

TIME OF DEATH ESTIMATE IN MOOSE

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Time of death estimate can be established from time: temperature and time:chemical change relationships in wildlife species as moose (*Alces alces*) and deer (*Odocoileus spp.*). Care has to be exercised in developing these relationships to make certain that they reflect local conditions and customs. Moose in Minnesota are generally transported on open beds of pick-up trucks or trailers to compulsory registration stations. For the purposes of this study time of death was obtained in a hunter interview. Temperature of the head was obtained by inserting a 30 cm laboratory grade thermometer into the naris. The temperature was read after 3 minutes. Under these conditions the coefficient of determination is 0.69 and the equation for estimating the time of death is $y = 46.3 - (13.1 \times \log t)$ where y = estimated hours since death and t = temperature in naris in °C. Standard error of the estimate is 4.2 hours.

Vitreous humor was withdrawn from the eye(s) using a 1 1/2 inch, 18 ga needle into a 5 cc syringe and immediately filtered through a Gelman membrane filter (Gelman filter holder No. 61319 and Gelman Acropor Membrane Filter, 0.2 micrometers pore size, Gelman No. 4320-1) and stored in screw-top plastic vials. Clear

filtrates were found to be necessary for accurate results. Previous work indicated the samples to be very stable and storage after collection was at ambient temperature. Chemical analysis for glucose used an O-toluidine procedure; sodium and potassium were analyzed using a flame photometer. For 24 moose we sampled both eyes and found no significant differences between eyes of the same moose for any of the constituents. Glucose decreased exponentially with time and potassium increased linearly. Sodium showed no change with time. Adjusted coefficient of multiple determination for combining glucose and potassium is 0.90, and for combining nasal temperature, glucose and potassium is 0.94. Estimating time of death using these parameters is by $y = 35.1 - (12.2 \times \log g) + 2.12 \times K$ or $y = 37.3 - (6.3 \times \log t) - (7.5 \times \log g) + 2.2 \times K$ where y = estimate of hours since death, t is naris temperature in °C, g is glucose in mg/dl and K is potassium in mEq/l. Standard errors of the estimate are 3.2 and 2.5 hours respectively for these estimates. Workers are advised to develop their own predictive equations to reflect local conditions.