

**Beechler, B.R., Jolles, A.E. & Ezenwa V.O. (2009). Evaluation of hematologic values in free-ranging African Buffalo (*Syncerus caffer*). *Journal of Wildlife Diseases*, 45(1): 57 – 66.**

**ABSTRACT:** As part of a large-scale disease screening program, blood samples were collected from 534 African buffalo (*Syncerus caffer*) in South Africa's Hluhluwe-iMfolozi Park in October 2005 and May 2006 to establish age- and sex-specific reference intervals for erythrogram and leukogram values. Sixty-seven of the animals were positive for bovine tuberculosis (TB), allowing for comparisons between TB-positive and TB-negative groups. Positive animals had basopenia and slight lymphopenia compared to TB-negative animals. Blood values were compared to those reported for captive African buffalo, American bison (*Bos bison*), and cattle (*Bos taurus*). The free-ranging buffalo sampled in this study had higher white blood cell counts than captive buffalo, and this difference was driven by lymphocytes. Free-ranging buffalo also had higher red blood cell counts, mean corpuscular haemoglobin concentration (MCHC), white blood cell counts, neutrophils and lymphocytes, and lower mean corpuscular volume (MCV) than cattle. Demographic and environmental factors strongly affected hematologic values in the study population. Older animals had significantly higher haemoglobin, haematocrit, MCV, and mean corpuscular haemoglobin (MCH), while younger animals had a higher red blood cell count, red cell distribution width (RDW), and white blood cell count, which was due to lymphocytes and basophils. Females had a higher haemoglobin concentration, haematocrit, MCV, MCH, and basophils than males. At the end of the wet season, haemoglobin, red blood cell count, haematocrit, MCHC, RDW, white blood cell count, and neutrophils were all significantly higher, while basophils and MCV were lower, than at the end of the dry season. Our results emphasize the need to use species-specific data when interpreting hematologic values and point to important differences in haematology between captive and free-ranging animals of the same species. Strong variability in hematologic values with animal age and sex, season, and herd affiliation indicates that "normal" hematologic values in wild animals vary throughout their lives and subject to fluctuating environmental conditions.

**Key words:** African buffalo, bovine tuberculosis, demographic variation, hematologic reference ranges, *Mycobacterium bovis*, seasonal variation, *Syncerus caffer*, tuberculosis.