
MODELING CARNIVORE SIGN DATA: A CASE STUDY WITH THE CARNIVORE GUILD IN A RANCH IN EASTERN MONTANA

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Track deposition patterns by carnivores on a 54 km² ranch in eastern Montana were recorded with a sand strip passive index survey method over the course of 33 days. Carnivore tracks identified included coyotes ($n = 17$), bobcats ($n = 8$), feral cats ($n = 6$), pumas ($n = 1$), and long-tailed weasels ($n = 1$). Using temporal, weather, and habitat covariates, coyote intrusions were modeled with generalized linear models using a negative binomial distribution and log link. An information theoretic approach using the Akaike information criterion adjusted for sample size (AICc) to compare the relative support of multiple models indicated that habitat type had a strong influence on coyote track deposition, and that weather and temporal covariates were comparatively poor descriptors of coyote track patterns. Autocorrelation functions revealed no evidence for daily temporal autocorrelation of coyote intrusion numbers in either habitat, and a Spearman's rank correlation coefficient suggested little between-habitat daily intrusion correlation ($r = -0.21$). Use of open areas by coyotes has been well documented in the literature, and the data analyzed in this report are in agreement with said studies.