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THE IMPACTS OF INTENSITY OF HUMAN USE ON GRIZZLY BEAR HABITAT SELECTION

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Problem Statement

One of the major challenges to grizzly bear preservation in the greater Yellowstone area is the impact on grizzly bear habitat selection by various types and intensities of human activities. The most prevalent of these human activities is the presence and intensity of use of motorized transportation systems. These transportation systems provide increased access into grizzly bear habitat and thus increase the risk of mortality and dilute the effectiveness of their habitat (Brannon 1984, Archibald et. al 1987, McLellan and Shackleton 1988, Kasworm and Manley 1990, Mace et. al. 1996, Matson et. al. 1993). Results of studies by Anue and Kasworm (1989) found that 63 percent of 43 grizzly bear mortalities on the Rocky Mountain front occurred within 1km of the nearest road. The Grizzly Bear Conservation Strategy Plan, a document developed for the management of grizzly bears, identifies the impact of motorized transportations systems as one of the key factors in the management of grizzly bear habitat. Metrics have been defined in the plan, including road densities, associated with motorized transportation systems and their use to monitor the effectiveness and change in grizzly bear habitat use. Even though there is a great deal of interest in the impacts of motorized transportation systems and their impact on grizzly bear habitat, there has been little research conducted to address this question in the Greater Yellowstone area. Most of the work that has been done in the Greater Yellowstone area has focused on Yellowstone National Park where road use is tightly controlled and firearms are not allowed. Areas managed for multiple use activities outside of Yellowstone National Park where road use has fewer restrictions and firearms are allowed have received little attention.

Objective

The emphasis of this paper is to look at the effect of two metrics of human use and their association with grizzly bear habitat selection.

Funding Source

The U.S. Geological Survey

Methodology

The nature of global positioning system (GPS) data available will provide the opportunity to look at distance to roads, road density as well as rates of movement measured in diurnal, nocturnal and crepuscular time periods and seasonal time periods. In addition to bear location data, infrared vehicle counters have been used to count all vehicles that pass by the counters during deployment. These counting devices were placed strategically throughout a geographically closed drainage for the past two non-denning seasons to obtain a measure of human use intensity. To date this project has retrieved 10 collars, equipped with GPS receivers and very high frequency (VHF) beacons. The collars were deployed on four female and six male grizzly bears in the Yellowstone ecosystem, both within and outside Yellowstone National Park. The collars attempt to collect locations every 3.5 hours. These collars were on bears for 12 months and have collected over 10,000 locations. Two of these collars (from 1 male and 1 female) were retrieved in the same closed drainage where vehicle counters were deployed. The combination of the over 1,200 locations obtained and vehicle counter data will be used to examine associations of road use intensity and grizzly bear seasonal and daily habitat use patterns.

Summary of Findings

Thus far, we have GPS data from ten collars which were deployed on grizzly bears on multiple use lands. In addition to the GPS data, we have three seasons of traffic monitoring data. These data have provided important ecological insights to grizzly bear habitat use and management options.

Implications for Further Research

Based on current research and hypotheses that have been generated from this research, resource management agencies would be well served with efforts that would increase the geographic and temporal scale of this research. One example of this would be in developing management scenarios for implementation of new transportations plans.

URL

Web site for this project is currently under development

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