disease, however reference ranges are only of significant value in relation to the amount and quality data used to

create them. Further analysis of haematological data to include more recent data will be undertaken in the near future to strengthen the relevance of the current reference ranges.

### 5.5.3.5. Future work

Further analysis of data to assess for significant variation in haematological parameters with demographic and health status variables should be undertaken to further investigate for changes associated with disease, age, gender and so on.  It is felt that sufficient haematological data is now available from the perspective of developing a sound reference range for this species, and for assessing variation in relation to demographics, location etc.  Further analysis of haematological information in relation to health status to investigate for potential subclinical effects of pathogens studied thus far would also be valuable to undertake.

### 5.5.3.6. Conclusion

A reference range for haematological parameters for woylies has previously been developed based on a limited number of samples (Section 5.5.2. Haemotology Report 2006).  Further data analysis to include more recently obtained data will be undertaken to strengthen this reference information.   Further investigations regarding haemoparasites have been undertaken and are discussed elsewhere in this report.