Submitted Abstract

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Abstract

Outdoor recreational activities such as hiking and mountain biking, are increasingly popular in many parts of the world, especially in mountainous areas. In the context of a systematic literature review we assessed the latest research on the impacts of these activities on mammals and birds in mountainous areas on a global scale. Most research was conducted in Europe (52%) and in subalpine habitats (49%) such as open forests. Impacts from recreational infrastructure (51%) were more frequently assesses than those from activities and most research was conducted in summer (47%). Ninety-one percent of the included research documented significant effects of recreation, which were negative in 82% of all cases. We found most evidence for negative effects related to infrastructure, such as ski-lifts and (hiking)trails. Research at community level was rare (7%) but negative impacts on populations (40%) and individuals (42%) were well documented. They included reduction of habitat and changes in behaviour. To minimise impacts of recreation on wildlife, research proposed a wide range of measures. They included conservation strategies implemented at landscape scale, habitat improvement, spatial restrictions such as wildlife sanctuaries and visitor education. While the effects of infrastructure and non-motorized activities such as hiking are well understood, there is a significant knowledge gap when it comes to the effects of increasingly popular activities, such as mountain biking and electric mountain biking. Further, there is limited knowledge on the awareness of recreationists and their ability to plan tours that minimally impact wildlife. To close this knowledge gaps, we invite researchers to conduct further studies including a diverse range of activities as well as responses of wildlife on population and community level. With this knowledge, managers of mountainous and protected areas can introduce effective schemes to reduce the negative effects of recreation on wildlife and recreationists can be sensitized.