Using visitor monitoring data to manage mountain-biking use in the Wienerwald Biosphere Reserve, Austria

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Introduction

Urban and suburban landscapes are heavily used by recreationists and other land users (Arnberger & Eder, 2012). Mountain biking in such landscapes provides many positive effects for the bikers, but may also negatively impact other recreational users, nature or management activities of landowners. Natural resource managers, therefore, need visitor monitoring data for decision making. Since many years, mountain biking has been a very popular activity in the Wienerwald UNESCO Biosphere Reserve (WBR) which directly borders the city of Vienna with its 1.9 m inhabitants (Arnberger & Eder, 2007; Hirnschall *et al.,* 2012). More than 800 km of mountain bike trails have been established in the biosphere reserve; however, many of these trails do not satisfy the needs of mountain bikers. During the last years, various non-designated mountain bike single trails were developed and illegal bike areas with ramps and jumps were built, even in the core zones of the WBR. These off-trail uses and new facilities evoked conflicts with other area users, land owners and nature conservation. Since 2014 forest owners, mountain bikers, local tourism, and WBR management work together to develop mountain biking facilities in a sustainable way and according to the goals of the WBR (Koeck & Brenner, 2015). A monitoring of mountain-biking use was established in one of the biking hot spots to deliver information on use intensities and to test the success of the reorganization of mountain bike trails and areas.

Study Area

The WBR extends across the two federal provinces of Vienna and Lower Austria and covers an area of about 100,000 hectares. Within the WBR 37 areas are designated as core zones, in which nature protection is the main goal. Recreation use is possible along officially marked trails, whereas mountain biking is not allowed in core zones and biking use limitations exist for specific day times depending on season. For example, bicycling is not allowed in the WBR forests between November and February. In 2016, the mountain biker association transformed the former illegal downhill bike area in Weidlingbach (near Vienna) into a legal downhill trail area in accordance with nature conservation regulations and in cooperation with landowners and WBR management.

Methods

On behalf of the WBR management, mountain bikers were counted along four trails between June 2015 and July 2017 before and after the redesign of the bike area to get information about the intensity and the temporal use patterns of different trail types and the effects of the redesign of the bike trail area. The permanent counting was done by electronic counting devices which were installed at designated and non-designated trails around Weidlingbach. Induction loops, heat detecting sensors (at downhill trails), and a tube sensor counted bicyclists. All counting devices were calibrated by human observer counts. The data was downloaded once a month, transferred into a database and checked for plausibility.

Results

Results indicate that bikers use the trails all over the year; the highest use intensities were recorded between April and September. The counters registered most use at the official mountain bike trail, but counted also high numbers of users at the illegal trails. Most mountain bikers were counted on Sundays and public holidays, followed by Saturdays and Fridays. On working days, most use occurred in the evening hours, while weekend use peaks were counted before and after noon. In summer time, mountain bike use started early in the morning and lasted till sunset, while in winter and spring, most visitors cycled between 10:00 and 16:00. Many counts were registered outside the official day times and months for bicycling. The counts also revealed that biking use outside the official day times and months slightly dropped between 2015 and 2017. The new bike area with its two downhill tracks was heavily used in the first months of its existence, while biker numbers slightly dropped at the counter of the core zone.

Conclusions

The study showed that mountain bikers use the bike area and its surroundings during the whole year and day, although biking is not allowed during specific months and day times (Reimoser *et al.* 2008). However, ongoing information efforts seem to be successful because of the drop of illegal biking use. The study also showed that the new bike area with its downhill trails attracted many bikers, thereby deflecting some use from a core zone of the WBR. Results of this monitoring built not only the basis for an effective management of mountain biking and provided basic data for evaluating the acceptability of the trail area, but also showed whether the new bike area is deflecting biking use from core zones of the WBR. Ongoing biker use monitoring should be carried out to further investigate the effects of the new trail area, redesigns of the biker trail network in the region, and e-mountain biking.

Acknowledgements

The authors thank the forest owners and the biker association Wienerwaldtrails for their cooperation.

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