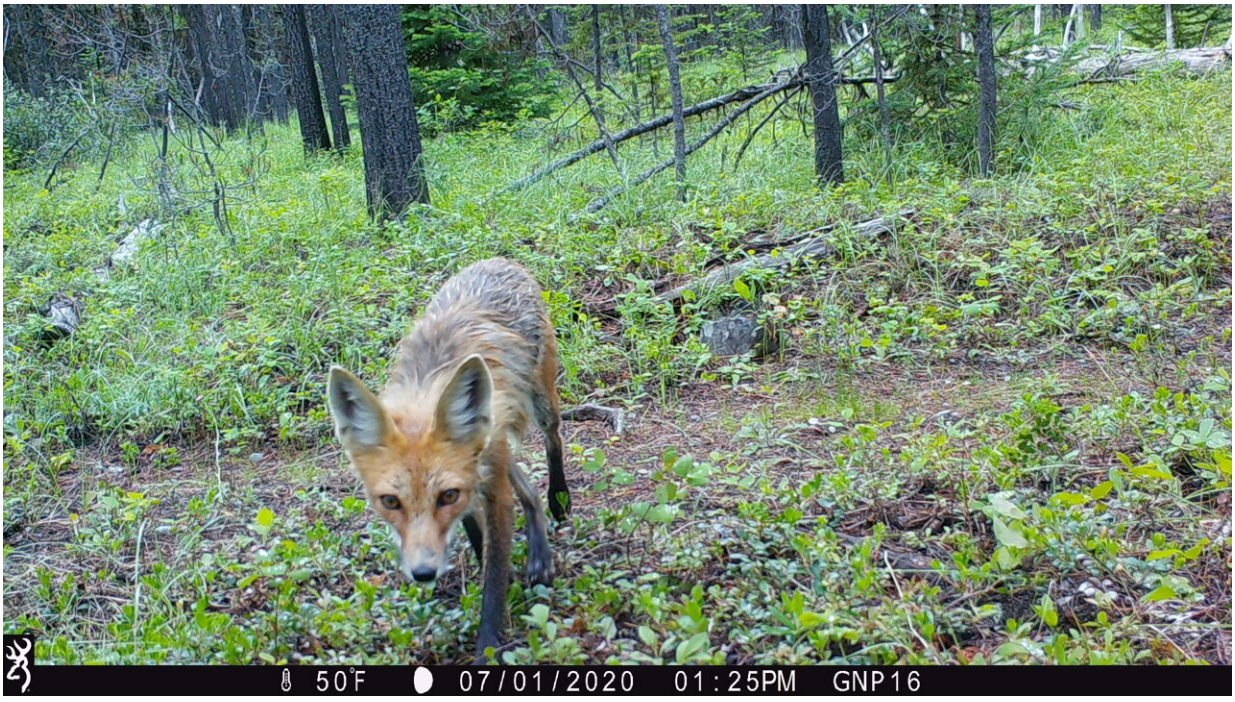
Low-impact human recreation changes wildlife behavior

January 19 2023, by Sara Zaske



Researchers placed camera traps along hiking trails in Glacier National Park and found that 16 out of 22 species changed the way they accessed areas when humans were present. Only one species red fox were more present on and near trails when the park was open–perhaps because their competitors, coyotes, avoided those areas when humans were around. Credit: Mammal Spatial Ecology and Conservation Lab, Washington State University

Even without hunting rifles, humans appear to have a strong negative

influence on the movement of wildlife. A study of Glacier National Park hiking trails during and after a COVID-19 closure adds evidence to the theory that humans can create a "landscape of fear" like other apex predators, changing how species use an area simply with their presence.

Washington State University and National Park Service researchers found that when human hikers were present, 16 out of 22 mammal species, including predators and prey alike, changed where and when they accessed areas. Some completely abandoned places they previously used, others used them less frequently, and some shifted to more nocturnal activities to avoid humans.

"When the park was open to the public, and there were a lot of hikers and recreators using the area, we saw a bunch of changes in how animals were using that same area," said Daniel Thornton, WSU wildlife ecologist and senior author on the study published in the journal Scientific Reports. "The surprising thing is that there's no other real human disturbance out there because Glacier is such a highly protected national park, so these responses really are being driven by human presence and human noise."

The researchers had also expected to find an effect known as "human shielding," when human presence causes large predators to avoid an area, providing opportunity for smaller predators and perhaps some prey species to use an area more frequently. In this case, they found this potential effect for only one species, red fox. The foxes were more present on and near trails when the park was open–perhaps because their competitors, coyotes, avoided those areas when humans were around.

Researchers placed camera traps along hiking trails in Glacier National Park during and after a COVID-19 closure. They found that 16 out of 22 mammal species changed the way they accessed areas when humans were present. Credit: Mammal Spatial Ecology and Conservation Lab, Washington State University

Several species showed a decline in use of trail areas when the park was open, including black bear, elk and white-tailed deer. Many decreased their day-time activities, including mule deer, snowshoe hare, grizzly bears and coyotes. A few, including cougars, seemed indifferent to human presence.

While the influence of low-impact recreation is concerning, the researchers emphasized that more research is needed to determine if it has negative effects on the species' survival.

"This study does not say that hiking is necessarily bad for wildlife, but it

does have some impacts on spatiotemporal ecology, or how wildlife uses a landscape and when," said Alissa Anderson, a resent WSU master's graduate and first author on the study. "Maybe they are not on the trails as much, but they're using different places, and how much does that actually impact species' ability to survive and thrive in a place, or not? There are a lot of questions about how this actually plays into population survival."

Researchers placed camera traps along hiking trails in Glacier National Park during and after a COVID-19 closure. They found that 16 out of 22 species changed the way they accessed areas when humans were present. Credit: Mammal Spatial Ecology and Conservation Lab, Washington State University

The study came about in part because of the pandemic. Both humans and wildlife like to use trails, so the researchers had set up an array of

camera traps near several trails to study lynx populations in Glacier National Park when COVID-19 hit. In an effort to keep the virus from spreading to the nearby Blackfeet Indian Reservation, the eastern portion of the park was closed in 2020 with only minimal access allowed to administrators and researchers.

This allowed Anderson, Thornton and co-author John Waller of Glacier National Park to conduct a natural experiment. They captured images in summer of 2020 when the park was closed as well as in 2021 when it opened again.

Glacier, which covers nearly 1,600 square-miles of northwestern Montana, sees more than 3 million human visitors a year. It is also home to diverse range of animals with almost the full complement of mammal species that has existed in the region historically.

Researchers placed camera traps along hiking trails in Glacier National Park

during and after a COVID-19 closure. They found that 16 out of 22 mammal species changed the way they accessed areas when humans were present. Credit: Mammal Spatial Ecology and Conservation Lab, Washington State University

Researchers placed camera traps along hiking trails in Glacier National Park during and after a COVID-19 closure. They found that 16 out of 22 mammal species changed the way they accessed areas when humans were present. Only a few species, including cougars, seemed indifferent to human presence. Credit: Mammal Spatial Ecology and Conservation Lab, Washington State University

Thornton said park managers are faced with a balancing act between conservation and public use missions.

"It's obviously important that people are able to get out there, but there might be a level of which that starts to be problematic," he said. "Some

additional research could help get a better understanding of that and help develop some guidelines and goals."

More information: Alissa K. Anderson et al, Partial COVID-19 closure of a national park reveals negative influence of low-impact recreation on wildlife spatiotemporal ecology, *Scientific Reports* (2023). DOI: 10.1038/s41598-023-27670-9

Provided by Washington State University