

Objectives and Basis of Management of Visitor Flows in the Biosphere Reserve Vessertal/Thuringia Germany

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Abstract: The biosphere reserve Vessertal (Biosphärenreservat Vessertal) is one of the two oldest biosphere reserves in Germany and represents a characteristic part of the central European highlands. It is part of the Thuringian Forest (Thüringer Wald). In this region nature based tourism is very traditional. Since 1999 the increase of touristic offers in combination with the development of more touristic infrastructure caused a variety of activities in visitor management. A first step was the definition of the aims of visitor management. The discussion showed soon that visitor management in the Vessertal should include more aspects than the protection of species and biotops. Nevertheless the survey of sensitive habitats and species is an important basis for all further steps towards a concept of sustainable development. Finally, the first results of a project of reducing the present network of touristic trails are presented.

THE BIOSPHERE RESERVE VESSERTAL INTRODUCTION

The biosphere reserve (BR) Vessertal is located in the middle of Germany in the federal state of Thuringia. It represents a characteristic landscape of the Thuringian Forest. This densely wooded low mountain range is extending from west-northwest to east-southeast. It is part of a chain of central European highlands which are predominately covered from coniferous forests like Thüringer Schiefergebirge, Frankenwald, Fichtelgebirge, Erzgebirge and Oberpfälzer Wald to the Czech Böhmerwald. The biosphere reserve Vessertal is one of the two oldest among the 14 recognized biosphere reserves in Germany (first recognition 1979).

The BR Vessertal has a total area of 17000 hectares. To fulfill the different functions of a biosphere reserve, the BR is subdivided into a core area (279 hectares), a buffer zone (2175 hectares) and a transition area (14546 hectares).

The landscape is quite varied. It is characterized by predominately big woods, partially dominated by beech, mainly by spruce, mountain meadows in the narrow valleys and the surroundings of the villages, fens in the upper regions and a dense net of streams.

The main land use in the Vessertal region is forestry and tourism. Agriculture is on a very extensive level. Most of the greenland is subsidized by management agreement in combination with management restrictions.

Land use	Area (hectare)	Area (%)
Woods	14960	88
Grassland/Greenland	1530	9
Waters, dams	119	0.7
Fens	34	0.4
roads, settlements, tourism facilities	323	1.9
Complete	17000	100.00

Table 1: Land use in the biosphere reserve Vessertal

The following table shows the main habitat-complexes in the BR Vessertal (Table 2).

Tourism has a one-hundred-year old tradition in the area. After World War II the Thuringian Forest became one of the most important vacation regions in the former GDR. A corresponding touristic infrastructure (hotels, vacation homes, hiking trails, cross-country ski trails, ski lifts) had been established at that time. The touristic accommodation in the 80's were up to 500,000 days / year.

After the reunification (1989/1990), at first the overnight stay numbers declined significantly (ca. - 60%). Since then a specific increase can be measured.

Habitat complex	Indicator species
Intact fens, well-structured mountain greenland, woods with plenty of blueberries, cranberries, mountain ashes and birches	Black Grouse, Common Redpoll
Maturity and decline phases of woods with high share of dead wood, bright forest fringes inside the woods (e.g. along ways)	Gray-headed Woodpecker
Woods rich in structures with big old trees, cave trees, and complexes of dense undergrowth	Eurasian Nutcracker, Black Woodpecker, European Sparrow Hawk, Tengmalm's Owl, Pine Marten
Woods with rocks	Eagle-Owl
Large undisturbed woodlands, wetlands and mountain creeks	Black Stork
Mountain sprucewoods rich in structures and with numerous species of birds	Eurasian Pygmy Owl
Layered beechwoods, rich in structures	Common Wood-Warbler, Salamander
Hedges rich in insects and hedgebanks in contact with open landscape	Yellowhammer, Red-backed Shrike
shores of little streams rich in insects, wetlands	Kleinäugige Wühlmaus (Microtus subterraneus) Große Wasserspitzmaus (Neomys fodiens)
Clean streams with pebble covered bottoms	Bullhead (Cottus gobio), Common Kingfisher, White-breasted Dipper

Table 2: Habitat complexes and Indicator species of the biosphere reserve Vessertal (Lange 1995; modified)

The reunification of Germany has basically changed the social framework conditions. Because of the extensive decline of workplaces in the industry (e.g. glass industry) tourism is considered to be the most important income source for the communities. At the beginning of the 90's, the decline of tourists initiated numerous activities to improve the touristic infrastructure and to increase the number of tourists.

Numerous hiking trails were signposted. Many of these touristic activities were not coordinated adequately with each other. In many cases the required approvals were lacking. The activities also led increasingly to impairments of sensitive areas in the BR.

The protection of ecosystems, the development of sustainable land use, public relations,

environmental formation, research and environmental observation, are the main tasks of the biosphere reserves. This conceptual approach of the biosphere reserves goes beyond the tasks of "classic" protected areas like landscape or nature protectorates (LSG, NSG). Therefore, different activities in tourism management had been started since 1999.

OBJECTIVES OF VISITOR MANAGEMENT

The objectives of visitor management have been discussed with communities, tourism-specialistes, local authorities, forest administration, farmers, hunters, water authorities and different NGO. The results of this discussion have been documented in a study (Kleine-Herzbruch, 2000). The extended approach of the biosphere reserves was taken into consideration.

Visitor management in the BR Vessertal should contribute to the support and further development of a sustainable tourism. This goal shall be accomplished by the following aims:

- Fixation of different types of areas, which are suitable in a different manner for the development of tourist infrastructure
 - Protection of attractive but very conflict laden and sensitive areas by rechanneling touristic flows in attractive but resilient areas
 - Disentangling and reducing of the dense network of touristic trails
- Support and creation of a traffic conducting system and an improved and well circulated public traffic system
- Development and arrangement of the tourist infrastructure and their supply on the target group of the nature and culture vacationists
- Support and creation of ecologically acceptable forms and possibilities of the education, information, and relaxation for vacationists and tourists.

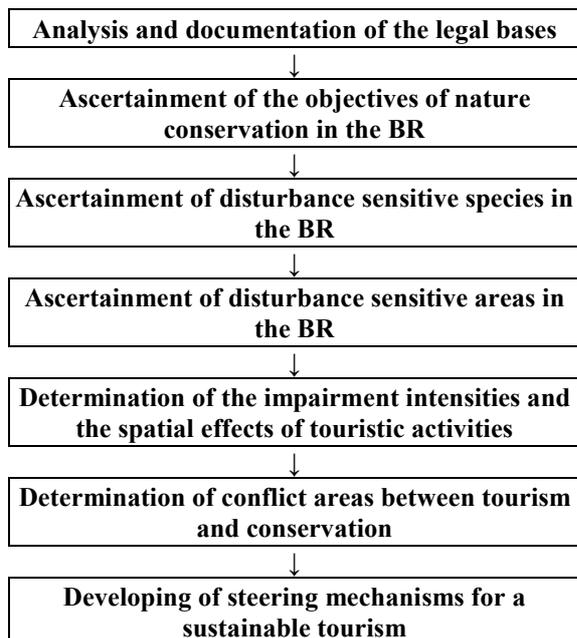
The main goal (the action frame) is the common planning or coordination of measures in the biosphere reserve among all involved. In future the aspects of the traffic and the education shall be included intensively into consideration besides the interests of the tourism and the nature conservation in the biosphere reserve Vessertal. Additionally the interests of agriculture and forestry, water-management and hunting also have to be especially taken into account. By the inclusion and the cooperation with all ones involved in the region the goals formulated jointly shall be accomplished.

BASICS OF NATURE CONSERVATION AND VISITOR MANAGEMENT

Methodic Procedure

For the ascertainment of the basics of nature conservation all available documents were compiled

and the newest surveys and studies have been analysed. The following method has been worked out:



Analysis and documentation of the legal bases

The legal bases for the complete biosphere reserve or for parts of it (BR-ordinance, FFH-areas, ordinances for nature protectorates (NSG), protected landscape parts (GLB) or protected natural monuments (FND)) deliver a first frame for the visitors' guidance. The aims formulated in these ordinances serve as orientation frames for the fixing of species and biotope protective measures. A listing of commandments and bans primarily in the core area and buffer zone but also in transition area III delivers first concrete restrictions (for e.g. there exists a way commandment in the zone II).

Ascertainment of the objectives of nature conservation in the BR

In the context of the ascertainment of the objectives of nature conservation in the BR existing reports and plannings were predominant evaluated besides the analysis of the legal bases.

The most important studies have been:

- the outlines of the species and biotope protection program (ABSP) for the administrative districts Hildburghausen and Ilmkreis (Büro für ökologische Studien, 2001, Büro Bettinger, 2001)
- the outline of the environmental quality aims for the BR (Büro für ökologische Studien, 2000)
- the outline of the subject report for the frame strategy for the BR Vessertal (Ringler, 1999)

Ascertainment of disturbance sensitive species

The ascertainment of disturbance sensitive species in the BR was carried out on the base of specialized Literatur. Furthermore new studies have been analysed:

- the Species- and biotope-protection-programm (ABSP) including all existing primary dates (species-survey-programm (AEP), biotope mapping-programms)
- the subject report for the frame strategy (Ringler, 1999)
- the botanic and faunistic publications at present available

An analysis of publications about the negative effects of tourism and outdoor-activities on disturbance-sensitive species and biotops was the basis of the fixation of sensitive areas (Ammer, U. & Pröbstl, U., 1991; Coch, T. & Hirmschal, J., 1998; Hölzinger, J. et al. 1987; Kuhn, J., 1984; Kuhn, J., 1987; Lerch, A., 1999; Mader, H.J. & Pauritsch, 1981; Münch, D., 1989; Münch, D., 1992). In a first step, all threatened species of the red data books of Thuringia and Germany had been focused. In a second step a selection of those species took place, which are threatened by tourism and outdoor-activities. The red data books hardly give answer to this kind of question, as the reasons for the endangerment of these species and biotopes aren't analyzed in detail. In many cases it is the interaction of different causes which lead to a decline of a species. Conservation experts generally assume that the current management of agriculture and forestry is the main reason for the threat of species in Germany. They also mention tourism and outdoor activities as the third important cause (Korneck and Sukopp, 1988). Since the procedure introduced here shall be practical oriented, only two grades of intensity were distinguished at the assessment of the disturbance sensitiveness.

The distribution of some selected disturbance sensitive bird species shows the difference between actual zones of the BR and sensitive sites (see fig. 1). In order to find out very sensitive sites, the selected species have been categorized relating to their disturbance sensitiveness (explanation of the categories see above):

Black grouse (2), kingfisher (1), black stork (2), sparrow screech owl (1), eagle-owl (1), water blackbird (1), salamander (1).

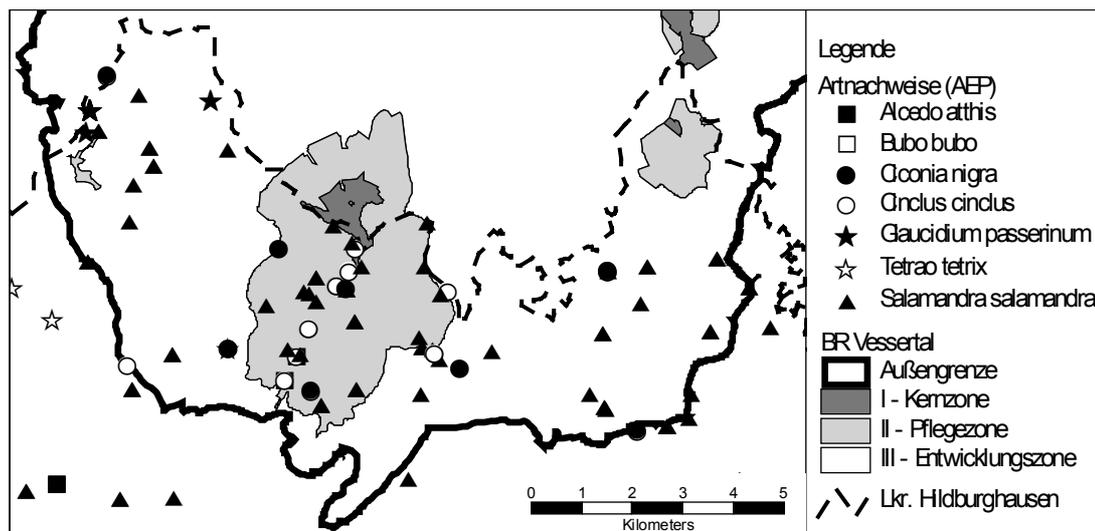


Fig. 1: Distribution of selected disturbance sensitive species in comparison to the zones of the BR in the county (Landkreis) Hildburghausen (Data basis: Thüringer Arten-Erfassungsprogramm (AEP))

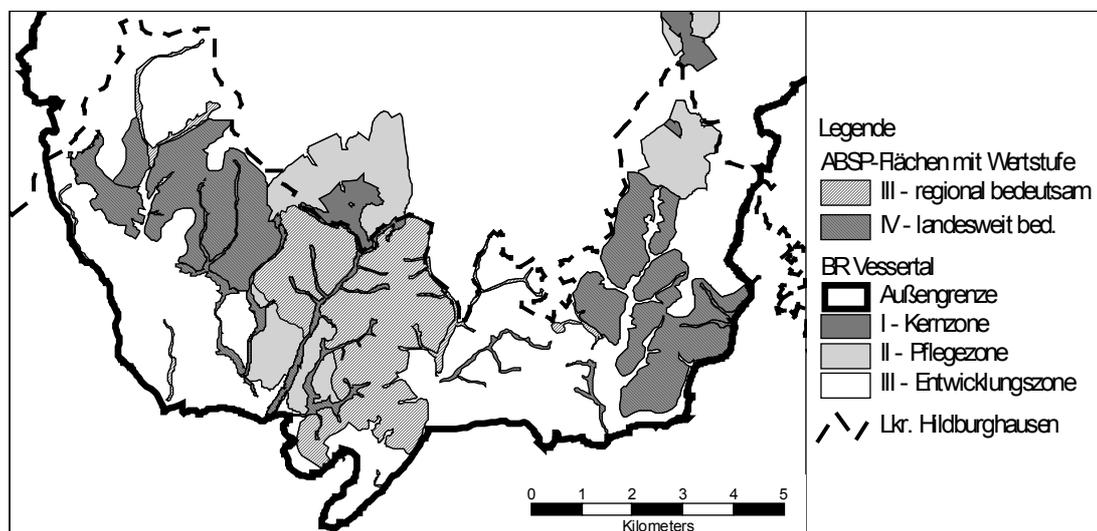


Fig. 2: Areas of nationwide or regional importance for the conservation of important species and biotops in comparison to the zones of the BR (Data basis: Arten- und Biotopschutzprogramm (ABSP) Thüringen, Landkreis Hildburghausen)

Categorization of the disturbance sensitiveness of species

- = (1) disturbance sensitive
(Attractive species like orchids, losses in the traffic e.g. mammals)
- = (2) very sensitive to disturbances
(red list 1 species, extremely sensitive to disturbance, e.g. black grouse, black stork;)

Ascertainment of disturbance sensitive areas in the BR

The ascertainment of disturbance sensitive areas in the BR was carried out after an evaluation of the above-mentioned species and biotope protection program (ABSP) as well as the available specialized literature. This evaluation gave hints about the disturbance sensitiveness of

single species from certain species groups like mammals including bats, amphibians, reptiles and fishes. Ecological function areas (ABSP areas) were derived on the base of the habitats from the point proofs of species. These areas were subdivided into four categories from "IV" (nationwide important) to "I" (locally important) till according to a certain assessment method (ABSP). Nationwide and supraregional areas are meaningful for the visitors' guidance.

Ascertainment of the impairment intensities and the spatial effects of tourist activities

The impairment intensities and spatial effects of tourist activities have been represented separately in tables. The information listed there serves as a basis for the assessment of the intensity of threatening for

species and habitats, sensitive to disturbance at present.

Determination of conflict areas between tourism and conservation

The ascertainment of conflict areas between tourism and conservation delivers decisive argumentation aids for the execution of visitors' guidance measures (see the following chapter).

REVISION AND COORDINATION OF THE NETWORK OF TOURISTIC TRAILS – FINDING SOLUTIONS BY PARTICIPATION

The basics of nature conservation could be used in a previous project, the "revision and coordination of the touristic trails." Conservation technical aspects were not the single aspect, focussed at this project. According to the aims of the visitors' guidance, the interests of municipalities, forestry, farming and others were taken into account. Due to the high percentage of public owned forests, the project has been carried out in close cooperation with the forestry commission. The involved parties emphasized different aspects in the processing: From the point of view of nature conservation there was too much disturbance in the nature protectorates (NSGs) and in other disturbance sensitive areas. The forestry commission considered the touristic trails as too dense. Municipalities complained that correspondence of signposts of trails and the description in the trail maps and leaflets was insufficient.

Based on the aims of the visitors' guidance the following objectives (see above) were coordinated for the project:

- Disentangling of the existing multiple use of pathways (hiking, skiing, riding, biking)
- Optimization of the touristic trails
- Coordination with the interests of forestry and hunting
- Consideration of conservation technically sensitive areas
- Defusing of conflicts primarily in the nature protectorates
- Improved correspondence between the touristic trails and trail maps and leaflets

The implementation of the project was carried out in five steps in 2000 and 2001:

- Information of the ones involved
- Analysis of the situation
- Discussion and coordination with administration of the municipalities
- Documentation and presentation of the results
- Putting into action

The information of the ones involved was carried out in writing. Furthermore there were meetings and discussions with the mayors of the municipalities. The public was informed through the press.

In a first step the network of touristic trails was analyzed and drawn into maps (scale 1:10,000). Important informations concerning forestry (woods tenure, forestry roads, game reserves) were investigated oder determined. The Thuringian forest authority assisted with plans of the forestry roads ("Waldwegefunktionsplanung"). The conservation technical interests were arranged according to the methodology (protectorates, species and habitats, sensitive to disturbance). Based on this (maps 1:10,000) conflict areas were defined.

In cooperation with the forestry commission and the biosphere reserve administration proposals for the solution of conflicts have been worked out.

The discussion took place separately in each community. In cooperation with tourist information offices, farmers and game tenants, forestry authorities, the District Office, the conservation authorities, the association nature park Thuringian woods (Verband Naturpark Thüringer Wald) and with NGOs and private owners (e.g. restaurant operators) different suggestions were considered and coordinated. Proposals, which were not agreed on, were further revised till conjoint solutions could be found. Compromises partly were necessary. Altogether, ca. 80 advices took place with more than 70 representatives of the communities, institutions and NGOs. The project goals could be accomplished. A reduction and breakup of the tourist way net could be agreed conjointly.

In August 2001 the results were presented to the public under participation of the ones involved. All involved parties agreed on implementation of the proposal.

In fall 2001 implementation started. Implementation includes actualisation of the network of trails (predominately rebuilding, construction of a few new trails), signposting, the revision of the trail maps and leaflets and the update of the information panels in the area.

In 2002 an evaluation is scheduled, including all partners involved. Then we have to search for further solutions in case of obvious problems, occurring during implementation. If necessary, further measures of the visitors' guidance have to be discussed.

PRESENTATION OF THE RESULTS CONCERNING THE NATURE PROTECTORATE (NSG) "MARKTAL UND MORAST".

The nature protectorate "Marktall und Morast" has a size of 205 hectares including a core area of 100 hectares. This NSG is a characteristic part of the uplands and the northern slopes of the Thuringian woods with little plains and deep valleys, the slopes covered with mountain beech woods and mountain sprucewood in the edge area of a moorland area.

The analysis of the actual state showed the following aspects:

- most of the touristic trails are used in multiple ways (hiking, biking, skiing)
- at the edge of the nature protection area (Dreiherrenstein) there isn't any clear way due to numerous tracks
- in the Marktal there is a hiking and biking trail crossing through the core area
- in the leaflets this trail is indicated as a Mountain-Bike trail
- a second path through the core area (from the Dreiherrenstein to the Schortetal) is used as a forestry road (that can be used by trucks).

The analysis of the conservation technical bases led to the following statements:

Legal bases:

- in accordance with the biosphere reserve ordinance there is a way commandment in zone II (NSG);
- in the core area it is forbidden to carry out any economic activities as well as to impair the area in any way;
- the forestry road is granted by law.

Conservation technical aims and models:

- Support of a sustainable tourism

Disturbance sensitive species:

- The NSG is a breeding area of the Eurasian Pygmy Owl, the Teng-malm's Owl and black woodpecker. It is a food habitat of the Black Grouse and the black stork

Disturbance sensitive area: the complete NSG

Intensity of the impairment:

- the path through the Marktal (core area) attracts only a few hikers and bikers
- the Marktal attracts only few tourists
- the second path through the core area (from Dreiherrenstein to the Schobsetal) is a forestry road of a certain importance for three forestry offices
- for tourists this trail is a main connection from the Rennsteig to the settlements at the mountains edge
- Tracks on the edge of the NSG (at the Dreiherrenstein) show a frequent use of this part of the Rennsteig.

Conflict areas:

- Pathway through the Marktal (core area)
- Pathway in the direction of the Schobsetal (core area)
- Pathway (at the Dreiherrenstein) in the area of the tracks (on the edge of the NSG)

The network of tourist trails was revised as follows:

- the multiple use has been reduced. At

maximum two interested groups were put on a way

- the trail, traversing the core area through the Marktal was eliminated.)
- the pathway through the core area (Dreiherrenstein - Schobsetal) remains since it is an important way for the forestry and tourism.

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