163 Monitoring of recreation use in Austrian UNESCO Biosphere Reserves – the case of the Wienerwald Biosphere Reserve

Arne Arnberger, **Renate Eder**, University of Natural Resources and Life Sciences Vienna, Austria

Introduction

UNESCO's MAB Programme and its World Network of Biosphere Reserves (WNBR) play a key role in the integration of biodiversity conservation in sustainable development. Since 1976, when the MAB Programme designated the first 57 BRs, the Programme has undergone many significant developments. Meanwhile, the WNBR includes more than 700 BRs in 129 countries (Köck & Arnberger 2017). BRs include not only attractive landscapes and specific landscape features but also settlement areas, and can even include parts of larger cities. Such areas are exposed not only to high overnight and day tourism pressure but also to the everyday recreation of even millions of urban residents.

Austria established its first four BRs in 1977. These first generation BRs were removed from the WNBR between 2014 and 2016 because of not fulfilling the renewed criteria for BRs (Köck & Arnberger 2017). Two of these BRs were located in East-Austria and part of national parks. While for the former Untere Lobau BR, which is part of the city of Vienna, a rich and long-term data base on recreation uses exists (Arnberger 2006), there is little knowledge on recreation uses of the former Neusiedler-See BR. Between 2000 and 2019, four second generation BRs were established, among these the Wienerwald BR (WBR) located in East-Austria.

Study Area

The WBR extends across the two federal provinces of Vienna and Lower Austria and covers an area of about 105,000 hectares. About 850,000 people live in biosphere reserve communities or city districts of Vienna. 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 and horse riding are not allowed in core zones and biking use limitations exist for specific day times depending on season. Due to many different activities and interests, which take place in the WBR, a high conflict potential exists. Interaction between different user groups and interests provide a key challenge to BR managers as the interactions may lead to conflicts.

Overview on studies on visitor monitoring and user conflicts

Meanwhile a range of studies dealing with recreation uses of the WBR exist (Table 1). Since several decades, recreational user conflicts are a main topic. Bürg et al. (1999) identified bicyclists, followed by dog walkers as the most disturbing user groups. A previous project (Reimoser et al. 2008) and an ongoing project (Eder 2019) focussed on user conflicts too. Eder (2019) investigated systematically perceptions of user conflicts in the WBR by the use of on-site interviews and participatory GIS. First results indicate that conflicts are not a major topic. Most conflicts arise with dog walkers and mountain bikers but perceptions of conflicts heavily depend on activity type.

Visitor counting in the WBR over longer periods took only place at two urban sites (Arnberger & Eder 2007, Arnberger et al. 2006). These studies quantified the total use and found that use pressure ranges between 200 visits/ha a (Lainzer Tiergarten) and 2000 visits/ha a (Ottakringer Wald). While in the Lainzer Tiergarten bicycle use is not allowed, the Ottakringer Wald is heavily and partly illegally used by mountain bikers. Increasing conflicts between mountain bikers, landowners, forestry and nature conservation have resulted in a mountain bike and visitor use monitoring using automatic counting devices in and nearby heavily used core zones of the WBR (Arnberger et al. 2018).

Studies	Methods	Years	Sources
Survey among Viennese population	Telephone survey (face-to-face interviews)	1989-1998	Bürg et al. 1991
1-yr visitor monitoring at the Ottakringer Wald (Vienna)	Video monitoring Human observers On-site interviews	2004-2005	Arnberger & Eder 2007
Visitor surveys at specific sites of the BR	On-site interviews	2005-2008	Reimoser et al. 2008
1.5-yr visitor and mountain bike use counting at several sites (Vienna/Lower Austria)	Bicycle counters (tubes) and passive infrared counters	2015-2017	Arnberger et al. 2018
Visitor surveys at specific sites of the BR	Participatory-GIS On-site interviews	2018-2021	Eder 2019

Table 1. Example studies on monitoring recreation use and visitor conflicts in the Wienerwald BR

Discussion and conclusion

The conflict situation in the heavily used WBR seems to similar compared to the situation 30 yrs. ago. Main conflicting recreational uses are mountain biking and off-leash dog walking. For few areas only within the WBR knowledge on the total number of visitors exists. No visitor monitoring system is currently in place to document changes in recreation use levels due to the impact of the COVID crisis.

Managers of all Austrian BRs claim that use levels have drastically increased in their BRs during the COVID crisis and have recently expressed an urgent need for information on visitor uses and management. A standardized and long-term monitoring system with visitor counters, onsite interviews and population surveys may be implemented in all BRs.

Acknowledgements

The authors thank the Municipal Department 49 - Forestry Office and Urban Agriculture of the City of Vienna, the Management of the WBR, forest owners and the biker association Wienerwaldtrails for their cooperation.

References

Arnberger A. 2006. **https://doi.org/10.1016/j.ufug.2006.01.004**. Arnberger A & Eder R. 2007. **https://doi.org/10.1093/forestry/cpl043**. Arnberger et al. 2006. Besuchererfassungstechnologien als Beitrag für eine nachhaltige Erholungsgebiets- und Stadtentwicklung. In: Conference Proceedings CORP 2006 & Geomultimedia06, Vienna, Austria. Arnberger A et al. 2018. Using visitor monitoring data to manage mountain-biking use in the Wienerwald Biosphere Reserve, Austria. In: Conference Proceedings MMV 9.
Bürg J et al. 1991. Die Wiener und ihre Wälder. Univ. f. Bodenkultur Wien. Eder R. 2019. Perception and reality of user conflicts in the UNESCO Wienerwald Biosphere Reserve. Interim Report. Köck G & Arnberger A. 2017. https://doi:**10.1553/eco.mont-9-sis85.** Reimoser F et al. 2008. ISWI-MAB Integrated Sustainable Wildlife Management in the Biosphere Reserve Wienerwald. Report.