

Snowmobiles can stress wildlife.

Snowmobile lovers say the noisy machines don't harm wildlife but conservationists fear they do. However, there has been little solid evidence for either side. Now new research shows that snowmobiles can raise the stress hormones of animals in national parks.

"Elk and wolves show physiological stress responses to snowmobiles and that the response is stronger when the intensity of snowmobile use is heavier," says Scott Creel of Montana State University in Bozeman, who presents this work with five co-authors in the June issue of Conservation Biology.

The annual number of snowmobiles in Yellowstone National Park has increased about 25 times since the mid-1960s. In 1997 the Fund for Animals sued the National Park Service over snowmobile use, and in 2002 the Department of the Interior decided to ban snowmobiles from most national parks by the winter of 2003-2004. When the ban was challenged in a lawsuit by the International Snowmobile Manufacturers Association, the Interior department reversed itself and lifted the ban. Now the issue is being reconsidered (see the NPS website below).

To help resolve the debate over whether snowmobiles harm wildlife, Creel and his colleagues measured glucocorticoids ("stress hormones") in the feces of elk and wolves in several national parks. When chronically elevated, glucocorticoids can cause adverse effects such as reducing reproduction and survival. The researchers collected 125 elk fecal samples near Old Faithful in Yellowstone National Park both during the snowmobile season and right afterwards, when wheeled vehicles use roads in the park. The researchers collected wolf fecal samples from three national parks: 178 from Voyageurs, where snowmobiles are common; 193 from Isle Royale, which closed to public during the winter and so has no snowmobiles; and 161 from Yellowstone's northern range, which is closed to snowmobiles but open to wheeled vehicles.

After accounting for snow depth and age, Creel and his colleagues found that elk glucocorticoids were higher when snowmobile use was higher. The results also suggested that elk glucocorticoids were higher when snowmobiles were present than when wheeled vehicles were present. The number of snowmobiles ranged from 144 to 1,168 per day during the 89-day winter season, and the number of wheeled vehicles ranged from 134 to 732 per day.

The researchers also found that wolf glucocorticoids were higher in Voyageurs, which has snowmobiles, than in Isle Royale, which does not. Moreover, the stress hormone increase paralleled the intensity of snowmobiling: wolf glucocorticoid levels increased by nearly a third in 2000, when snowmobile use was relatively light, and doubled in 1999, when snowmobile use was heavy. Wolf glucocorticoids were intermediate in the Yellowstone area that was snowmobile-free but had wheeled vehicles.

Creel and his colleagues found no evidence that current levels of snowmobile use are harming the populations of elk or wolves studied -- both are stable. However, they caution that their results do not mean that snowmobile use in national parks is benign. "The populations we studied apparently can compensate for the current level of stress, under current ecological conditions, but the physiological effect is there to be seen," says Creel. "The question facing managers will be to evaluate how much weight to place on data related to stress. Managers might decide to rely on simple changes in population size, birth and death rates, or the glucocorticoid data could be treated as an early warning signal."

<http://news.bio-medicine.org/biology-news-2/Snowmobiles-can-stress-wildlife-7500-2/>