Acute Nutritional Stress in White-tailed Deer During the 1996/97 Winter in Northwest Montana[TWS]

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Once every 200-300 years, maximum snow depth at Kalispell Airport reaches that recorded during, the 1996/97 winter. Once every 33 years, an equal number of consecutive snow cover days would be recorded. Ungulate overwinter survival depends on many factors, including winter severity and possessing the necessary fat reserves to meet increased thermoregulatory demands and offset nutritional stress caused by low quality forage. To assess the timing and degree of acute nutritional stress in white-tailed deer (*Odocoileus virginianus*), the percent (%) marrow fat content was determined using the oven-drying; technique for femurs collected from carcasses encountered during field work and along roadways from December 1996 to June 1997. We recorded sex and age, location, cause of death, and death date estimated to julian week. Cause of death was categorized as vehicle, predation, unknown, or natural (accidents and winter-kill). Percent marrow fat in adult females declined significantly through the winter for vehicle-kills ($p = 0.000\ 1$) but did not decline for those adult females dying of natural causes ($p = 0.\ 19$). In fawns, % marrow fat declined significantly through time for vehicle kills ($P = 0.008$) but not for natural deaths ($p = 0.66$). Fawn natural mortality commenced in late January whereas adult female natural mortality commenced in mid-February. Of those deer which died of natural causes, the marrow fat content averaged 72.4% (95% C.I. 65.7 - 79. 1) for fawns and 66.9% (95% C.I. 58.1 - 75.8) for adult females. Mean % marrow fat for fawns dying of natural causes was significantly less than for predator-kills ($p = 0.02$), but the difference was insignificant for adult females ($p = 0.\ 10\ 8$).