

## **UC Davis**

### **Recent Work**

#### **Title**

Spatial and temporal response of grizzly bears to recreational use on trails

#### **Permalink**

<https://escholarship.org/uc/item/8bd59485>

#### **Authors**

Graves, Tabitha A.  
Servheen, Christopher  
Godtel, Don

#### **Publication Date**

2003-08-24

## **SPATIAL AND TEMPORAL RESPONSE OF GRIZZLY BEARS TO RECREATIONAL USE ON TRAILS**

**Tabitha A. Graves (Phone: 406-243-5197, Email: tgraves@forestry.umt.edu), University of Montana, University Hall 309, University of Montana, Missoula, Montana 59812 Fax: 406-329-3212**

**Christopher Servheen (Phone: 406-243-4903, Email: grizz@selway.umt.edu), U.S. Fish and Wildlife Service, University Hall 309, University of Montana, Missoula, Montana 59812**

**Don Godtel (Phone: 406-791-7739, Email: dgodtel@fs.fed.us), U.S. Forest Service, Lewis and Clark National Forest, 1101 15<sup>th</sup> St, Great Falls, MT, 59403**

### **Abstract**

Many human activities affect how bears use habitat. The effects of motorized recreational vehicle use on trails have not been formally assessed previously. Potential effects include displacement from and avoidance of high quality habitat, either temporally or spatially, which could affect reproduction and survival and result in fewer bears. Focusing on displacement, we used hourly locations from four GPS-collared female bears in the Badger-Two Medicine area in the Lewis and Clark National Forest to assess spatial and temporal distributions of bears relative to trail locations and to recreational use on trails. When availability was defined as circles equal to 95 percent of move distances around the previous bear location, all bears used areas near trails less than expected. We iteratively reclassified trail habitat versus non-trail habitat as increasing buffers in 50m increments around trails until we reached a buffer-width at which bears used areas near trails in proportion to availability. Compositional analysis results showed that bears selected against areas within 250 - 900m from ATV trails and within 450 - 600m from single-track trails, which had some motorbike use. The distance from trails at which bear use approximated availability varied by individual bear, by time of day, and by type of trail. Log-ratio differences were used to assess selection. Bears were less likely to spend time near trails with high (~5 trips/day average) motorized use than trails with low motorized use. We used an information-theoretic approach to select between nonlinear regression models with variables that included motorized use estimates, non-motorized use estimates, and trail density.

### **Funding**

This study was supported by the Lewis and Clark National Forest, the U.S. Fish and Wildlife Service, the Blackfeet Tribal Fish and Game Department, Brown Bear Resources, and the George E. Bright Fellowship through the University of Montana School of Forestry.