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FREQUENCY AND DISTRIBUTION OF HIGHWAY CROSSINGS BY KENAI PENINSULA BROWN BEARS

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Abstract

Highway construction and expansion through bear habitat can negatively affect brown bear populations. Highway structures can decrease habitat availability through habitat loss and restricted access, roads often displace animals and cause re-direction of natural movements, and highways can act as barriers to decrease gene flow. Lastly, highway traffic can cause direct bear and human mortality through car-animal collisions.

We examined the spatial and temporal distribution of brown bear crossings of the Sterling and Seward Highways on the Kenai Peninsula, Alaska. Data were collected between 1995 and 2001 as part of an ongoing population study. We created random walking bears within each bear's home range and compared the geographic distribution of each bear's highway crossing locations to the random crossing locations to assess whether the number and pattern of crossing locations were different than expected. An information theoretic approach comparing logistic regression models was used to determine if traffic volume, distance to cover across the highway, road density, and distance to the closest stream crossing were related to locations bears crossed the highway. We conducted a second set of analyses comparing models based on the temporal factors of daylight versus darkness, mean bear movement per hour, and traffic volume. Most bears crossed the highway less frequently than expected. While locations where bears crossed the highway were clustered, none of the spatial models tested strongly explained the observed clustering. Bears were more likely to cross the highway during nighttime. Additional research will be necessary to identify the cues bears use to choose locations to cross the highway.

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