

Seasonal Pattern of Births, Female Reproductive Success and Causes of Neonate Mortality of Farmed Red Deer and Fallow Deer in Northern New Zealand

G.W. Asher and M. Langridge*

Breeding female populations on seven red deer (*Cervus elaphus*) and five fallow deer (*Dama dama*) farms in northern New Zealand (latitude 37°–38°S) were monitored daily during the calving/fawning seasons (November–January) of 1980/81–1983/84. All neonates were tagged and weighed within 24 h of birth, and most were identified to their dams. Causes of neonate mortality were assessed by post-mortem examination of all retrieved specimens. Females of breeding age (> 15 months) were weighed immediately prior to the rut preceding each birth season, and linear regression analyses were performed to determine the influences of dam age and prerut (nonpregnant) live weight on neonate birth date and birth weight. Birth records were obtained for 932 red calves born to 1005 hinds (91.8% calving rate) and 853 fallow fawns born to 960 does (88.9% fawning rate); 115 red calves (12.5% of calves born) and 161 fallow fawns (18.9%) died before weaning in March (at 2 to 4 months of age). The resultant weaning rates (offspring weaned/females present at parturition) were 80.4% and 71.2%, respectively. The distribution of birth dates were skewed for both

species, with the right-hand tail representing late conceptions. Between-farm and year corrections on birth data (i.e., alignment to median birth date) indicate that fallow deer had a more synchronous birth pattern, with 83.7% of fawns born over a 21-day period (i.e., 10 days either side of median), compared with 67.6% for red deer. However, fallow deer births generally started 2 to 3 weeks later than red deer. Mortality diagnoses of 102 red calves (88.7% of known deaths) and 161 fallow fawns (100%) indicate that dystocia, starvation, and misadventure accounted for 40.2%, 34.3%, and 13.7% respectively of red calf deaths; whereas nonviability (failure to walk and suckle), infectious agents, starvation, dystocia, and misadventure accounted for 24.9%, 22.3%, 19.3%, 14.3%, and 11.2% respectively of fallow fawn deaths. Neonate mortality increased with decreasing birth weight. Sex-corrected birth weights of neonates were positively related to birth date and dam prerut live weight for both species. Dam age (primiparous vs multiparous) had a significant effect on birth date for red deer and birth weight for fallow deer.

*Ruakura Agricultural Centre, MAFTech North, Private Bag, Hamilton, New Zealand