
LINKING LANDSCAPE CHARACTERISTICS TO LOCAL GRIZZLY BEAR ABUNDANCE AROUND GLACIER NATIONAL PARK

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Grizzly bear (*Ursus arctos*) habitat use has been extensively studied, but habitat has rarely been linked to demographic parameters and habitat models have not accounted for variation in detection or spatial autocorrelation. We collected bear hair from bear hair traps and rub trees in and around Glacier National Park (GNP) in northwestern Montana and genotyped the samples to identify individuals. We developed a hierarchical model with 1) explicit landscape and habitat variables that we theorized might influence abundance, 2) separate sub-models of detection probability for each sampling type, 3) covariates to explain variation in detection, 4) a conditional autoregressive (CAR) term to account for spatial autocorrelation, and 5) weights to identify most important variables. Road density and percent mesic habitat best explained variation in female grizzly bear abundance and the spatial autocorrelation term was not supported. Female abundance was higher where road density was lower and where more mesic habitat exists. Detection of females increased with rub tree sampling effort. Road density best explained variation in male grizzly bear abundance and the spatial autocorrelation term was supported. More male bears occurred in areas of low road density. Detection of males increased with rub tree and hair trap sampling effort and decreased with time. Our finding that road density influences abundance concurs with conclusions of earlier studies that road density influences habitat use.