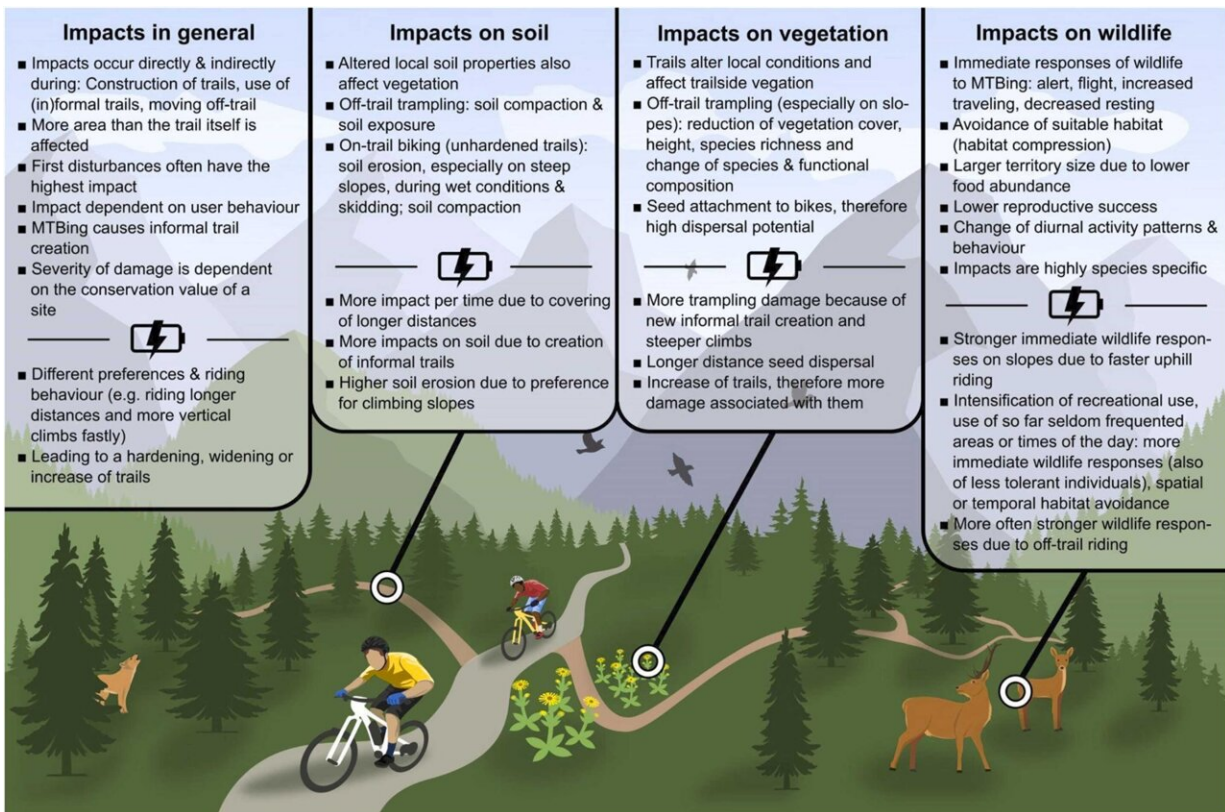


# Evaluating the ecological impacts of mountain biking

May 23 2023, by Christian Wißler



Impacts of conventional mountain biking on ecosystems and the potential consequences of electrically assisted mountain biking. The upper part of each box summarizes the findings of the literature review, whereas the lower part beneath the battery summarizes potentially arising consequences of the e-assisted riding, which were discussed in this review. Credit: *Global Ecology and Conservation* (2023). DOI: 10.1016/j.gecco.2023.e02475

Mountain biking is one of the most popular leisure activities today. Sport ecologists at the University of Bayreuth have now compiled and evaluated a wide range of previously published findings on the ecological consequences of this sport. Numerous direct and short-term effects on animals, plants and soils can be clearly demonstrated. However, estimates of long-term consequences remain difficult because of the complexity of ecosystems and their inherent dynamics. The review article was published in the journal *Global Ecology and Conservation*.

Particularly serious consequences can be observed when near-natural areas are first used for mountain biking. As soon as areas are opened up for mountain biking by creating new trails or mountain bikers enter intact flora and fauna on previously untraveled terrain, wild animals begin to change their behavior. Vegetation is visibly impacted, and the tendency for [soil erosion](#) increases. These effects are all the more striking because areas with a distinct landscape diversity are particularly attractive and used for [outdoor sports](#) such as mountain biking.

One of the studies evaluated demonstrated a reduction in soil microbial biomass on a strip of terrain up to 20 meters adjacent to trails. This weakens the supply of nutrients to plants and therefore affects their growth and reproduction. The thinning of plant cover in turn increases soil erosion, which is in any case promoted by new, unpaved trails.

However, consequences for vegetation do not only result from the construction of trails, but—as further studies have shown—also from the fact that mountain bikers leave the designated trails and use the adjacent terrain instead. How the relevance of the resulting damage is to be assessed always depends in each individual case on the respective protection status and the function of the affected plants.

Destruction of plant cover in the terrain used for mountain biking is

particularly relevant for [endangered species](#), but can also have a beneficial effect on biodiversity.

Mountain biking also has a direct impact on wildlife in many ways, as the overview of previous research shows. Often wildlife reacts to mountain biking by avoiding proximity to athletes and their trails. It is not uncommon for cycling to shorten their resting periods and interfere with their feeding at their usual times of day.

Some species therefore change both their habitats and their daily rhythms. Such effects of mountain biking have been studied particularly frequently in mammals and birds. However, potential changes in behavior do not necessarily have negative effects on the population of the species in question.

In their review, the Bayreuth sport ecologists explicitly point to gaps in knowledge. Many aspects of the interactions between mountain biking, plants and animals have not been sufficiently studied and are likely to differ considerably between individual species. Also, little is known to date about the consequences of the rapidly growing popularity of electric-powered mountain bikes.

"There are indeed many indications that the [environmental effects](#) identified in previous studies are enhanced by e-mountain biking. However, a great deal of research is still needed before generally valid statements can be made. Not least, these would also have to investigate changes in sports behavior associated with the switch to electric-powered mountain bikes," said Veronika Mitterwallner, corresponding author of the review article and doctoral student at the Sport Ecology research group at the University of Bayreuth.

The authors of the new publication emphasize that the knowledge available to date on the immediate environmental effects of mountain

biking is seldom sufficient to enable conclusions to be drawn with regard to long-term consequences for ecological systems. In many cases, much more data than is available today would need to be collected to make reasoned conclusions about the nature and extent of potential long-term impacts.

"In principle, the effects of mountain biking can be expected to differ substantially among species and depending on context. The targeted investigation of rare species or species worthy of protection has so far often been insufficient, and the long-term relevance of short-term disturbances consequently remains open," said Mitterwallner.

The Bayreuth sport ecologists also point out that outdoor sports such as mountain biking could contribute in the long term to sensitizing people to the aesthetic and ecological value of landscapes. In this case, these sports would even have the potential to strengthen a mindful, ecologically conscious approach to nature.

**More information:** Lukas F. Kuwaczka et al, Ecological impacts of (electrically assisted) mountain biking, *Global Ecology and Conservation* (2023). [DOI: 10.1016/j.gecco.2023.e02475](https://doi.org/10.1016/j.gecco.2023.e02475)

Provided by Bayreuth University

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