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Author

Hardy, Amanda R.

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RESPONSES OF ELK AND BISON TO WINTER RECREATION IN YELLOWSTONE NATIONAL PARK

Amanda R. Hardy, Research Associate Ecologist, (Email: ahardy@coe.montana.edu)
Western Transportation Institute, College of Engineering,
Scott Creel, Professor of Wildlife Ecology,
& Robert A. Garrott, Professor of Wildlife Ecology,
Montana State University, Bozeman, MT 59717
Phone: 406-994-2322, Fax: 406-994-1697

Abstract

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The effect of winter recreation on animal populations is widely debated, particularly since a recent decision by the US Department of the Interior to ban snowmobiles from National Parks. This study assesses effects of over-snow vehicle traffic on an elk (*Cervus elaphus*) and bison (*Bison bison*) population in Yellowstone National Park. We relate behavior and distribution to variation in over-snow vehicle traffic. We use immunoassays of fecal glucocorticoid levels as a noninvasive method of measuring physiological stress responses to disturbances, to relate over-snow vehicle activity to glucocorticoid levels. In preliminary results for elk, day-to-day variation in fecal glucocorticoid levels tracked variation in the number of snowmobiles, after controlling for effects of weather and age. Glucocorticoid concentrations were higher in response to snowmobiles than in response to wheeled vehicles, after controlling for effects of weather, age and number of vehicles. Results for bison are pending, as are behavior and distribution analyses. Despite these stress responses, there is no evidence that current levels of snowmobile activity are affecting population dynamics for either species.