How do our outdoor activities impact wildlife?

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Abstract

Do you love seeing wildlife when you’re wandering around in the woods? Like a majestic deer, or a beautiful bird? Well, the love might not be very mutual. In fact, many animals avoid us, even if we don’t mean any harm.

So, what impact do our outdoor activities have on wildlife? We set out to answer this question by radio tracking the whereabouts of red deer and capercaillie (also called wood grouse—a kind of bird) in the Black Forest in Germany. Deer are common, but capercaillie are on the brink of extinction in that area.

We found that both red deer and capercaillie avoided hiking trails in our study areas. Interestingly, the extent of avoidance changed between the seasons, and, in the case of deer, even between day and night! Effective natural area management plans that aim at protecting wildlife and reducing human animal conflict need to take these temporal differences into account.

Introduction

More and more people are enjoying the outdoors, either hiking and biking in the summer, or skiing and snowshoeing in the winter. Many of us think it’s a treat to catch a glimpse of wildlife, like a deer, a chipmunk, or a bird, while stomping around in the woods. But the wildlife we encounter is usually not quite as excited to see us.

In fact, many animals associate humans with danger and run away or avoid areas with people all together (unless the animals are used to seeing us around, or even attracted to us because they expect food). So how are animals affected by all our outdoor fun?

We set out to study two specific examples in the Black Forest in Germany: red deer (Cervus elaphus) and capercaillie (Tetrao urogallus), a large wood grouse. (Fig. 1) Red deer, the largest animals in the Black Forest, are pretty common, but capercaillie are so rare that they are locally threatened by extinction.

In some parts of the Black Forest management zones have been designated to reduce potential conflicts between humans and wildlife. They limit outdoor activities at certain areas and times of the year. One of our goals was to measure the animals’ response to recreation activities in these areas and to see if the red deer management plan is appropriate.
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Methods

The Black Forest is a mostly forested mountain range of about 6000 km² in size (that’s a little bigger than the Everglades National Park in Florida). You may have heard about the famous cuckoo clocks and the cute half-timbered houses that are typical for the area. The forest itself is a popular place for outdoor recreation all year round. The hiking trails alone add up to over 23,000 km in length (that’s more walking than going all the way from New York City to the southern tip of South America!).

So what impact do all these hikers and other outdoor enthusiasts make on deer and capercaillie in these woods? To find out, we selected study areas within the Black Forest that are popular for outdoor recreation all year round (Fig. 2). In these, we mapped all trails used for summer hiking and winter skiing and also counted visitors during times that were representative for our study period. We also mapped the vegetation as well as topography of the area.

To see how our study animals responded to people, we equipped 15 deer and 12 capercaillie with radio transmitters and then tracked their movement in relation to the trails. We had two types of transmitters:

- Smaller ones for the wood grouse, which had to be located with antennas (in a process called radio-telemetry)
- Bigger GPS transmitters for the red deer, that communicated with satellites in the sky and logged animal movement automatically.

We tracked deer and grouse activity year round and also distinguished between day and night movements of deer.

Results

We found that capercaillie and red deer were affected by trails within their habitat. Both animals avoided trails, but their behavior depended on season of the year or even time of the day.

For instance, red deer avoided hiking trails only during the day (when people are using them). But they actually preferred areas near trails during the night to eat food that was off limits to them during the day (Fig. 3).

The extent to which both animals avoided people or trails changed throughout the year: in the summer, capercaillie avoided areas close to hiking trails up to a distance of 145m.

In the winter, however, with less vegetation in which to hide, the animals’ distance to hiking and skiing areas more than doubled (to about 320m), especially in areas without bushes to hide in.

Of the entire habitat of the capercaillie that we studied, we estimate that 8 to 20% (in summer) and 8 to 40% (in winter) were affected by outdoor recreation, mainly in higher altitudes.

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If we want to create effective management plans for natural areas where animals and humans interact, we need to know what kind of impact people’s outdoor activities have on animals. Our studies show that both deer and grouse avoid trails when people use them. For animals like the capercaillie, which only exist in very limited numbers and areas in the Black Forest (Fig. 2), this can be particularly harmful.

Furthermore, we need to look at seasonal and also day/night differences of these effects. Red deer avoided areas with trails more during the day than during the night, and both animals kept a bigger distance from humans in the winter than during the summer. This shows us that successful management plans need to account for these temporal difference of impact of outdoor recreation (for instance by limiting nightly recreational behavior during vulnerable times of the year).

Finally, to offset these potential harmful impacts of our outdoor activities, we need to make sure animals have enough resources (favorite food, hiding places) available in areas that are further away from hiking trails or skiing areas. This will also reduce potential management conflicts like deer eating and damaging valuable trees in sensitive forestry areas they enter when trying to avoid people in the woods.

Discussion

When we use green spaces like forests or nature reserves for recreation, we need to be mindful that we are guests in the homes and territories of animals that live there. Even when we don’t actively try to scare animals, our mere presence can make them avoid certain areas. Nature reserves therefore need to be carefully managed to keep both people and animals happy. And in order to minimize potential harm for wild creatures in the woods, we need to respect specific rules of the wild places we visit, like staying on trails, not picking plants or feeding wildlife.

Conclusion

When we use green spaces like forests or nature reserves for recreation, we need to be mindful that we are guests in the homes and territories of animals that live there. Even when we don’t actively try to scare animals, our mere presence can make them avoid certain areas. Nature reserves therefore need to be carefully managed to keep both people and animals happy. And in order to minimize potential harm for wild creatures in the woods, we need to respect specific rules of the wild places we visit, like staying on trails, not picking plants or feeding wildlife.
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Check your understanding

1. What negative consequences could animals suffer from avoiding areas with humans?
2. What other conflicts can you think of that might occur between deer and humans?
3. You heard about different management zones in the Black Forest. Why do you think are they necessary?
4. According to our study, how can these management zones be improved?
5. We used GPS receivers for tracking red deer, which automatically record activity and the whereabouts (in GPS coordinates) of the animals. Why could we not use these handy GPS receivers for the grouse?
6. What do you think – shall we forbid outdoor recreation in natural reserves all together, for the sake of wild animals?

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Glossary of Key Terms

Capercaillie – (wood grouse): A wild bird, and the biggest member of the grouse family. It can weight up to 7.2 kg (16 lbs). The males are almost twice as big as the females.

GPS receiver – a device that can communicate with satellites in the sky to determine one’s exact position. GPS stands for Geopositioning System. Many people use a GPS for navigating their car.

Habitat – a natural environment of an animal or plant (or other living organism). It provides food and shelter. The Black Forest is the habitat for red deer and capercaillie in this study.

Radio tracking/radio telemetry – a technique to track animals from a distance. A transmitter is attached to the animals and sends radio signals to a receiver (usually a handheld antenna). The person radio tracking usually has to follow the animal around to record its position.

Temporal – having to do with time. For instance, we looked at temporal difference in avoidance behavior of deer and grouse – difference in season or time of day.

Topography – the arrangement of natural and artificial features of an area. You might have heard of the term Topo-map.. this is a map that has features included such as mountains, hills, valleys etc.

REFERENCES

