Assessing Winter Recreation Effects on Stress Hormone Levels of Elk and Bison in Yellowstone National Park [TWS]

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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. Immunoassays of fecal glucocorticoid levels provide a noninvasive method of measuring physiological stress responses of wildlife to disturbances. Here, we relate snowmobile activity to glucocorticoid levels of an elk (*Cervus elaphus),* and bison (*Bison bison*) population in Yellowstone National Park. 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. Despite these stress responses, there is no evidence that current levels of snowmobile activity are affecting population dynamics for either species.