

RM-CESU - Project Completion Report, FY06

Project Title: Evaluate the Effectiveness of Grizzly Bear Management Areas in Yellowstone National Park

Park: YELL

Funding Sources: Rocky Mountain CESU Research Funding (\$5,000)

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Project Description:

Special Bear Management Areas (BMAs) were designated in Yellowstone National Park in 1983 in an effort to provide security for the threatened grizzly bear. Sixteen BMAs were identified and have been in place since that time. These BMAs comprise 464,638 acres or approximately 21% of YNP, and are closed to human access and recreational activity for part or all of the spring, summer, and fall seasons when bears are active. The goals behind these restrictions were to: 1) minimize bear-human interactions that may lead to habituation of bears to people, 2) prevent human-caused displacement of bears from prime food sources, and 3) decrease the risk of bear-cause human injuries in areas with high levels of bear activity. Our study objective is to determine if Yellowstone BMAs are functioning as designed and are meeting these three primary goals.

Since their development, only one attempt has been made to evaluate the role and significance of BMAs in grizzly bear conservation. Results from that study clearly indicated a lack of adequate empirical data to conduct such analysis. The study recommended that additional data on the spatial and temporal distribution of bears in BMAs be collected. In this study, we are collecting this additional data by the use of new GPS radio collars, which allow for up to 48 radiolocations per day. GPS radio collars collect very fine scale movement of bear activity and allow us to determine very specific bear locations in relationship to hiking trails, backcountry camps, roads, and cabins. In addition, human use in BMAs is being measured with the aide of hand held GPS units. These units can collect continuous movement of backcountry users in the BMAs.

The study results will include an analysis of the activity of hikers compared to movement information from radio collared grizzly bears. An assessment of these two activities allows us to identify potential and actual conflict areas. These conflict areas are compared to the existing BMA rules to help determine if the rules are allowing bears

adequate foraging opportunity and providing a safe backcountry experience for recreational users.

Project Results:

In 2006, we collected preliminary data on human use in BMAs. We developed and refined a process for collecting fine-scale human use data in 4 BMAs by deploying hand-held GPS units to a subset of backcountry users. A total of six backpacking parties were given units. All units collected data with a very low error rate and we found that the data gathered will provide excellent human use information. In addition, all units were returned on time and in good condition.

Four grizzly bears were trapped and radio collared in the fall of 2006. Three of these bears were captured within study area BMAs. This includes two male and one female adult bear. Two of these bears received spread spectrum radio collars and one received a “store on board” radio collar. In addition, one bear was captured very near the study area BMAs and could potentially travel in and out of these areas. This sub adult female grizzly was captured during a management operation in the Lake Government area. This bear received a “store on board” GPS radio collar.

The preliminary results show that backpacking parties primarily travel on the trail and during the mid-day in BMAs. The bear movement data will be analyzed as soon as the GPS radio collars are available to download. Once the radio collars have a successful download, the data will be analyzed to determine potential conflict sites between bears and people.

Finally, three separate scat samples were collected from the Riddle Lake BMA. These scat samples are in the laboratory at MSU and will be analyzed for stress hormone (corticosterone) levels. This will help determine if there is an elevated stress level for bears when a BMA is open to human recreation.

Follow-up of this project:

The project will continue in the summer of 2007, 2008, and beyond if necessary. Given the results of the 2006 data, we will continue to collect human-use data and deploy additional grizzly bear GPS collars. Collection and analysis of data will continue through 2008. Thanks to this seed money, Yellowstone was successful in getting \$50,000 from the BRMD fund source to extend this evaluation of BMAs in FY08-10.

Publications, other reports expected/ with dates:

Tyler Coleman will be writing a master’s thesis for Montana State University. The completion date for the thesis is not yet determined, however it will likely occur in the fall of 2008. We also expect at least one publication as a result of this research. The publication will share the same time frame as the master’s thesis.