

## ABSTRACT

**Ryan, S.J., Knechtel, C.U. & W.M. Getza, W.M. (2007). Ecological cues, gestation length, and birth timing in African buffalo (*Syncerus caffer*) *Behav Ecol*, 18: 635 – 644.**

We examined annual variation in the timing of conception and parturition in the African buffalo (*Syncerus caffer*) and the synchrony of birth timing with resource cues, using 8 years of monthly birth, rainfall, and vegetation data, measured as Normalized Difference Vegetation Index (NDVI). Monthly births had the strongest significant correlations with NDVI and rainfall levels 12 and 13 months in the past, respectively. In addition, the synchrony of current year births corresponds most strongly to the synchrony of the previous year's NDVI distribution. Because the gestation period of buffalo has been estimated to be around 11 months, these findings suggest that improved protein levels, occurring approximately a month after the first green flush of the wet season, are either a trigger for conception or conception has evolved to be synchronous with correlated environmental cues that ensure females enter a period of peak body condition around the time of conception and/or parturition. With a gestation period of approximately 340 days, parturition occurs to take advantage of the period when forage has its highest protein content. A comparative analysis of gestation periods within the subfamily Bovinae indicates that African buffalo have a protracted gestation for their body size, which we suggest is an adaptation to their seasonal environment. We also found that interannual variation in the birth distribution suggests a degree of plasticity in the date of conception, and variation in the number of calves born each year suggest further synchrony at a timescale longer than a single year.

Key words: birth synchrony, breeding ecology, NDVI, phenology.