Multi-Scale Effects Of Forest Roads On Black Bears

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The black bear (*Ursus americanus*) population within the Coeur d'Alene River watershed of northern Idaho is exposed to high hunting and recreational pressure facilitated by a dense network of forest roads. Bears are hunted using bait and dogs in spring and fall, with an additional non-lethal summer pursuit season. To understand the effects of these roads on black bear behavior we used data collected from 28 adult bears fitted with Global Positioning Systems (GPS) collars from June 1 2007 through the fall of 2008. We used locations acquired at 20 minute intervals to assess habitat selection and activity patterns of males and females at home range (2nd order) and within home range (3rd order) scales, both annually and seasonally. We tested the hypotheses that black bears 1) will show no response to road density in 2nd order habitat selection in areas of relatively consistent road density, 2) will show a functional response to roads in 3rd order habitat selection, i.e., use of habitat near roads will be inversely proportional to traffic volume, 3) show seasonal shifts in activity patterns and movement rates in proximity to roads. Avoidance of areas containing primary food sources or increased activity and energy expenditure may have profound consequences for bears. Understanding how traffic volume and road density influences habitat selection and movement patterns can therefore play an important role in management of the species.