

# Biosphere Reserve Black Forest



Application for designation  
as a UNESCO biosphere reserve



**Baden-Württemberg**

MINISTERIUM FÜR UMWELT, KLIMA UND ENERGIEWIRTSCHAFT

# IMPRINT

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We would like to thank the many other participants from academia, local politics, and various associations who have helped us prepare this application. The horizon is constantly expanding.

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## INTRODUCTION

Biosphere reserves are areas from terrestrial and coastal/marine ecosystems or a combination of such ecosystems that are internationally recognised under the UNESCO Man and the Biosphere (MAB) Programme. Biosphere reserves are established to promote and exemplify a balanced relationship between humans and the biosphere. The designation of biosphere reserves is done through the International Coordination Council (ICC) of the MAB programme at the request of the state concerned. The individual biosphere reserves remain under the authority of the state in which they are located. All biosphere reserves form a global network in which the state participate voluntarily.

For the global network, the international guidelines adopted at the 1995 UNESCO General Conference apply. These define the terms, the objectives, the criteria, and the designation procedures for biosphere reserves. The actions recommended for the development of biosphere reserves are explained in the “Sevilla Strategy” and have been further developed in the Madrid (2008–2013) and Lima (2016–2025) Action Plans. These documents should be used as a reference when completing this application form.

The information contained in this application form will be used by UNESCO for various purposes:

- a) for review of the area by the International Advisory Committee for Biosphere Reserves and the office of the ICC of the MAB
- b) for use in a globally-accessible information system, especially UNESCO-MABnet and corresponding publications in order to facilitate communication and interaction between all those interested in biosphere reserves.

The application form consists of three parts:

Part I briefly explains the extent to which the proposed area fulfils the functions and criteria for biosphere reserves outlined in the international guidelines. It also contains the signatures of the participating authorities, which confirm advocacy of the application. Part II contains detailed descriptions of the area with respect to its human, physical, and biological properties as well as institutional aspects. Part III consists of two annexes: Annex I serves to update the directory of biosphere reserves in MABnet after successfully designation of the area as a biosphere reserve. Annex II provides promotional and communication material for the biosphere reserve. As required, tables, figures, and maps may be inserted throughout the application form.

The form must be completed in English, French, or Spanish. Two copies in the following form shall be sent to the office:

1. The original with original signatures, letters of support, zoning maps, and supporting documentation. These documents shall be forwarded to the office through the official channels i.e. via the national UNESCO commission and/or the permanent representation at UNESCO.
2. An electronic version (e.g. disk, CD) of the application form and the maps (especially the zoning maps). These documents can be directly forwarded to the MAB office.

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## Abbreviations

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ADO	Administrative district office
Ah	maple ( <i>Acer pseudoplatanus</i> , ( <i>A. platanoides</i> ))
BA	Baumart [tree species]
BAh	Bergahorn ( <i>Acer pseudoplatanus</i> ) [sycamore]
BMEL	Bundesministerium für Ernährung und Landwirtschaft [Federal Ministry of Food and Agriculture]
BNatSchG	Bundesnaturschutzgesetz [Federal Nature Conservation Act] (Germany)
BNE	Bildung für Nachhaltige Entwicklung [education for sustainable development]
BSG	Biosphärengebiet [biosphere reserve]
BSR	Biosphärenreservat [biosphere reserve]
Bu	Buche ( <i>Fagus sylvatica</i> ) [beech]
BW	Bannwald [Forest Reserve]
	Baden-Württemberg
BWI	Bundeswaldinventur [National Forest Inventory]
cf	compare
Dgl	Douglas-Fir ( <i>Pseudotsuga manziesii</i> )
Distr. Adm	District administrator
EFRE	Europäischer Fonds für Regionale Entwicklung [European Regional Development Fund]
e.g.	for example
Ei	Eiche ( <i>Quercus spec.</i> ) [oak]
EMAS	Eco-management and Audit Scheme
Er	Erle ( <i>Alnus glutinosa</i> , ( <i>A. incana</i> )) [alder]
Es	Esche ( <i>Fraxinus excelsior</i> ) [ash]
ESD	Education for sustainable development
EU	European Union
FAKT	Förderprogramm Agrarumwelt, Klimaschutz und Tierwohl [Funding Programme for agri-environmental Affairs, Climate, and Animal welfare]
Fi	Fichte ( <i>Picea abies</i> ) [spruce]
FRG	Federal republic of Germany
FSC	Forest Stewardship Council
FVA	Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg [Forest Research Institute of Baden-Württemberg]
GmbH	Gesellschaft mit beschränkter Haftung [limited liability company]
ha	hectares
i. Schw.	im Schwarzwald [in the Black Forest]
i. W.	im Wiesental [in the Wiesental]
km	kilometre
KZF	Kernzonenfläche [core area]
LANA	Länderarbeitsgemeinschaft Naturschutz [Federal States Working Group for Nature Conservation]
LBV BW	Landesamt für Besoldung und Versorgung Baden-Württemberg [State Office for Salaries and Benefits in Baden-Württemberg]
LEADER	Liaison entre actions de développement de l'économie rurale
LEV	Landschaftserhaltungsverband [Landscape Conservation Association]
LGRB	Landesamt für Geologie, Rohstoffe und Bergbau [State Office for Geology, Raw Material and Mining]
LIFE	L'Instrument Financier pour l'Environnement
LPR	Landschaftspflegebericht [Land Stewardship Policy]
LUBW	Landesanstalt für Umwelt, Messung und Naturschutz Baden-Württemberg [Baden-Württemberg State Institute for Environment, Measurements and Nature Conservation]

LWaldG	Landeswaldgesetz Baden-Württemberg [State Forest Law of Baden-Württemberg]
m	metre
MAB	Man and the Biosphere
MD	Managing Director
ME	Ministry of the Environment, Climate Protection and the Energy Sector
MEKA	Marktentlastungs und Kulturlandschaftsausgleich [Market Relief and Cultural Landscape Compensation]
Mio.	millions
MLR	Ministerium für Ländlichen Raum und Verbraucherschutz [Ministry of Rural Affairs and Consumer Protection]
mm	millimetres
MRA	Ministry of Rural Affairs and Consumer Protection
MW	Megawatt
A.D.	Anno Domini
NatSchG	Naturschutzgesetz Baden-Württemberg [Nature Conservation Act of Baden-Württemberg]
NP	natural park
NSG	Naturschutzgebiet [nature conservation area]
NSGP	Naturschutzgroßprojekt [nature conservation project]
PEFC	Programme for the Endorsement of Forest Certification Schemes
PLENUM	Projekt des Landes zur Erhaltung und Entwicklung von Natur und Umwelt [Project of the Federal State for the Conservation and Development of Nature and the Environment]
pnV	potential natural vegetation
RA	Regional Authority
RL	Red List
RP	Regierungspräsidium [Regional Authority]
SCI	Sites of Community Importance
sLB	sonstige Laubbäume [other deciduous trees]
sNB	sonstige Nadelbäume [other conifers]
SPA	Special Protection Area
Str	Weymouth-Kiefer ( <i>Pinus strobus</i> ) [soft pine]
Ta	Tanne ( <i>Abies albs</i> ) [white fir]
UM	Umweltministerium [Ministry of the Environment, Climate Protection and the Energy Sector (Ministry of Environment)]
UN	United Nations
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
UZW	Umweltzulage Wald [environmental allowance forest]
Vb	Vogelbeere ( <i>Sorbus aucuparia</i> ) [rowan berry]
Vfm	Vorratsfestmeter [stock cubic metres]
WGS	World Geodetic System



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## PART I: OVERVIEW

### 1 NAME OF THE PROPOSED BIOSPHERE

Biosphere Reserve Black Forest



Figure 1: View from the Belchen to the Alps. © Schwarzwaldregion Belchen

### 2 NAME OF THE COUNTRY

Federal Republic of Germany, Federal State of Baden-Württemberg

### 3 FULFILMENT OF THE THREE FUNCTIONS OF BIOSPHERE RESERVE

#### Overall objective of the Biosphere Reserve Black Forest

The sustainable economic use should be linked to the maintenance and enhancement of the natural and cultural landscape and positively shaped.

The guiding principle is **participation** in the sense of “from the region, with the region”.

#### Detailed objectives

1. Protection and conservation of the diverse and characteristic ecosystems, which are important for biodiversity
2. Development of adaptive strategies with respect to climate change
3. Economic (agricultural, silvicultural, commercial, industrial, and service-related), social, and demographic stabilisation and development of the rural area
4. Promotion of sustainable tourism
5. Strengthening the equal participation of all people (those with an immigration background, men and women, individuals with disabilities)
6. Maintenance and development of the characteristic areas of common economic activity (historically: common land) as the most important element of the cultural landscape
7. Maintenance and development of competitive agriculture and forestry, taking into account the special significance of nature and landscape.
8. Development and strengthening of a cultural identity
9. Continuation and intensification of education for sustainable development
10. Support and promotion of a research network
11. Integration into the international network of biosphere reserves

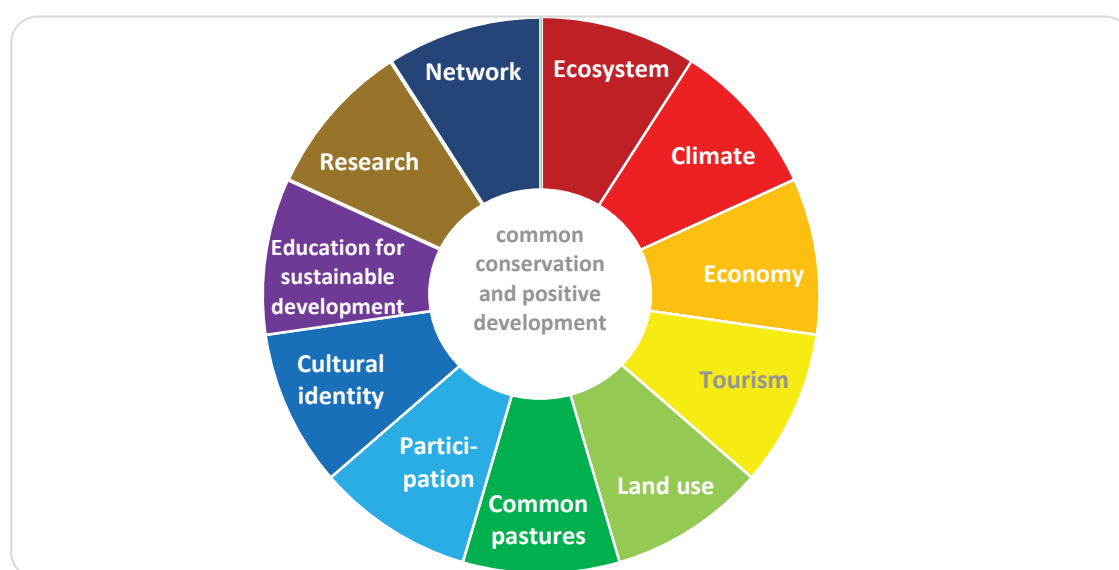


Figure 2: The 11 Objectives of the Biosphere Reserve Black Forest

### **3.1 Protection: contribution to the conservation of landscapes, ecosystems, species and genetic variation**

The biosphere reserve serves to protect particularly important geological, natural, and culturally shaped habitats. Especially characteristic are:

1. large, communal pastures (partially former common land), which feature different characteristics depending on location and altitude,
2. the glacially influenced communities of the highlands with numerous glacial relict species including coombes (e.g. Nonnenmattweiher), active avalanche tracks, and spring/irrigation swamps,
3. natural beech and beech-fir forests with different local, use-related, and structural characteristics (e.g. selection and timber forests) in sub to high mountainous locations,
4. ravine forests in moist layers, blocks and talus forests in the environment of rocks, high mountainous mixed alpine forests with natural spruce,
5. open screes and cliffs,
6. moors with various characteristics,
7. natural and semi-natural watercourses including accompanying vegetation as well as spring and tall herb swamps,
8. lowland and mountain hay meadows,
9. special structures (e.g. from mining, stone fences) required for previous or current use.

The lowland and mountain hay meadows are a unique feature in a nationwide comparison. These contain many endangered SCI species as well as species on the red list. The height gradient from colline growth zones to sub-alpine regions allows for an extraordinary degree of different growth conditions in a confined space. The Black Forest can thus become an ark for many species that have become endangered as a result of climate change.

The object of conservation management in the Biosphere Reserve is to preserve and promote the natural quality and local mosaic of forests, to ensure the maintenance of open pastures and meadows, to continue to naturally develop the peatlands, and keep other special locations such as rocks and cliffs free of vegetation.



Figure 3: Beech as a symbol of a high-quality cultural landscape for nature conservation © Regional authority of Freiburg

### 3.2 Development: funding of socio-culturally and ecologically sustainable economic and human development

The Biosphere Reserve Black Forest can draw from several established processes and characteristics:

- extensive cultural tradition which is maintained locally with varying degrees of intensity
- profound and far-reaching experience in the sustainable management of renewable energy
- established sustainable forestry
- large-scale organic farming
- long-term tradition in the joint management of open land
- high-quality management of tourism by Black Forest Tourism and the Southern black forest Nature Park
- "Black Forest" is already a well-known national and international brand.

These activities should continue to be promoted and optimised because they form an essential basis for the sustainable development of underdeveloped rural areas.

The participation of volunteers will be decisive in implementing sustainable development. During the five-year foundation phase, the Biosphere Reserve Black Forest has made many outstanding contributions. In over 200 events, the general public and all interest groups were consulted with respect to the set-up and design of the biosphere reserve. During the founding phase, this led to increased awareness of the opportunities and possibilities of the development process in the biosphere reserve. This resulted in numerous ideas for action as well as the drafting of a cooperation agreement that secured the permanent cooperation in the biosphere reserve.

Two important preliminary projects, the "Feldberg-Belchen-Upper Wiesental" conservation project and the "Upper Hotzenwald" LIFE Project, have prepared the field for the biosphere reserve. They initiated many important conservation activities: Woody plant succession was removed from pastures, special structures were uncovered, grazing infrastructures (stables, fences, and watering) were financed, forests



were restored to their natural state, and fenlands were renatured. Species protection measures were also carried out (e.g. for the grouse, the adder, and the rock bunting) and bodies of water were treated. These initial measures must now be maintained. The projects also highlight the willingness and commitment to sustainability of the local community. There is a chance to combine the natural and ecological land use with a large-scale economic revaluation, thereby implementing sustainable development in an exemplary manner.

The considerably larger Southern black forest Nature Park (394,000 ha) which was founded in 1999 and encompasses the Biosphere Reserve Black Forest, has done considerable groundwork, which can be expanded. The nature park, which will remain, is also an important medium for disseminating and propagating sustainable developments in the biosphere reserve far beyond the borders of the area.

The “Biosphere Reserve Black Forest” can be established for tourism and potentially also regional products (dairy, meat from young cattle, forestry and agricultural processing, handicrafts). This is beneficial for the qualitative image and tourism as well as for urban–rural relations. The proximity to the agglomeration areas Basel (Switzerland) and Freiburg (Germany) enables the forging of strong interrelations from which everyone can benefit: Many affluent inhabitants of the region enjoy the products as well as the beauty of the landscape. The healthy produce of the biosphere reserve will be marketed regionally and via short transport routes. The agglomerations will also benefit from attractive recreation opportunities. The Biosphere Reserve Black Forest will be structurally strengthened. With the help of further funding programmed, it can continue to develop so that demographic shifts can be stopped and a younger population remains in the area. The cultural landscape, which also requires active management, can also be maintained.

The biosphere reserve can thus implement a control loop, which would optimally support sustainable development.

The international designation as a “Biosphere reserve” by UNESCO is an important criterion for funding. On this basis, the areas and measures eligible for funding can be readily integrated into funding programmes that can be applied for and managed by the office of the biosphere reserve .

The high potential for renewable energies (hydro-power, wood as a climate-neutral fuel, high solar radiation, and windy locations) is an important nucleus for a total energy optimisation. Building on increased energy independence, the municipalities can develop an overall concept of short transport routes, intelligent energy networks, efficient co-generation, and a public transport system. Although there is a high demand, there is also a great deal of experience that can be built on. The municipality of Schönau im Schwarzwald is a pioneer of decentralised and environmentally friendly energy supply in Germany.



Figure 4: Typical agricultural farm in the biosphere reserve . It is clear that operations like this have tapped many opportunities for generating income because the actual farming (cattle and, to a lesser extent, chicken farming) contributes to only a portion of the operating income. The roofs facing south (as well as south-east and south west) are ideal for the use of solar cells. Because of the minimal mist and fog at these altitudes, the level of solar radiation is particularly high. These operations contribute to the use of renewable energy.

The many vehicles in the farmyards indicate that some family members commute to work.

To manage the steep areas, special machines are also used as can be seen in the above image. This is subject to a higher capital investment. © Peter Schach

### 3.3 Logistics function: Support from demonstrations and environmental education/training as well as research and monitoring related to local, regional, national, and global issues of conservation and sustainable development

The proximity to the universities in Freiburg and Constance (Germany), Basel (Switzerland), and Strasbourg (France) in this border triangle, enable direct and regular research on the foundations for sustainable development as well as the documentation of further action. An example of this is a recent joint research project that investigates the interdisciplinary biodiversity in the Black Forest and research areas – also in the biosphere reserve.

The research is not only scientific but also includes social, cultural, and economical aspects.

The presence of many native and historical organisations and institutes (e.g. Alemannic Institute, Society for Natural Sciences at Freiburg ) is an important pillar of the research facility because these have already done considerable research – both on a professional and voluntary basis – on the origin, identity, and characteristic of the region.

There are already numerous permanent monitoring programmes, which have influenced the environment. Indicators that document sustainable development can be derived from these. The biosphere reserve is up to introduce the integrative monitoring concept in large protected areas. This was adopted by the LANA Committee on 11 March 2016.

Numerous initiatives in the field of environmental education are an important mainstay for the BNE process. Some of the schools supported by the Southern black forest Nature Park have gone out of their way to show students how important local networking and responsibility is for sustainable development. The BNE process extends above and beyond the target group of students. The objective of development is also to integrate clubs, companies, and other organisations as well as entire communities into the BNE process, thereby promoting awareness for sustainability.

In addition to environmental awareness activities, there are other important points of contact: Some communities have already established themselves as “energy villages”. Companies such as *Zahoransky* (Todtnau), a leading international engineering firm for brush machines or *Faller-Konfitüren* (Schönau), a trans-regional producer of domestic food, rely on integration into the region and emphasise tradition, local ties, and sustainable production.

These skills and potentials merge into the responsibility to become nationally and internationally involved in the network of biosphere reserves. The office of the Biosphere Reserve Black Forest as well as the regional delegations are available for this purpose.



Figure 5: Ignition of a charcoal kiln: Historical charcoal burning exemplifies the tradition, regionality, and importance of wood. Charcoal burning, which once had great importance in the biosphere reserve, is now demonstrated in popular public events. © Municipality of Dachsberg



## 4 CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE

### 4.1 Representative ecosystems for major bio-geographic regions, including graduated forms of human engagement

As a “South-west German upland/terraced landscape of the continental region (terrestrial continental region)”, the Biosphere Reserve Black Forest represents a characteristic form of a European mountain landscape that has been a cultural landscape for over 1000 years. Topographical, conservationist and culturally conditioned landforms combine with typical and valuable ecosystems to form a forest landscape rich in grassland.

It is characterised by natural deciduous and coniferous forests, moors, and rivers as well as open structures with rocks and scree.

The high quality, extensively used pastures including pasture trees on nutrient-poor sites have been strongly influenced by humans.

On an area of approx. 63,000 ha, there is an interconnection of naturally open areas, conservationist areas to be kept open, and naturally wooded land, which is worthy of preservation.

### 4.2 Importance for the protection of the biological diversity

The Biosphere Reserve Black Forest is a mountain landscape ranging from 310 to 1420 metres above sea level. In no other landscape in Germany are there such large differences in elevation in such a confined space. Through the interaction of different height levels, high relief intensity – steep V-shaped valleys and rounded, glacially formed trough valleys – and glacial moraine deposits as well as different exposures featuring micro-climatic characteristics and a mosaic of closed forest areas and open grasslands, various habitats occur in the biosphere reserve. The flora and fauna characteristic of each habitat are essential for protecting biodiversity. This richly structured landscape features an abundance of topographical, geomorphological, and climatic niches with a variety of endemic and relict species. In some cases, this is the only place in Germany where these unique species can be found. Endangered species and varieties of particular importance include:

- Alpine club moss (*Diphasium alpinum*)
- Auricula (*Primula auricula*)
- Large thyme (*Thymus alpestris*)
- Thick-leaved stonecrop (*Sedum dasyphyllum*)
- Annual stonecrop (*Sedum annuum*)
- Swiss dandelion (*Leontodon helveticus*),
- Oblong woodsia (*Woodsia ilvenses*)
- White mountain saxifrage (*Saxifraga paniculata*)
- Wart-biter (*Decticus verrucosus*)
- Rock bunting (*Emberiza zia*)
- Alpine birch (*Betula nana*)
- Giant earthworm of Baden (*Lumbricus badensis*) – endemic species
- Präg ground beetle (*Nebria prägensis*) – endemic species of beetle

In addition to the natural condition, through their economic activities, humans have given the montane area a type of cultural landscape character that is unique in Germany. Steeper unfavourable locations are stocked with forests of various types of trees (depending on the altitude). Favourable locations and knolls are often managed as common land. The accumulation of these areas of communal economic activity in

mountainous areas in connection with high-quality and extensive *Nardus* grasslands and winged broom pastures is unique to Germany. Because of the extensive grazing, the large pastures offer habitats for countless rare species as well as for phenotypically interesting pasture beeches. They are therefore an especially important area for the conservation of biodiversity.

#### **4.3 Opportunities for research and exemplification of concepts for sustainable development at the regional level**

In addition to the geographically related structure, the value of the landscape arises from the culture-creating activity of humans. In view of the structural weakness of the rural areas, the mosaic of open and extensively used landscape, forest, and moor areas on the slopes and highlands as well as settlement structures in the valleys is fragile and requires continual promotion and support. The regions would otherwise become increasingly depopulated, the open land areas would become overgrown, and the ecosystem services – especially in the area of renewable energy and extensive grazing would decline. This complex network of use, development, and protection of the landscape offers the optimum conditions for the research and testing of success models for sustainable development.

This requires an anthropocentric approach – humans as formative landscapers are the immediate centre of the system. However, a sustainable development is only possible through the positive interactions between humans and nature. The former areas of communal management (common lands) are therefore a vivid symbol.

These interactions arise between the cultural, socio-economic, and ecological levels. They create a network of connections that can predict a promising development only in its complex totality.

In many ways, identifying the individual components and success factors for the sustainable development, testing and optimising management practices, and advancing the communication and sensitisation of the local population offers excellent approaches for research and monitoring.

The results are self-reinforcing for the regional development process and multiplying at the national and international level.

#### **4.4 Presentation of sufficient size**

The Biosphere Reserve Black Forest encompasses 63,235.7 ha. Within the framework of the orders of magnitude required by the national MAB committee, the sizes range from 30,000 to 150,000 ha.

The area arose in several stages and is derived from the following decision parameters:

1. Suitability for nature conservation (protective function)

For the area, functioning ecosystems of European mountain ranges were selected under the condition that they are worthy of protection, viable, and largely undisturbed by external influences. The nucleation of this criterion were the “Feldberg-Belchen-Oberes Wiesental” nature conservation project, which already carried out important set-up measures for ecosystems worthy of protection and have underlined the value of these ecosystems. The high proportion of existing SCI, conservation, and forest reserve areas is further evidence for the professionally qualified location and size of the biosphere reserve. Unique conservational features for the Biosphere Reserve Black Forest are the areas of communal economic activity (former common pastures), which harbour extensive species rich *Nardus* grasslands. The remainder of the extensively farmed areas within the Southern black forest was almost completely integrated into the area.

## 2. Viability (developmental function)

Building on the professional suitability, in a five-year process, it was discussed with the people of the region whether and how the existing developmental potential could be addressed by the region and viewed as an opportunity. After positive council resolution, the individual municipalities of the biosphere reserve opted in. For this reason, the regional setting simultaneously stands for the articulated willingness of the region to collaborate in the sustainability process.

From a structurally disadvantaged starting position, the region represents all three economic sectors (primary production, processing, service), which are viable at all levels.

It is the core area of a touristically attractive landscape and simultaneously a potential production site for different processing stages. Important resources include the wood from the forest areas as well as the large meadows used for grazing. Both are extensively represented for European mountain area in the Biosphere Reserve Black Forest.

Another deciding factor is that the biosphere reserve is located in the agglomerations of the border triangle of Switzerland, France, and Germany. There are extensive interrelations that can be used in the sense of sustainable development.

## 3. Research, education for sustainable development, network (logistic function)

For scientific research purposes, the biosphere reserve includes many areas that are already subject to environmental monitoring. These can be used for continued research on the structure, function, and dynamics of ecosystems. The individual ecosystem areas are so large that a representative and statistically valid development can be documented. There are also countless research projects on the historical genesis as well as the cultural, social, and economic development of the area.

The education for sustainable development process is initiated both within and adjacent to the biosphere reserve so that there is sufficient potential for further development.

Within the area, there are many groups of actors ready to take on the network function of the biosphere reserve. They can support the idea of sustainability as delegations. They are recruited from the energy sector, agriculture and forestry, the manufacturing industry, and tourism as well as the political bodies of the 29 communities that are participating in the biosphere reserve. This land network is large enough to constructively advance sustainable development at both the national and international level.

## 4.5 Core areas, buffer zones, and transition areas for fulfilling the functions

Table 1: Area distribution to the three zone types in the Biosphere Reserve Black Forest

	ha	%
<b>Core areas*</b>	1,904.8	3.01
<b>Buffer zones</b>	18,522.7	29.29
<b>Transition areas</b>	42,808.3	67.70
<b>Total</b>	63,235.8	100%

\*It is envisaged that the core areas will increase because of changes and extensions. This process is currently being coordinated. The table displays the current status of the legally secured areas.

The area setting, which consists of core areas, buffer zones and transition areas (Table 1), is the result of many years of extensive consultation. The individuals living in the area had many possibilities to participate in the process.

Because the voluntary participation of the authorities was the guiding principle in designing the biosphere reserve, the negotiations were conducted with an open outcome. Each community was able to freely decide whether it wished to participate in the biosphere reserve.

In the end, 29 municipalities declared themselves willing to join the biosphere reserve. It is hoped that additional municipalities will decide to join the biosphere reserve if it is expanded.

When creating the zoning, many criteria were incorporated and coordinated. The German MAB committee established basic technical criteria for the zoning. These are comprised of "A criteria", which must be fulfilled in the application phase, and "B criteria", which are benchmark criteria.

For the zoning, the national German MAB committee established the following A criteria.

- The biosphere reserve must be divided into three zones: the core, buffer, and transition areas.
- The core areas must account for at least 3% of the area of the biosphere reserve.
- The core areas and buffer zones must account for at least 20% of the total area.
- The transition areas must account for 50% of the total area.

These criteria will be fulfilled in the Biosphere Reserve Black Forest

The international criterion "the core areas must be surrounded by buffer zones or buffer zones should border the core areas" was also satisfied for the most part. Further details will be outlined in the individual foundation for formation and the sizes of the individual core areas in Section 19.2.

### A) Core areas

The following concept was the basis for the designation of the core areas:

- The core areas should only consist of forests. Open areas of land or succession areas were excluded from the outset. However, a key objective of the Biosphere Reserve Black Forest to preserve the open cultivated land from the impending succession. Process protection would not be desirable.
- At the beginning of the conception, there were already approx. 990 ha of forest reserves (process protection areas designated by ordinance). These were adopted in a core area concept. This means that on more than half of the core areas, the uninfluenced forest dynamics have partially been protected for more than 45 years. These existing forest reserves should be expanded by additional core areas.
- The core areas should be mainly composed of natural and structurally rich forests. The focus is on older fir and beech forests.
- Where possible, the core areas are intended to cover the bio-geophysical and local potential of the biosphere reserve; all naturally occurring forest communities should also be reflected in the forested areas of the core areas (Table 2, cf Section 19.2).

The goal was to form as few core area as possible and have them be larger in size. Based on existing process protection areas (forest reserves, see second point), attempts were made to enlarge the existing process protection areas/forest reserves. The recommendation of the German MAB committee that the individual core areas should have a minimum area of 50 ha (Table 3) was also to be considered.

- The core areas should be divided over the entire region as evenly as possible. The type of forest ownership also played a large role; the core areas were to only lie in public forest (i.e. state and municipal forests). Private forests were to be omitted from the core areas. Map XII in the annex shows the distribution of the three types of forest ownership in the biosphere reserve.: State forests, municipal forests, and private forests. It can be seen that the municipal forests is concentrated in the middle of the region. Private forests are mainly found in the West and East of the region. State forests – mainly resulting from prior monastery forest possession – is concentrated in few areas of the region.
- In the biosphere reserve, there are some communities that are larger forest owners. The objective of the core area concept was for each municipality with larger forest ownership to reasonably contribute to the core areas. For some municipalities, the annual earnings from the forest management is an important source of income. Attempts were therefore made to divide the designation of core areas from municipal forests over as many municipalities in the area as possible. At the same time, efforts were made to designate inter-municipal core areas in order to be able to form the largest possible core areas.

Table 2: Representation of the main tree species of the site forests within the core areas in accordance with the results of the site mapping.

Tree species	Area ha	Area ratio %
<b>Beech</b>	1,549	85
<b>Fir</b>	1,358	74
<b>Sycamore</b>	584	32
<b>Sessile oak</b>	330	18
<b>Spruce</b>	200	11
<b>Alder/ash</b>	44	2

Table 2 depicts the main tree species of the various site forests within the core areas (cf Section 19.2). The site forest is important forest ecological information, which can be taken from the silvicultural site mapping. The site forest represents the composition of tree species of the local natural forest. It is derived from the local natural forest community and thus depicts the natural potential of the expected main tree species of the climax forest of a local unit.

Table 2 it can be further seen that beech occurs as a main natural tree species on 85% of the core area. On 74% of the core area, the fir is instrumental in the structure of the natural forest. Beech-fir forests are the dominant natural species in the region. On 32% of the core area, sycamore plays an important role in the natural climax forest. The sessile oak can be found on 330 ha (18%) of the natural forest within the core area. For example, these are flat, partially rocky, mostly sun-exposed sites in the lower lying, sub-montane areas of the region. On 11% of the core area, spruce plays a larger role. These are found in high montane sites as well as in small-area azonal special locations such as rocky, blocky, or moored areas in the higher elevations of the biosphere reserve. In addition, wet, humid, or riparian sites are populated with natural forests of alder and ash. Such special sites account for 2% of the core areas.

Altogether, Table 2 and section 19.2 show that the core areas represent a variety of typical locations of the biosphere reserve.



When selecting the core areas, the aforementioned basic criteria were overlaid by other conditions:

- Wind energy systems: The German MAB committee also categorically excludes the installation of wind turbines, among others, in the core areas. In Baden-Württemberg, wind energy plays a central role in the development of renewable energy. The current state government set the goal of continuing to increase the production of renewable energy in the upcoming years. The core area concept thus had to be reconciled with the wind energy planning of the communes and the regional associations. Potential wind energy system locations were not allowed to be located in a core area.
- Natura 2000: It was important to ensure that no habitat type requiring care was located in the core areas. The same applies for the species of the Habitat or the Bird Directive. Above all, the grouse should be mentioned. This glacial relict that has been observed in the highest elevations of the Black Forest. For several years, especially in the Southern black forest and thus in the Biosphere reserve, the population has been declining. The grouse can currently only survive in the forest with the help of human intervention. The core areas should therefore not be placed in forests requiring maintenance in the sense of special species protection. The grouse or the grouse action plan of the Forest Research Institute of Baden-Württemberg was the reason why in the high montane region, suitable core area could not be allocated as such.
- Wild animal management play an important role in the implementation of development goals in potential core areas, especially with respect to the high numbers of chamois. Measures must be taken to ensure that game browsing does not endanger the natural development.
- Further spatial planning considerations in the designation of the core area included priority areas for mining of near-surface resources. In particular, the quarry in Präg/Bernau should be mentioned. The forests in this area are well suited for core areas. However, they were rejected because of a possible expansion of the existing grey-wacke quarry.

In addition to the fixed selection criteria of the German MAB committee, the committee issues recommendations as guidelines. For the core areas, the following recommendation should be named:

- The individual core areas should be at least 50 ha. In individual cases, a lower deviation is possible as long as this is justified.

In the Biosphere Reserve Black Forest, this recommendation was also largely met.

Table 3: Distribution of the core areas among each area size category

Core area category			
Area category	Number of partial areas	Total area ha	Ratio %
1–49 ha	12	223	11.7
50–99 ha	9	578	30.3
100–150 ha	2	238	12.5
> 150 ha	3	866	45.5
<b>Sum</b>	<b>25</b>	<b>1,905</b>	<b>100.0</b>

The core areas are legally secured in several respects:

All core areas are legally protected by §5 of the Enactment of the Ministry of Rural Affairs and Consumer Protection concerning the Biosphere Reserve Black Forest (Biosphere Reserve Black Forest Enactment) from 4 January 2016 and are subject to process protection.

In addition, 77% of the core area is designated as a forest reserve per legal ordinance and protected.

Further explanations on the individual core areas and the surrounding buffer zones can be found in Section 19.2.

### Traffic safety areas

Because of the strong morphological overprint of the entire region, most core areas are found on relatively steep slopes. A favourable effect is that the slopes of the area have historically been cultivated much more extensively than the few flat areas. In the slopes, the natural tree species have largely been maintained. This is a favourable starting point for a process protection.

As a rule, the valley are opened up by roads in the valley bottom. In some cases, core areas directly touch public roads. Along these roads, a duty of care still remains; therefore, in very isolated cases, individual trees within a small strip along the roads in the slope must be cut down because they could otherwise endanger traffic. These narrow strips are not subject to the permanent process protection. These traffic safety strips within the core areas must therefore be considered in the balance sheet. As explained, it is intended to compensate for this in terms of area. The process is currently being coordinated.

Figure 6 shows an example of two core areas in which traffic safety strips must be established along a federal highway and a residential area. Altogether, all core areas that feature traffic safety strips along public roads (federal highways, state roads, and county roads) and residential areas account for approx. 54 ha. A strip width of 35 m (measured from the centre of the roadway) was estimated in the horizontal projection. On inclined surfaces, this means a distance of approx. 43 m at a slope angle of approx. 35°.

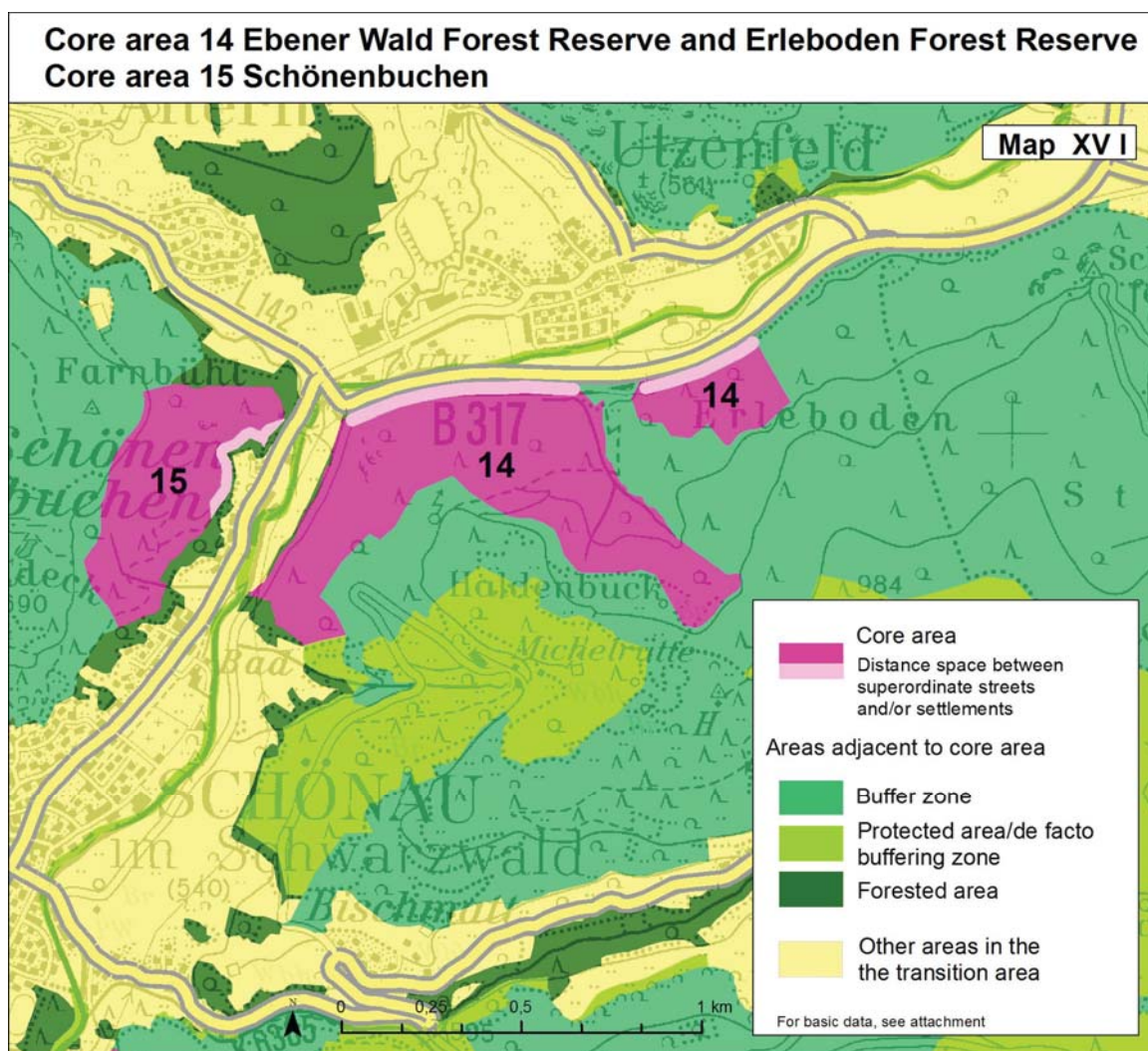


Figure 6: Consideration of distance areas using the example of core areas 14 and 15. Along the federal highway B 317 (core area 14) and along the settlement (core area 15), a 35 m distance strip in the horizontal map project was considered in the balance sheet (marked light pink).

## B) Buffer zones

In the list of criteria for the designation of biosphere reserves in Germany, the following A criteria was named with respect to the buffer zones:

- The core and buffer zones must account for at least 20% of the total area. The core areas should be surrounded by buffer zones.

With almost 30% area proportion of the buffer zone on the entire biosphere reserve (Table 1), this criterion has been met.

When determining the buffer zone areas, there were several technical criteria (as was the case for the core area designation). These are given below.

- The buffer zones were initially places around the planned core areas.
- In a further step, extensive buffer zone planning settings were created. These are oriented around the existing legally secured reserves such as:

- Nature reserves and protected woodlands
- Natura 2000 protected areas: In the state forest, Natura 2000 protected areas will be initially adopted in the setting (insofar as this is technically justified). The same applies for SCI in open land.
- In Southern black forest, the grouse also plays a large role in species protection. Certain areas from the grouse action plan of the Forest Research Institute of Baden-Württemberg (FVA, areas of priorities 1 and 2) were initially suggested as buffer zones in the public forest (municipal and state forest).
- The setting of the legally protected biotope also provides important information. Areas with a high proportion of protected biotopes, especially in open land were adopted into the buffer zone as a planning setting – initially independent of the type of ownership (municipal or private ownership).
- For the biosphere reserve, areas that were either conservationally valuable or had appreciation potential were selected even though were not protected. Above all, meadows and pastures in the western half of the region should be mentioned.

As described below, the first planning settings were discussed and revised in consultation with the land owners and land users on numerous occasions. The following criteria were used:

- Nature reserves in accordance with §23 BNatSchG and Protected woodlands in accordance with §32 LWaldG were included in the buffer zone setting independent of the type of ownership. No changes were made to the settings.
- For all other proposed buffer zone areas, the respective owners could decide whether to accept the buffer zone. The principle that the owner of an area outside the nature reserves and Protected woodlands can decide which zone the corresponding area should belong to was consistently pursued from the beginning to the end of the consultation process with the objective of gaining a high acceptance for the setting from the owners and users.
- The municipalities and land owners were also able to draw up their own proposals for the buffer zone areas. These were professionally checked and adopted if they met the qualifications.

The buffer zone setting of the biosphere reserve primarily includes areas that have a high conservational value. In open land, these are valuable cultural landscape elements, especially the extensively used pastures and meadows featuring characteristic flora and fauna as well as typical structural elements such as rocks, cairns, damp and wet areas, mossy areas, individual pasture trees, small bushes, and forest islands.

### **C) Transition area**

For the transition area, there are several A criteria of the national list of criteria that need to be met. These are as follows: The transition areas must occupy at least 50% of the area of the biosphere reserve. At approx. 68% (Table 1), the Biosphere Reserve Black Forest fulfils this criterion.

In the transition area, the planning powers of the local authorities in the context of land use planning shall apply. The local authorities are able to advance the communal development in the form of municipal and commercial areas.

The transition areas were closely coordinated with the municipalities, thereby minimising the potential for conflict in the further communal development.

#### **4.5.1 Justification for the formation of the biosphere reserve setting**

In some locations, larger bays and "worm extensions" are an obstacle to the formation of optimal, realigned regional settings. This mainly involves areas around the municipalities of Feldberg, Todtmoos, Höchenschwand, and Albruck, which are not or are only partially included in the regional settings. The narrow extension of the setting along the Alb tal in the South-East is also notable.

The reasons for these formations should be set out in detail.

### Municipality of Feldberg

The areas in the municipality of Feldberg include the Feldberg massif. This is the highest elevation of the Black Forest and also Germany's highest north of the Alps. From a conservationist perspective, the area is extremely valuable and the largest nature reserve of Baden-Württemberg: In the context of the biosphere reserve consultation process, the (sub) alpine climate with the onset of natural tree line, the pronounced avalanche tracks with high-quality vegetation, and extensive slope and flat moors, and the Feldseewalt forest reserve with the impressive cirque lake of the Black Forest as well as the highest mountain meadows and pastures with *Nardus* grasslands and valuable glacial relict species have led to the intensive promotion of the inclusion of this region in the biosphere reserve setting.

In addition, winter and summer tourism plays a prominent role. The conflicts and management strategies were also included into the strategies of the biosphere reserve in the context of sustainable development. Feldberg is also the location of the "House of Nature", an information centre of the Southern black forest Nature Park. It features illustrative exhibitions on the natural peculiarities.

However, the high economic significance of tourism for the municipality of Feldberg has led to a deep-seated mistrust of additional reserve obligations. The municipal council was concerned that the further development of tourism activities could be hindered by the objectives of the biosphere reserve.

In numerous appointments on the part of the biosphere reserve team and political managers with representatives from the municipality of Feldberg as well as in public municipal council meetings, attempts were made to point out the congruence between the biosphere reserve objectives of sustainable development and the local goals and stress a win-win situation.

Guided by the premise that the region should ultimately decide on participation, on 1 December 2015, with a narrow majority (6:4 votes), the municipal council decided against joining the biosphere reserve.

From a functional perspective, the Feldberg region acts directly in the area. The office of the biosphere reserve will therefore work closely together with the Feldberg region. In the case of a future expansion of the biosphere reserve, the participation of the Municipality of Feldberg will be sought.

### Municipality of Todtmoos

The areas of the Municipality of Todtmoos are marked by the trenches of the Wehratal. In the North, these are large, flat hollows with extensive former common land and also used as pastures. The slopes and highlands are dominated by forests. These often feature excellent fir-beech-spruce-selection forests. Several moor areas can also be found in the municipal region. As part of the "Oberer Hotzenwald" SCI region as well as "Murg zum Hochrhein", the basic suitability of the municipality for the biosphere reserve is emphasised.

The Municipality of Todtmoos is a spa resort with one of the few remaining health clinics in Southern black forest. However, the number of overnight stays in the municipality is declining.

Based on the aforementioned protection and development criteria, participation of the region in the biosphere reserve would be very desirable. The issues were discussed in many (some public) municipal council meeting. There were public hearings. At the request of the citizens, around 570 (!) private plots were individually considered and assigned to the three zone categories in consensus with the owners. The community-owned land was also re-adjusted at the request of the municipal council. Political managers such as Government President Schäfer repeatedly spoke with representatives from the Municipalities and attempted to reach a consensus.

On 10 November 2015, the municipal council voted against participation with 6:5 votes. The mistrust of the municipal council concerning unforeseeable farming requirements had prevailed.

In the context of expansion, the participation of the Municipality of Todtmoos will be sought.

### **Municipality of Höchenschwand**

The Municipality of Höchenschwand is located on a curved plateau at approx. 1000 m above sea level between the Albtal in the West, the Valley of Schwarza in the East, and the High Rhine in the South. For the Biosphere Reserve Black Forest, this pronounced plateau character is a charming scenic expansion. The area is an important interface between the partial landscape of Oberen Hotzenwald and the largest core area of the Schwarzhalden forest reserve.

Agriculture played a large role in the main occupation. The climatically favourable location with southern exposure but especially the morphological conditions and the slightly more nutrient rich soil led to increased use of grassland and arable farming. This would expand the range of regional products from the biosphere reserve.

Economically speaking, spa and general tourism continue to play an important role.

As was the case in Feldberg and Todtmoos, Höchenschwand did not believe that a biosphere reserve could be an important initiator for the long-term sustainable development. In this region, the existing economic pillars in tourism and agriculture appear to be so stable that a strategic expansion could not convince the citizens.

On 15 June 2015, the municipal council decided to join the biosphere reserve with only the Schwarzhalden forest reserve. In the future, the accession of additional areas will be promoted by the office of the biosphere reserve.

### **Municipality of Albbruck with the Albtal**

The Albtal is a deeply carved valley with high-quality, natural sites. It serves as an important ecological link to the High Rhine. It is an essential part of the "Alb zum Hochrhein" SCI region and the southern foothills of the "Southern black forest" SPA. The Municipality of Albbruck brought up the region on its own accord. The inclusion of this area was strongly advocated. It is therefore also a part of the Biosphere Reserve Black Forest. In addition to the Wehratal and the Valley of Schwarza (Schwarzhalden Forest Reserve), the Albtal, the third imposing gorge-like and rocky valley could be included in the biosphere reserve.

On the plateaus on the side of the Albtal, there is intensified agriculture in the form of farming. This can be compared with the Municipality of Höchenschwand. An expansion of the biosphere reserve setting into these areas is a delightful addition.

Later in the consultation process, the Municipality of Albbruck expressed interest in joining the biosphere reserve because it needed to reorient itself in light of structural changes (important employers, especially the paper mill, have left the area). The biosphere reserve sees the municipality as a chance for better regional marketing. As was the case in Höchenschwand, there were reservations from agribusiness about incorporating their areas into the biosphere reserve because farming requirements were feared. Even after extensive consultation, these could not be dispelled.

The current solution of incorporating the Albtal into the biosphere reserve and leaving out the agricultural land on the plateaus is a transitional solution. In the further biosphere reserve process, the goal is to convince the farmers of the plateaus of the success on the integrated concept of the biosphere reserve using positive examples from the existing biosphere reserve.



## Conclusion

The regional setting was designed using the three biosphere functions: protection, development, and logistics. The areas that are currently part of the setting fulfil the criteria of a biosphere reserve.

Because the final decision about participation in the biosphere reserve was left with the region, the areas that have been incorporated are not only technically but also communicatively-strategically well suited for the vital development of the biosphere reserve. Sustainable development focuses on individuals. They should take part on their own initiative and not under duress. All participating municipalities decided to take the step towards participation based on their own convictions and are therefore highly likely to actively support the sustainable development.

From a technical perspective, it would be desirable to include other areas. Under the primacy of voluntary action and a democratic decision, this could not be achieved at the time of formation. It is now up to the successful management of the biosphere reserve to develop a magnetic effect through good examples so that the biosphere reserve can continue to incorporate important and technically suitable area.

## 4.6 Organisational measures for the participation in and contribution to the planning and realisation of the functions of the biosphere reserve

### 4.6.1 Measures that have been taken or planned

The participation and collaboration of the local population and interest groups of the regions in the Biosphere Reserve Black Forest is the central guiding principle.

This can be mapped using the creation process of the biosphere reserve as well as the organisation and structuring of the management of the biosphere reserve.

#### 1. Participation in the founding phase

In a five-year process, the coordination team of the regional authority of Freiburg for the founding of the biosphere reserve came into contact with all interest groups of the regions on around 250 different occasions in order to discuss the opportunities, risks, strengths, and weaknesses of the biosphere idea and to examine the feasibility for each interested municipality. In addition to the basic pros and cons, the organisation and substantive direction of the biosphere reserve were discussed. The organisational structure in accordance with Figure 7 was worked out in a workshop with all participating associations. A future workshop was conducted with all associations, municipal, and civic representatives to work out content and initial project ideas.

The mayors of the interesting communities as well as association representatives from agriculture and forestry, the environment, and nature conservation intensively participated. All church representatives and representatives of cultural facilities were involved in the process. Individual areas users, especially farmers and foresters actively participated.

This participation led to a clear outlook of the planned biosphere reserve. This had an immediate effect on the zoning process and the exterior borders of the biosphere reserve. These were continually updated in the ongoing dialogue between the coordination team and the region. The participation process culminated in the individual votes in the council meetings of each municipality concerning joining the Biosphere Reserve Black Forest.

The protective reserve setting, which was legally prescribed on 1 February 2016, is thus the democratic result of this consultation process.

## 2. Involvement and participation in the biosphere reserve

The management and networking of all participants in the biosphere reserve are controlled by the office of the biosphere reserve, which has its headquarters in Schönau im Schwarzwald. This is affiliated with the regional authority of Freiburg. Fundamental decisions regarding the development of the biosphere reserve, staffing, and the use of resources as well as the creation of the conceptual framework will be met democratically through the steering committee of the biosphere reserve. In this body, all deciding political and technical interest groups of the region are represented. The composition of the steering committee resulted from the cooperation agreement between the local government representatives and the federal state of Baden-Württemberg. It should be noted that the five technical pillars (Figure 7) – mostly representatives from associations – also have a right to vote in the steering committee. This was one of the essential mutual results of the participative process.

The steering committee is the central deciding body for the affairs of the biosphere reserve. Representatives of the biosphere reserve council shall be appointed to the committee. This council essentially represents the advisory parliament of the biosphere reserve in which all interested parties of the region can become engaged. A total of 56 individuals are institutionalised in the council. These include representatives from the 29 municipalities, the three districts, the regional authority of Freiburg, the nature park, and the “five pillars”. These “five pillars” stand for the five most important topic areas: “Land use, natural production, society and culture, education for sustainable development, economy and tourism” in the biosphere reserve. These five areas are each constituted as a working area and appoint representatives to the council or steering committee.

In this way, it is ensure that the interests of the regional representatives are extensively considered.

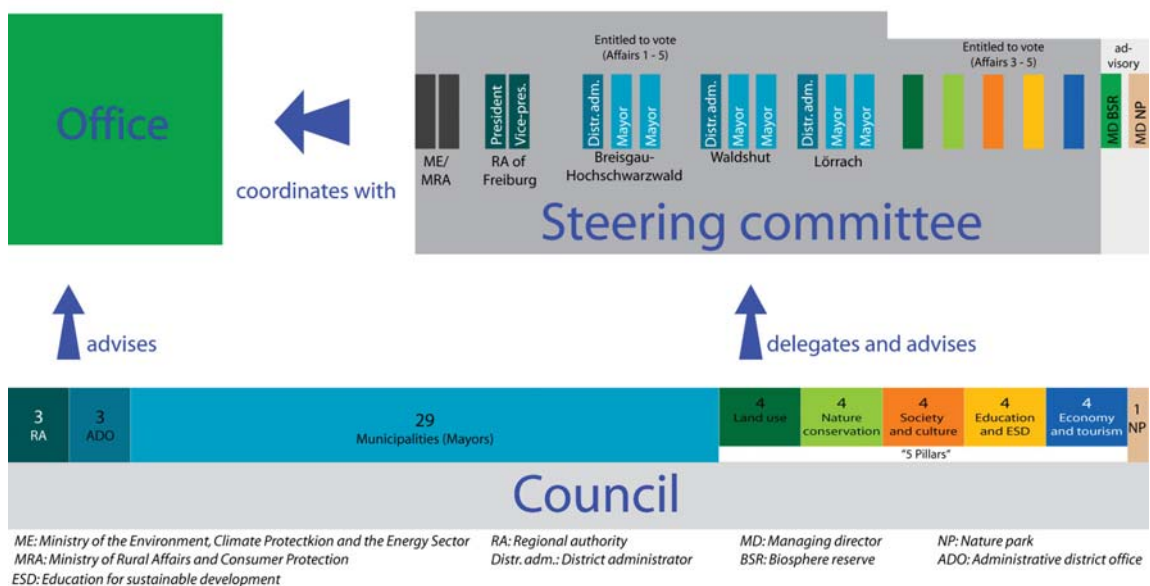


Figure 7: Organigram for the participation possibilities for the management of the Biosphere Reserve Black Forest.



In addition to the special biosphere reserve management by the office of the biosphere reserve, the state authorities are responsible for maintaining the protective objectives of the biosphere reserve. Their sovereign powers within the biosphere reserve remain unaffected. The office can therefore mediate between the individuals of the region and the authorities.

#### 4.6.2 Estimations of the cultural and social consequences

The cultural and traditional importance of the region is directly linked with important objectives of the biosphere reserve. Only because of the special land use tradition (common pasture management) was the area deemed worthy of protection.

The biosphere reserve should strengthen or reactivate the cultural identity of the region and use it as a driving force to further revive the traditional land use forms.

The objectives of the biosphere reserve are thus consistent with the cultural and social traditions of the region and directly promote them.

#### 4.7 Implementation mechanisms

- a) Mechanisms for regulating the human uses and activities in the buffer zones.

The biosphere reserve is integrated into the general landscape and regional planning of the federal state of Baden-Württemberg. For nearly all municipal areas, there are area use plans including landscape plans (cf Section 19.3.5). These landscape plans do not yet take into account the objectives of the biosphere reserve because they came into effect before the establishment of the biosphere reserve. However, it is intended to include the objectives of sustainable development when revising the landscape plans – and in the landscape structure plans of the regional plans of the Southern Upper Rhine and High Rhine Lake Constance.

In the zoning process, the different surface features were considered in detail so that the applicable implementation mechanisms are consistent with the objectives of the zones. Among other things, the priority areas shown in the regional plans will be considered for wind power.

In general, the use occurs under the German legislation taking into consideration proper agriculture and forestry. As a rule, areas under private ownership will be managed independently. Areas owned by communes will be managed as forest land by salaried foresters. Open land areas will be leased. Forest areas owned by the state will be managed by state employees. Access to these areas is subject to general market mechanisms or is publicly regulated.

There are numerous control mechanisms that specially regulate or control the use of the landscape in the buffer zones. These are listed in Table 4.

Table 4: Overview of the regulation mechanisms practise in the Biosphere Reserve Black Forest

Regulation mechanism	Description	Binding effect
<b>Financial funding programme</b>	<p>The programmes will be established by the federal state, the federal government, the EU, or other organisations (e.g nature park). For example, these include</p> <ul style="list-style-type: none"> <li>FAKT (Förderprogramm Agrarumwelt, Klimaschutz und Tierwohl; Funding programme for agri-environmental affairs, climate, and animal welfare)</li> <li>LPR (Landschaftspflege richtlinie; Land Stewardship Policy)</li> </ul>	<p>With funding in accordance with the goals defined, the applicant is committed to implementing the measures (compliance obligation). FAKT and LPR subsidies are aimed at nature-friendly and ecological land use. If the funding objectives are not met, the applicant is obliged to repay the funds.</p>

	<ul style="list-style-type: none"> <li>• UZW (Umweltzulage Wald; Environmental Supplement Forest)</li> </ul>	
<b>Legal Mechanisms</b>	<ul style="list-style-type: none"> <li>• Biosphere region enactment</li> <li>• FFG protection area objectives</li> <li>• SPA regulations</li> <li>• Nature reserve regulations</li> <li>• Forest reserve and protected woodland regulations</li> <li>• Conservation area regulations</li> </ul>	<p>The objectives in the regulations and guidelines are binding and will be legally monitored.</p> <p>In individual cases, exceptional regulations are possible after a formal investigation procedure.</p>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>• FSC</li> <li>• PEFC</li> <li>• Bioland</li> <li>• Demeter</li> </ul>	<p>The certifications apply to forestry and agricultural areas and their production conditions. If the standards are not maintained, the participant loses the certificate as well as any competitive advantages.</p>
<b>Organisational mechanisms</b>	<ul style="list-style-type: none"> <li>• LEV</li> <li>• Pasture cooperatives</li> <li>• Forest cooperatives</li> <li>• Forest enterprise communities</li> </ul>	<p>The landscape conservation organisations are organisational management options for areas of the landscape worth protecting. Through networking and maintenance concepts, they create conditions for a favourable conservation and development management.</p> <p>Pasture cooperatives are groupings of numerous pastures owners who have the goal of overcoming cost intensity through joint management. The pastures can thereby be managed more efficiently. In the private areas of the forest, there are forest cooperatives or communities. The objective of these associations are primarily to bundle smaller quantities of wood into larger units and thereby be able to react more successfully and efficiently in the market.</p>

Above and beyond the existing regulatory mechanisms, it is an important developmental goal to promote and expand the joint management of the pastures through innovative cooperation models. The federal state and the EU already have several funding programmes at their disposal:

- ELR (Entwicklungsprogramm Ländlicher Raum; Rural Development Programme)
- LEADER (EU support for rural areas)
- EFRE (Innovation and Energy Transition Funding)

The goal is to expand the conservational control as well as to develop networking with business and culture so that the regional settings are not dependent on subsidies alone but can largely support themselves.

b) Management concept or management plan or the biosphere reserve.

With the enactment of the Ministry of Rural Affairs and Consumer Protection of Baden-Württemberg on the Biosphere Reserve Black Forest from 4 January 2016, the most important objectives of the biosphere reserve have been defined. These also include the tasks of the core, buffer, and transition areas with respect to achieving this objectives.

With designation as a UNESCO biosphere reserve, it is intended to create a conceptual framework within three years. Thanks to numerous consultations with municipal representatives, future workshops and the formation of interest groups from business, education, and culture, many ideas for the creation of a conceptual framework have been collected. These will be incorporated into the management plan. In this sense, the drafting of the management plan had already begun some time ago. It is being shaped by the continual participation of the representatives in the biosphere reserve.

In the conception of the zoning, all existing conservation areas were incorporated into the buffer and core areas. The SCI were included in 75% of the buffer and core areas. Their preservation and development goals (Natura 2000) and maintenance concepts (conservation concepts) can therefore be readily integrated into the conceptual framework.

c) relevant authorities or a mechanism for implementing this concept or plan

An office with headquarters in Schöna im Schwarzwald is responsible for the overall control and net-working. This office is subordinate to the regional authority in Freiburg. In addition to the management, the office of the biosphere reserve will be engaged with following disciplines.

- Conservation including monitoring
- Land use with focus on agriculture
- Economy/tourism/regional development/marketing
- Education/culture/society/social

For a "start team", a managing director position and four positions from the aforementioned areas were advertised. The managing director position was filled in the middle of July 2016. Another four positions will be filled. The staff of the office was then successively expanded to ten positions.

The following qualifications were advertised as conditions for staff appointments:

Managing directors

**University degree in environmental or natural sciences or a comparable course of study that qualifies for the proposed duties. Several years of work experience in the administration of a company or organisation are advantageous.**

Education/culture/society/social

**University degree (Bachelor's, Master's) in education or another suitable discipline (e.g. natural or social sciences, environmental sciences) that qualifies for the proposed duties. Sound knowledge and experience in the area of education for sustainable development are a prerequisite.**

Conservation including monitoring

**University degree (Bachelor's, Master's) in a landscape management and scientific discipline. Sound knowledge and experience in the area of nature conservation and landscape management are a prerequisite.**

Economy/tourism/regional development/marketing

**University degree in economics or a comparable course of study (Bachelor's or Master's degree) that qualifies for the proposed duties. Sound knowledge and experience in the area economics, tourism, regional development, and regional marketing are a prerequisite.**

Land use with focus on agriculture

**Degree (Bachelor's) in the area of agronomy, agricultural biology, forestry, or a similar discipline that qualifies for the proposed duties. Sound knowledge and experience in the area of agriculture and forestry in the context of sustainable use are a prerequisite.**

Up to ten positions (three of which are advanced) that can offered as the biosphere reserve is established have been considered in the budget. Through the conceptual involvement of stakeholders in the region, the intensive collaboration of many actors in the design and implementation of the management plan is intended.

d) Regional service

In addition to full-time employees of the office, who will naturally have a great presence in the area of the biosphere reserve, there are landscape conservation organisations in all three participating districts (Breisgau-Black forest highlands, Lörrach, and Waldshut). The landscape conservation organisations are service providers for a regional nature and landscape management and assist the municipalities, districts, private property owners and local conservation organisations in a practice-oriented manner. The offices of the

landscape conservation organisations advise and handle the technical and organisational work and apply for funding to implement measures of the association. The colleagues of this landscape conservation organisations are very present in the area and are thus an essential part of this service. In the Feldberg nature reserve, which is largely located in the biosphere reserve, a full-time ranger has been employed. The ranger will support the area service in a substantial part of the biosphere reserve.

Furthermore, the state area administrators from agriculture, forestry, and conservation management have a supervisory role and provide consultation with respect to the maintenance and development of the goals of the biosphere reserve.

e) Programme for research, monitoring, and educational purposes

Because of the Universities located in the wider region, many scientific investigations have and are being conducted on the Black Forest. There are also several environmental monitoring programmes. In 2015, an extensive research project on the biodiversity in the Black Forest was started at the University of Freiburg.

The Biosphere Reserve Black Forest will become a nucleus for future research projects. With the international designation of the biosphere reserve by UNESCO, it will become considerably easier to receive support from national and European funding in order to implement research, monitoring, and educational programmes. The proximity to important research centres in Freiburg, Rottenburg, and Hohenheim (Germany), Basel (Switzerland), and Strasbourg (France) will enable a close regional cooperation in a transnational context.

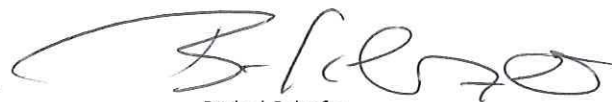
Possible priorities include research on the development of sustainable tourism (which requires different strategies for summer and winter) or the interactions in a grassland rich woodland. The urban-rural relationships are also a potential research field.

## 5 SIGNATURES

### 5.1 Signed by the relevant bodies for the management of the core zones

**Regional Authority of Freiburg**

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Bärbel Schäfer

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Walter Kemkes

### 5.2 Signed by the relevant bodies for the management of the buffer zones

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Walter Kemkes

**5.3 Signed by the managing authorities who are responsible for managing the core zones and buffer zones at the federal level (or federal state or district/county level)**

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Minister Franz Untersteller, Member of the Landtag

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Bärbel Schäfer

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Dorothea Störr-Ritter

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Dr Dieter Salomon

**5.4 Signed by the relevant bodies, an office recognised by the local government authority, or the speaker/representative in the municipalities in the development zones****Municipality of Aitern**

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Sigrid Böhler

**Municipality of Albbruck**

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Stefan Kaiser

**Municipality of Bernau im Schwarzwald**

Mayor Rolf Schmidt  
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Rolf Schmidt

**Gemeinde Böllen**

Mayor Bruno Kiefer  
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79677 Böllen

Bruno Kiefer

**Municipality of Dachsberg**

Mayor Helmut Kaiser  
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Helmut Kaiser

**Municipality of Fröhnd**

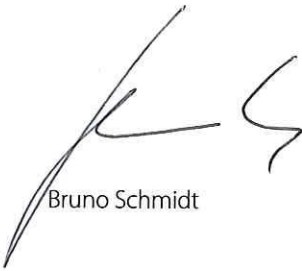
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Tanja Steinebrunner



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Bruno Schmidt

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Martin Bühler

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Thomas Kaiser

**Municipality of Hinterzarten**

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Klaus-Michael Tatsch

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Stefan Dorfmeister

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Helmut Kaiser



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Gerd Schönbett**Municipality of Oberried**

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Michael Quast**City of Schopfheim**

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Christof Nitz**City of St. Blasien**

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Rainer Fritz

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Andreas Wießner

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Klaus Rümmele

**Municipality of Ühlingen-Birkendorf**

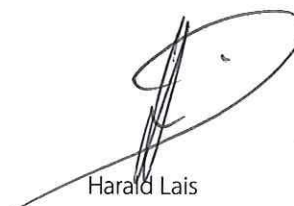
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Tobias Gantert

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Harald Lais

**City of Wehr**

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Michael Thater

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**Municipality of Wieden**

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Annette Franz

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**District office of Waldshut**

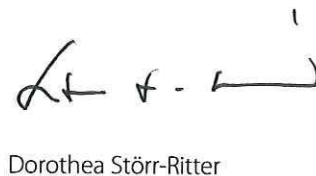
District Administrator Dr Martin Kistler  
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Dr Martin Kistler

**District Office of Breisgau-Hochschwarzwald**

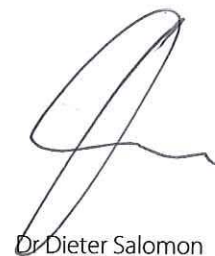
District Administrator Dorothea Störr-Ritter  
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Dorothea Störr-Ritter

**City of Freiburg**

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Dr Dieter Salomon

**5.5 Signed in the name of the MAB National Committee or the Central Liaison Office****Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety  
Chair of the German MAB National Committee**

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Dr Christiane Paulus

## PART II: DESCRIPTION OF THE REGION

### 6 LOCATION (COORDINATES AND MAP(S))

#### 6.1 Standard geographic coordinates of the biosphere reserve

Table 5: Location coordinates of the Biosphere Reserve Black Forest. The coordinates are specified in Projection WGS 84.

Cardinal points:	Latitude	Longitude
Midpoint:	47° 47' 21" N	7° 57' 27" E
Northernmost point:	47° 58' 35" N	7° 54' 49" E
Southernmost point:	47° 35' 28" N	8° 07' 41" E
Westernmost point:	47° 44' 36" N	7° 44' 07" E
Easternmost point:	47° 42' 59" N	8° 13' 46" E

#### 6.2 Topographic maps

Location maps 1a through 1l are included as attachments.

The zoning map can be found at [www.biosphaerengebiet-schwarzwald.de](http://www.biosphaerengebiet-schwarzwald.de).

### 7 AREA

cf map 1l in attachments

#### 7.1 Area of the core area(s) 1,904.8 ha (3.01%)

#### 7.2 Area of the buffer zone(s) 18,522.7 ha (29.29%)

#### 7.3 Area of the transition area(s) 42,808.3 ha (67.70%)

Total area **63,235.8 ha** (this is exclusively land area)

## 7.4 Fulfilling the biosphere functions in the three zones

	Protective function	Developmental function	Logistics function
<b>Core area</b>	<p>Process protection is in the foreground. All natural developmental processes in the various forest ecosystems of the biosphere reserve should have space and time to be able to flow freely. The core areas include nearly all natural forest communities of the biosphere reserve, the zonal communities (mostly communities of beech and fir forests), and numerous azonal communities (e.g. on rocky, blocky, or swampy locations).</p> <p>In addition to the priority objective of the process protection, the core areas fulfil the function of species protection, especially with respect to animal species that are closely couple to structures of decay phases.</p>	<p>Of relatively minor importance. Nevertheless qualitatively important for landscape preservation because it benefits tourism (hiking and recreation).</p> <ul style="list-style-type: none"> <li>• The core areas represent an ecological reference, the zero scenario to which the cultural achievements can be related.</li> <li>• They exemplify the development of biological structures from emergence to decay. Economic forests cannot afford this in particular, the decay phase can be impressively conveyed in the core areas.</li> <li>• They are a symbol of a sustainable recycling process and thus represent the basic idea of biosphere reserves with examples of different ecosystems.</li> </ul> <p>The larger core areas are also of particular importance in the context of research on forest ecosystems. The area offers the possibility to investigate the stepping stone function of smaller and isolated core areas. Research institutes with relevant experience in the area will be involved (Forest Research Institute of Baden-Württemberg Freiburg; University of Freiburg)</p>	<p>The core areas should play a decisive role in education for sustainable development. The importance of this is explained in the following three examples:</p> <ul style="list-style-type: none"> <li>• The core areas represent an ecological reference, the zero scenario to which the cultural achievements can be related.</li> <li>• They exemplify the development of biological structures from emergence to decay. Economic forests cannot afford this in particular, the decay phase can be impressively conveyed in the core areas.</li> <li>• They are a symbol of a sustainable recycling process and thus represent the basic idea of biosphere reserves with examples of different ecosystems.</li> </ul> <p>The larger core areas are also of particular importance in the context of research on forest ecosystems. The area offers the possibility to investigate the stepping stone function of smaller and isolated core areas. Research institutes with relevant experience in the area will be involved (Forest Research Institute of Baden-Württemberg Freiburg; University of Freiburg)</p>
<b>Buffer zone</b>	<p>In the Biosphere Reserve Black Forest, the buffer zones have three functions:</p> <ul style="list-style-type: none"> <li>• Because they surround the core areas, they buffer disturbing influences. They therefore perform a protective shield surrounding the process protection areas.</li> <li>• Active protection of open land ecosystems with their habitats for rare and endangered animal and plant species through permanent care. These are mainly the species rich pastures and meadows and Nardus grasslands in varying degrees. The conservation of these habitats is primarily ensured by the continuation of the extensive use.</li> <li>• The old breed of backwoods cattle is very closely linked with the regional setting of the biosphere reserve. This robust breed is optimally suited for the extensive management of the pastures of the biosphere reserve. Cultural achievements can thus be ensured for the future.</li> </ul>	<p>The buffer zone makes a substantial contribution to the development function of the biosphere reserve. Several agricultural operations are located in the buffer zone. In an ideal situation, the extensively used meadows and pastures of the buffer zone can be preserved through the continuation and development of agricultural use. The marketing of sustainable products – especially beef and goat meat – can be developed.</p> <p>Tourism in the buffer zone is partially quite intensive. Ways must be found to satisfy the need for both tourism and protection. Both areas have their place.</p>	<p>An essential element of the buffer zone is the diverse cultural landscape created by humans. In the context of education for sustainable development, it is necessary to convey the relationship between cultural activities, traditions, and the landscape. This includes the typical regional architectural styles and building types as well as traditional breeds with special properties.</p> <p>The buffer zones in the biosphere reserve, especially the pastures and meadows, should represent the research objectives of the biosphere reserve, which are to develop a use and management that is adapted to the requirements of humans. This should take into account the protective functions and preserve or increase species diversity.</p>
<b>Transition area</b>	<p>In the transition area, the protective function plays a subordinate role. In individual cases, the transition area can include open land</p>	<p>The majority of the infrastructural services are found in the transition areas.</p> <ul style="list-style-type: none"> <li>• Provision of housing</li> </ul>	<p>The people in the biosphere reserve mainly live and work in the transition area. Humans are therefore the central actors in the biosphere reserve. In contrast to other protection area categories (e.g. nature</p>

areas that are already in a more or less advanced stage of succession. These will be developed into open land and habitats for valuable species and thus fulfil protective functions.	<ul style="list-style-type: none"><li>• The possibility to generate income.</li><li>• Supply of food and consumer goods</li><li>• Educational institutions and medical care</li><li>• Important transport axes</li><li>• Facilities for tourism (e.g. ski lifts)</li></ul> <p>The goal of this biosphere reserve is to set sustainable development into motion and to regionalise the value added chains as much as possible.</p> <p>Closely intertwined with the protective function in the Biosphere Reserve Black Forest is the development function for the commercial economy. There are only a few full-time farmers in the area. Most agricultural operations are performed for secondary income. These part-time farmers often have a main occupation in a regional commercial operation. These commercial businesses in the immediate area are therefore of particular importance. Without these, the agricultural smallholdings could not exist, and the farmers could not stay in the region. The developmental function thereby directly supports the protection function.</p>	reserves, national parks), the functions and actions of humans have a positive connotation. The importance of humans and the positive attitude towards the activity of people should be conveyed in the context of education for sustainable development.
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## 8 BIOGEOGRAPHIC REGION

According to the Udvardy Classification System, the Biosphere Reserve Black Forest is located in the biogeographic region:

**“South-west German upland/terraced landscape – continental region (terrestrial continental region)”**

**D54 Black Forest**

**The main type of landscape is “grassland rich forest landscapes”.**

## 9 LAND USE

Table 6: Land use forms in the Biosphere Reserve Black Forest (cf Map IX in Annex)

Use	ha	%
<b>Farmland</b>	197	0.3
<b>Mining*</b>	16	< 0.1
<b>Fallow land</b>	20	< 0.1
<b>Running waters</b>	60	0.1
<b>Garden land</b>	10	< 0.1
<b>Groves</b>	984	1.6
<b>Grassland</b>	15,926	25.2
<b>Heath</b>	< 1	0.0
<b>Moor</b>	590	0.9
<b>Orchard</b>	6	< 0.1
<b>Residential area</b>	2,083	3.3
<b>Standing water</b>	66	0.1
<b>Meadow orchard</b>	247	0.4
<b>Forest</b>	43,030	68.0
<b>Sum</b>	<b>63,235</b>	<b>100.00</b>

\* Open pit/pit/quarry/mining operation

The main area coverage form is the forest (68%). Grassland is found on approx. 25% of the area.

Residential areas, including incidental use areas such as landfill sites, cemeteries or amusement parks occupy around 3.3% of the total area.

Other major surface coverages include areas with loose woody cover (1.6%) and moors (0.9%).

Cf Map IX in attachments.

### 9.1 Historical development of the area use

Humans have most likely roamed the Black Forest and mountain forests since the Neolithic period. However, this was certainly not one of the preferred residential areas.

Because of its inaccessibility, the Black Forest was first settled near the end of the first century AD. However, the Black Forest had served as a source of wood for much longer. Ore was also mined from very early on. From the high middle ages (12th to 13th century), mining activity was increased (Schauinsland, Todtnau). Because of the development pressure in the valleys, the Black Forest was populated from the

valleys outward. The Black Forest farmers were socially integrated into the system of medieval and early modern feudalism. This means that the farmers were dependent on landowners and had to pay taxes. The centres of these manorial farms were mostly feudal estates, which were often the starting points of the settlement<sup>1</sup>.

After the first settlers had taken root, the forest was continuously cleared to establish settlements and farmland. However, until the 17th century, there were still undeveloped areas. In the next 200 years, numerous glassworks were established. These had a very large demand for wood (charcoal production for the manufacture of glass and wood for shipbuilding in the Netherlands). The resulting timber trade was developed through the further clearing of municipal land and pastures. In 1780, only 30% of the Southern black forest was covered by forest. Today, 70% of the biosphere reserve is covered by forests. In Baden-Württemberg, the forest cover is 38%. Throughout Germany, the forest cover is only 32%.

An important nucleation for the settlement of the Black Forest was the settlement of monasteries in the 9th and 10th centuries. These withdrew into the deep Black Forest based on an urge to seek seclusion. The monasteries St Trudbert, Oberried, St Lioba in Günterstal, St Peter, St Märgen, and especially St Blasien quickly became important centres of culture and power, from where the colonisation of the Black Forest spread. Through donations, the St Blasien Monastery became one of the most important symbols of power in the Southern black forest.

The monasteries were also centres of trade and knowledge. They also laid claim to the large forest areas. Before secularisation, many residents of the Black Forest paid rent to the monasteries. Following secularisation in the early 19th century, the pastures were largely transferred to the municipalities. In some cases, the areas were also privatised. In contrast, the monastic forests largely became state forest.

Based on this history **common land or community pastures** developed. These have led to a very high biodiversity. They have been preserved to this day. Despite strong declines in recent decades, these pastures still occupy an area of approx. 10,000 ha<sup>2</sup>.

### Excursion: Common land

The main characteristic of the biosphere reserve is the Allmend pastures. They are commonly used, mostly large mountain pastures, which extend into the highest altitudes. These can be traced to the settlement of the Black Forest. They were first mentioned in 1284.

In Black Forest, the communal use of natural resources has been common practise since settlement. Field and forest owned by landlords (in this case the monasteries) became common areas that were shared by farmers. Cattle were driven in large herds on the common areas, which were referred to as "wild field" in the area. Following secularisation of the monasteries by Napoleon over 200 years ago, their possessions went to the municipalities. Since this time, the common areas have been communal property.

Because of the snow cover, the Allmend pastures were only used during the summer. In spring, as soon as there was enough vegetation cover to provide sufficient feed, the dairy cattle of an entire village were jointly herded on the pasture. Under the supervision a herdsman, the large herds crossed the Allmend pastures. Throughout the day, the cattle grazed on the pasture. In the evening, they returned to the farms to be milked. This type of grazing occurred until the end of the 2nd world war. The introduction of the

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<sup>1</sup> (Michael Buhlmann, Geschichte des Black Forestes [History of the Black Forest], Text from: Vertex Alemanniae. Schriftenreihe des Vereins für Heimatgeschichte St Georgen, Issue 34/1-2, St Georgen 2007)

<sup>2</sup> (LUICK, R. (1997): Preservation, maintenance and development of species-rich grassland habitats through extensive grazing with gentle cattle breeds. Research projects (1994–1997) – Singen: Institute for Landscape Ecology and Nature Conservation. Final report. 202 pg.)

electric fence allowed for the secure partition of the pastures and made the herdsman unnecessary. The high meadows in the summits of the Feldberg massif and Belchen were and still are partially reserved for young cattle. During the summer, they remained on the pastures with herder cottages. In winter, they returned to their stables in the valley.

Each farmer had a right of use. They could herd as many cattle on the common areas as they could care for in the winter. In return for the use of the pastures, the farmers had to contribute to the maintenance (compulsory labour). However, these rights were often superseded or concentrated on the remaining farmers. In some municipalities (e.g. Kleines Wiesental and Hotzenwald) the common land was eliminated in the 19th century. The land was distributed to the beneficial owners. It was hoped that the agriculture would improve. The pastures largely disappeared in these areas because the new owners reforested the area.

Also in Großes Wiesental, the current centre of the Allmend pastures, attempts are being made to eliminate these because they are perceived as a barrier to agricultural development. However, the government efforts were thwarted by the persistence of the farmers and municipalities, who wished to continue using the common land. In recent decades, the use structures and the scope of the Allmend pastures have changed greatly. However, the common use of the publicly owned areas has largely been preserved.

Because there were still complaints about the unsatisfactory yields and the condition of the pastures, since the middle of the 19th century, the state has been attempting to improve the condition of the common land and convert it into efficient pastures. Unclear regulations for grazing, the driving of too many animals, the permanent removal of nutrients, and overgrazing have led to the decline of the pastures. Attempts at improvement initially failed. Only in 1930, when the state of Baden created a "pasture inspection", which was entirely concentrated on the supervision of common pastures in the Southern black forest, did the situation improve. The support of the state resulted in the fertilisation of the pastures, the expansion of drinking troughs, and the creation of infrastructures for development. Pasture regulations were introduced in order to regulate the use of the Allmend pastures. Unprofitable and remote areas were removed from the pastures and reforested (preferably with spruce). The Allmend pastures thereby lost a substantial part of their area. The decline of farms also influenced the management of the Allmend pastures because the care and maintenance now rests on fewer shoulders.

Since the 1970s, an additional aspect – keeping the landscape open and protecting the exceptional vegetation on the rough pastures – has played an increasingly stronger role in the management of the Allmend pastures. The preservation of the typical landscape image has become an important reason for the use of the meadows, and agricultural support programmes are increasingly focussing on this.

The forest areas are the determining element of the cultural landscape in the biosphere reserve. In terms of tourism, this is of particular importance. The pastures are not only worth keeping from a cultural-historical perspective but also give the Southern black forest a characteristic appearance. As a structured "wild field" featuring striking pasture beeches and solitary spruce, it is a delightful contrast to the hay meadows within the scattered villages. The landscape aesthetics and the possibility of beautiful views in the Alps, Vosges, and Rhine Valley are mainly due to these.

Because the soil is relatively nutrient poor, the ground cover of the Allmend meadows largely consists of extensively usable lean turf. In the montane locations, which are favoured by a warm climate, *Nardus* grasslands with winged brooms predominate. In the summit areas (above 1,000–1,100 m), Swiss dandelion-*Nardus* grasslands prevail. Both vegetation types belong to the SCI habitat type “species-rich montane *Nardus* grasslands”. Areas that were fertilised in the course of improvement measures features red fescue pastures rich in clover. The vegetation cover is highly differentiated as a result of different exposure, soil, field intensity, snow cover, and moisture.

With respect to their expanse, differentiation, and species composition, the Allmend pastures in the Southern black forest are unique in the Central German Uplands. The preservation and continuation of extensive management of the Allmend pastures is essential for the preservation of the cultural landscape of the Southern Black Forest.

Table 7 provides a brief overview of the **land use history** of the regional setting of the Biosphere Reserve Black Forest.

Table 7: Outline of the land use history of the region in the Biosphere Reserve Black Forest.

Period	Phase	Agriculture	Mining and industry
<b>from approx. 1000 A.D.</b>	Opening up the previously unpopulated forest landscape	Modest agricultural sector for their supply of isolated settlements	The driving forces are the mining (prospecting for silver, lead and zinc) and the population growth in the adjacent Rhine valley.
<b>15th through 18th century.</b>	Exploitation of the mountain landscape	Expansion of agricultural land through deforestation -> generation of the extensive Allmend areas. In the partible inheritance area, population growth led to the downsizing of farms.	Slow decline of mining (exhaustion of ore), expansion of settlements. Great demand for wood (glass glowing, charcoal burning, firewood rafting). Always setbacks in wartime.
<b>Second half of the 18th century</b>	Period of greatest deforestation in the region	Period with the greatest expansion of agricultural area. Poor condition of pastures; in some valleys, division of Allmend pastures Because of the population growth, introduction of new usage forms in agriculture (Reutberg economy, field grass economy).	Start of production (first in manufacturing and cottage industry): use of domestic timber in carving and the manufacturing of brushes). Swiss companies introduce cotton weaving and spinning to the region.
<b>19th century</b>	Expansion of industry in the valleys	Allmend pastures in poor condition because of prolonged overuse; therefore first forestation. The State of Baden became increasingly concerned with the Allmend pastures. Agriculture lost economic importance. Population growth decreased because of migration and emigration in times of need.	Expansion of industrial production (use of machines); prompted by the use of water power and the improvement of infrastructure. Cities in the valley became industrial centres. Obere Hotzenwald still remains excluded from industrialisation.
<b>Middle of the 20th century</b>	Modernisation of the region	Decline in agriculture; mainly operated as a sideline. Large-scale forestation of unprofitable pastures.	Development of infrastructure. Despite crises, commerce and industry are the economic backbone of the region. Abandonment of mining Tourism gains importance.

<b>Since the 1970s</b>	Extensification in agriculture	Agricultural use becomes less important Abandonment of agricultural operations largely operated as a sideline. Hardly any forestation on Allmend areas. State support enables the move from production to landscape and nature conservation. Financial support for mountain farming enables the continued use of the Allmend pastures and the orientation towards landscape conservation. (Black Forest programme, Landscape Management Directive, conservation projects, MEKA/FAKT, prospectively the biosphere reserve?)	Industry and service in the cities of the valleys are the economic mainstay of the region, numerous commuters (In the industrial and service centres outside the Black Forest). Complete decline of the textile industry Tourism gains economic importance.
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## 9.2 Main users of the biosphere reserve

Core area	Buffer zone	Transition area
<ul style="list-style-type: none"> <li>• Scientists (environmental research and monitoring)</li> <li>• Hikers/recreation seekers (only possible on a few allocated paths),</li> <li>• Hunters (limited hunting)</li> <li>• Fishers (limited fishing)</li> <li>• Bee-keepers</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers: Meadows and pastures, rarely arable land</li> <li>• Woodland owners: Wood</li> <li>• Tourists: Landscape</li> <li>• Farmsteads: Land area</li> <li>• Population: Joy of homeland, in cultural identify</li> </ul>	<ul style="list-style-type: none"> <li>• Farmers: Pastures and meadows, forest, rarely arable land</li> <li>• Woodland owners: Wood</li> <li>• Tourists: Recreational landscape (summer and winter)</li> <li>• Businesses Land area, work force</li> <li>• Handicraft businesses Forest and land area, labour force</li> <li>• Energy sector: Water, wood (wind)</li> <li>• Population: Work/income, settlements: Land area</li> </ul>

In the region, there are no indigenous peoples in accordance with the UN definition.

### 9.3 Customary law or traditional rules for land use

Core area	Buffer zone	Transition area
<ul style="list-style-type: none"> <li>• No customary rights</li> <li>• Driving and hiking only on designated trails</li> <li>• Hunting and fishing possible with restrictions</li> </ul>	<ul style="list-style-type: none"> <li>• No customary rights</li> <li>• Jointly managed areas (Allmend pastures)</li> <li>• Free access rights in accordance with NatSchG and LWaldG so long as no other protection provisions apply.</li> </ul>	<ul style="list-style-type: none"> <li>• No customary rights</li> </ul>

There are no longer any express customary rights.




### 9.4 Differences between men and women in the access to resources and their control

Pursuant to German Basic Law and the Gender Equality Act, there are no differences. Men and women have equal rights to use the resources.



## 10 POPULATION OF PROPOSED BIOSPHERE TERRITORY

### 10.1 Local communities within or adjacent to the biosphere reserve

	Continually	Occasionally
<b>Core areas</b>  © ö:konzept	0 residents	0 residents
<b>Buffer zones</b>  © Peter Schach	Individual landscapeshaping farmsteads < 1% of the number of people living in the biosphere reserve	Individual hiking/ski snack bars, only occupied or managed during the hiking and skiing season < 1% of the number of people living in the biosphere reserve
<b>Transition areas</b>  © Peter Schach	1961 ==> 35,800 1991 ==> 39,300 2014 ==> 37,800 The population density in the biosphere reserve is 67 inhabitants per km <sup>2</sup> (as a comparison: in Baden-Württemberg: 300 inhabitants per km <sup>2</sup> ; in Germany: 229 inhabitants per km <sup>2</sup> ). Sources: Statistical Office of Baden-Württemberg, <a href="http://de.statista.com">http://de.statista.com</a> ,	Added to this are tourists, daytrippers, and overnight visitors. There are approx. three million overnight stays in all of Southern black forest (see Annexe). Tourism is an important economic sector for the municipalities in the biosphere reserve.
<b>Total:</b>	<b>38,000</b>	

The biosphere reserve is primarily home to German citizens. Most have lived in Baden-Württemberg for generations. They largely speak the Alemannic dialect, which is common to the region. No minorities are known. A manageable number of refugees from international crisis areas are currently being housed in the communities located in the biosphere reserve.

Of the 38,000 people living in the biosphere reserve, 14,100 are gainfully employed. In the biosphere reserve, there are 9,500 jobs. The remaining 4,600 have found work outside the area.

Approximately 5% people (620), including familyworkers, are employed in agriculture. This is above the stateaverage of Baden-Württemberg, which is 1.3% (throughout Germany the proportion is 1.6%). As shown by the development of farms (cf Section 15.3.1), the trend of people employed in agriculture is decreasing.

## 10.2 Cultural significance

### 10.2.1 Intangible cultural heritage

#### Traditions

The Southern black forest and Black forest highlands have produced very different traditions because of the rough living conditions, the difficult access (mountain location), and the small degree of networking. These conditions have strongly promoted the cohesion of the population and their identification with their homeland.

#### Village customs

Most villages have developed their own costumes (everyday and festive) The customs for holidays and anniversaries (birthdays, baptisms, weddings, funerals, and church celebrations) have been intensively maintained in order to provide stability in the community. Handicrafts flourish in the winter months. Especially in the Bernau region, wood carving is an important cultural feature.



Figure 8: Music association Bernau. © Musikverein Bernau

## History of mining

Throughout the biosphere reserve, mining was one of the driving forces for the colonisation of the mountain. Especially in the middle ages, it was the economic backbone of the region. Until today, a return to this tradition plays an important regional role.

## Arts/handicrafts

The handicrafts produced in the villages brought forth nationally renowned artists. The landscape painter Hans Thoma (1839–1924) from Bernau as well as “Snow painter” Hermann Dischler (1866–1935) and Karl Hauptmann (1880 – 1947) created characteristic paintings of mountain scenery, which have made them well known far beyond the borders of the Black Forest. Franz Xaver Winterhalter (1805–1873), who originated from Menzenschwand, was a popular portrait painter at European princely houses. Two of four prizes awarded by Baden-Württemberg – the Hans Thoma Prize for fine art and the Johann-Peter Hebel Prize for literature – went to personalities originating from the biosphere reserve (Bernau and Hausen im Wiesental). The Hans Thoma Museum not only features the works of Hans Thoma but also an extremely remarkable collection of works from well-known artists including Otto Dix.

## Carnival

In 2014, the Swabian-Alemannic carnival (Alemannic: Fasnet) was included in the national list as an intangible heritage by the German UNESCO Commission. This popular festival has a firm place in the lives of the local people and is of great importance for identifying with their homeland (Figure 9).

## Alemannic language

The Alemannic language (High Alemannic) is present in the everyday life of the biosphere reserve. It is an important identification feature for the people in the region.

A great deal of this cultural heritage is at risk of being lost – the need to define oneself through customs has been considerably reduced.



Figure 9: Schönaauer Schellenteufel. © Muth-Gräff



### Historical struggles for freedom

In the Southern black forest, there is a tradition in the struggle for civil liberties. Over the centuries, there were several riots against the authorities.

In 1525, in the course of the Reformation, the southern German rural population fought back against the burdens of feudalism. The rebellious peasants demanded the reduction of taxes and the abolition of forced labour. Starting from Stühlingen, unrest rapidly spread to the Southern black forest and led to the **Peasants' War**. In April of 1525, 600 farmers from Hotzenwald attacked the monastery of St Blasien and destroyed it in outrage over the "extravagant lifestyle" of the Benedictine monks.

In the **Saltpeter Riots** of 1725–1745, the Yeomen of the County of Hauenstein, which belonged to the Habsburg Empire (today: Hotzenwald) demanded ancient liberties, which had been denied by the Abbot of St Blasien. The clashes dragged on for decades and ended with the execution or banishment of the uprising leader.

In April of 1848, during the Baden Revolution, rebellious citizens and workers demanding a democratic republic made their way through the Wiesental starting from Freiburg. In Todtnau, the "Hecker platoon" was warmly welcomed, and some citizens voluntarily joined. The day after, the uprising ended bloodily because the platoon was defeated by Hessian troops in Kandern.

## 10.2.2 Important material cultural assets

### Architecture of the Black Forest buildings

The landscape of the Black Forest includes the large roof "Einfirsthöfe" featuring a hipped roof and high entrance to the hay barn. Each part of the Black Forest has its own characteristic building type. They were adapted to the climatic conditions and the economy. They provided a place for people, animals, and harvested goods under a single roof. There was often a workshop in the house, where various handicrafts could be produced during the long winter months. The oldest farmyards of the Black Forest can be traced back to the end of the 15th century and beginning of the 16th century. Nearly each farmyard had its own name. This belonged to the building and did not change with the owner. Current house names often refer to the owners in the 18th century.



Figures 10a and b: Until 1976, the Resenhof in Bernau was occupied by its last owner, Rese Hans, who left the building in nearly unaltered condition. The distinctive hipped roof form and the access to the house from the slope can be clearly seen. © Peter Schach

The Schauinsland house is widespread in the biosphere reserve. Because of the steepness of the terrain, it is parallel to the slope and accessed from the side. Likewise, one finds the Heidenhaus in its recent form, which is perpendicular to the slope. For this form of house, the service wing opens to the rear longitudinal side. The living quarters were in front area facing the valley. In the older Heidenhäuser, the living quarters were in the rear on the slope. There they were better protected from the cold. However, the living areas were often dark and damp. In the south-eastern part of the biosphere reserve, the smaller Hotzenhaus can be found.

The houses were adapted to the topography. The service section was opened from the slope above the top floor, the hay storage. The hay was thrown through hatches into the stable below. The manure was pushed out from the stable, which faced the valley. Using this organisational set-up, gravity could be used to facilitate manual labour.

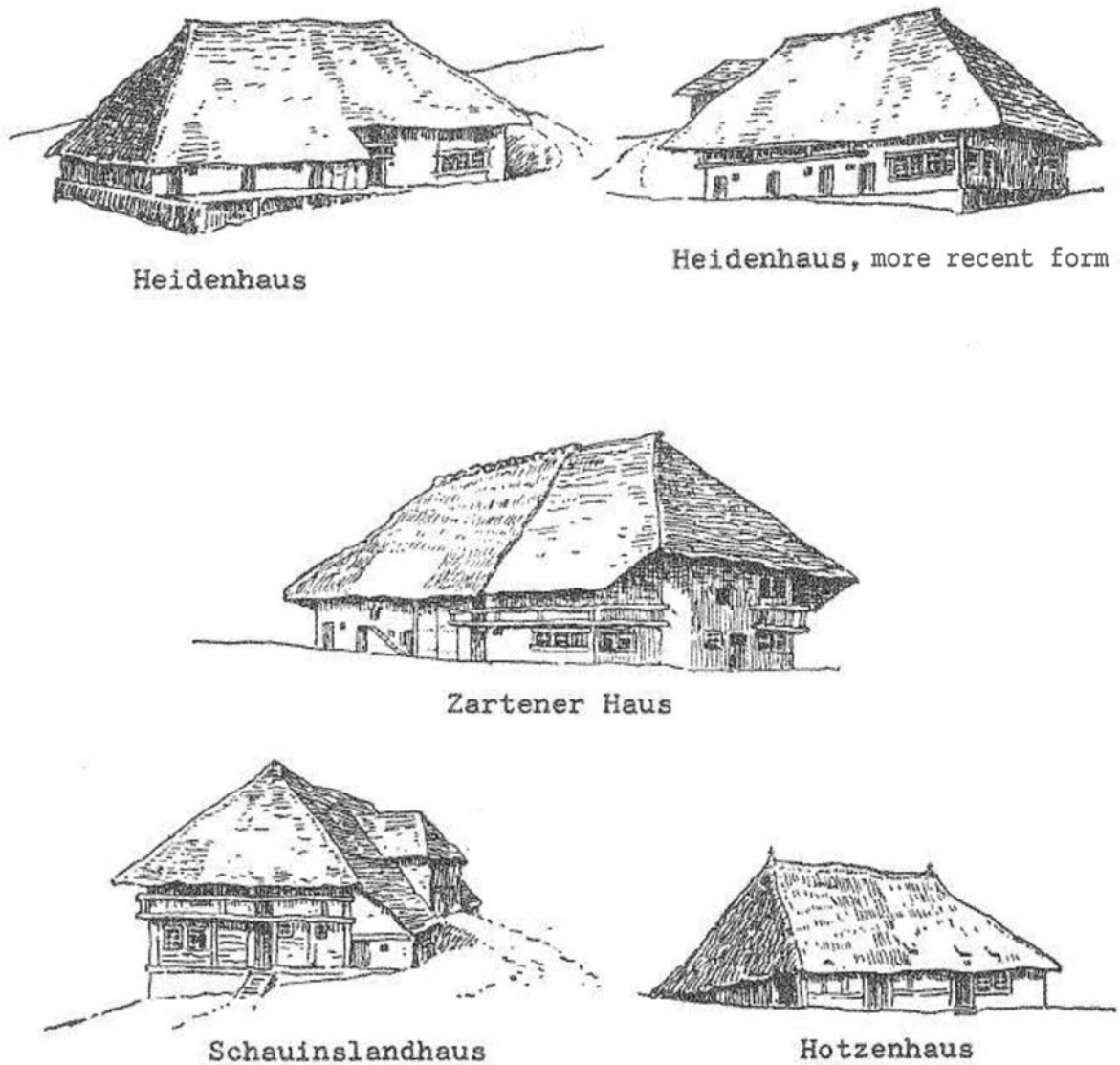


Figure 11: Traditional large roof "Einfirsthöfe" in Mittel- and Southern black forest. The "Schauinslandhaus", "Heidenhaus", and "Hotzenhaus" are typical building forms of the biosphere reserve (© Regional Authority of Freiburg, Department of Nutrition and Veterinary Activities (1980): 50 years of pasture inspection Schöna, Black Forest)

### **10.2.3 Patrimonial and art history museums in the region**

(selection)

#### **Hans-Thoma Art Museum, Bernau**

Permanent exhibition with paintings of Hans Thoma (1839–1924), who was born in Bernau. Featured presentation of numerous paintings of the cultural landscape of the Southern black forest.

#### **Resenhof, Bernau**

Typical Black Forest "Eindachhof" built in 1798. The museum depicts the living and environment in Bernauer Hochtal in the last century; numerous exhibits on old trades and cottage industry such as shingle makers, woodcarvers, and toymakers.

#### **"Gottesehre" Mineral Museum, Dachsberg-Urberg**

Documentation of the mining history in the Dachsberg with an extensive collection from the river and barite veins of the "Gottesehre" mine in Höll-Bildstein.

#### **Hebelhaus, Hausen**

Exhibition on writer and promoter of the Alemannic dialect, Johann Peter Hebel (1760–1826). Hebel spend much of his youth in Wiesental.

#### **Museum in the old town hall, Ibach**

Exhibition of brushes and brush-making tool, in 2013, it was expanded to included display items from forest industries (e.g. charcoal burning and tree felling).

#### **Schniederlihof, Oberried-Hofsgrund**

Old, well preserved farmhouse (Schauinslandhaus) located in the southern slope of the Schauinsland at 1,120 metres above sea level.

#### **Schauinsland Museum Mine Oberried-Hofsgrund**

The extensive tunnels and shafts of the former mine have been accessible since 1997. Silver, lead, and zinc were mined for over 700 years (in operation until 1954).

#### **Klösterle Homeland Museum, Schöna**

Exhibitions former silver and fluorite mining, working conditions and equipment of weavers, and the costumes of Wiesental.

#### **Forest Glass Centre, Schopfheim-Gersbach**

Since 2008, unique collection with valuable originals, which depicts the tradition of travelling glass works as well as charcoal makers and resin workers in the southern Black Forest.



### **“Le Petit Salon” Winterhalter Museum, St Blasien-Menzenschwand**

The small museum features the works of brothers Franz Xaver und Hermann Winterhalter, who were born in Menzenschwand. In his time, Franz Xaver (1805–1873) was the most famous and highest paid painter prince Europe.



Figure 12: “Le Petit Salon” Winterhalter Museum, © Le Petit Salon - Winterhalter in Menzenschwand e.V.

### **Museum in St Blasien**

Documentation of the history of the monastery in St Blasien, the most important Benedictine Abbey of the Black Forest as well as the secularisation that followed.

### **Segerhof Farmhouse Museum in Wembach**

Almost unchanged Black Forest house built in 1680, cultural monument of particular importance.

### **Wiesental Textile Museum, Zell**

Exhibition on the very important textile industry that was found in Wiesental. The exhibits include historical looms as well as spinning and dyeing machinery.

### **Military entrenchments**

Earth entrenchment built in the Baroque period under Badenese Margrave Ludwig Wilhelm von Baden-Baden (1655–1707), also named “Türkenlouis”.



Figure 13: The historical saddle safeguard from the 17th century consists of a polygonal entrenchment (star entrenchment) and a redoubt (quadrilateral entrenchment). It serves as a safeguard for the passageways to Schönau/St Blasien in the East and the Breisgau in the West. © Werner Störk

### Barbarastollen underground archive in Oberried

A former mine tunnel in Oberried houses the “Central Hiding Place of the Federal Republic of Germany” for photographically archived documents with high national or historical importance; it is the long-term memory of German culture. The documents saved on microfilm are stored in metal containers. In 2015, approx. 900 million images were archived; the inventory will be increased over time. Since 1954, the hiding place has been protected by UNESCO according to the Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict. As the only German property, it is subject to special protection (triple designation)

## 10.3 Languages in the biosphere reserve

In the biosphere reserve, German is the official language. It is also spoken by the general population. There are also many traditional vernacular dialects that are influenced by Alemannic. These are still spoken and maintained. There are often dialectal differences from valley to valley, although the localities are only just a few kilometres apart.

## 11 BIOPHYSICAL PROPERTIES

### 11.1 Site characteristics and site topography

For 1000 years, the Biosphere Reserve Black Forest has been a populated cultural landscape with an Atlantic climate. It is one of the most diverse low mountain ranges of Central Europe.

The area has an exceptionally large vertical extent of over 1,000 m. The highest points are in the slopes of the Feldberg massif (1,400 metres above sea level). The lowest are in Albrück (310 metres above sea level). The vertical extent corresponds to a climatic differentiation that extends from a high montane sub-alpine snowy mountain climate to a warm fruit growing climate.

Because of the large differences in altitude over a short distance, the streams and rivers have cut deeply into the rock masses consisting of gneiss and granite. During the ice ages, the sites above 800–900 metres above sea level were glaciated. From there, glaciers penetrated far into the valleys. They created the wide valleys (glacial troughs), especially the high valleys in the East of the region. The fluvial erosion is responsible for the canyon-like cutting of the water in the lower course.

The interaction of the high altitude, the strong forces of erosion and glacial overprints led to a highly segmented mountain landscape. Because of the rough climate, the low soil fertility, and the inaccessibility until the Middle Ages, this area was largely avoided by humans. Very sparse findings suggest that the impassable uplands were at most used for hunting. The then unwelcoming Black Forest was first settled in the Middle Ages from the 10th/11th century. The settlers certainly benefited from the optimal medieval climate in the time between 1000 and 1300. The main reasons for the permanent settlement were mining – primarily silver and lead – and the increase in population in the surrounding lowlands.

Decisive for the colonisation of the mountain was the establishment of monasteries, which were the outposts in an almost untouched natural landscape. The monasteries in St Blasien (first mentioned around 945) and St Trudbert im Münstertal (after 900, located in Münstertal outside of the biosphere reserve) promoted the settlement of people and the clearing of the mountain forest. Because of the supremacy of the monasteries, large parts of the current biosphere reserve fell into the hands of the spiritual leaders. They remained there until only 200 years ago.

Since the cultivation of the Black Forest in the Middle Ages, in the village communities, it was normal to jointly use the resources available (forest, agricultural land, and water) according to established rules. Through the use, a structured mountain landscape that followed a strict order was created. In Großes Wiesental and in Oberes Albthal, this has been impressively preserved until today (Figure 14).

- In the immediate vicinity of the settlement in the area of the valley bottom, there was permanent grassland. This was privately owned.
- These joined with the upward reaching (although not too far up the slope) green meadows, where green fodder and hay were produced for the winter. In the region, they were referred to as “tame fields”. Arable land was also operated in some locations. The areas were mostly privately owned and are almost completely cleared of stones. From the time of stabling, the fertility of the soil was promoted and maintained by adding manure.
- On the slopes followed the Allmend pastures, which were largely communal property. These were separated from the grasslands by stone fences or shrubs. These often extended into the gently rolling hilltops. With their irregular surface, the striking pasture trees (pasture beech, and increasing proportions of spruce in the highlands), and the brown-green vegetation cover, they set themselves apart and essentially dominate the landscape. The surfaces were not completely free of stones and boulders. Because of centuries of use, the site continues to dry out even further.
- The forest joined above the Allmend pastures. It stands above the unfavourable locations, the outlying communal districts, or emerged from unprofitable pastures.



- In the high altitudes (in the vicinity of the Feldberg and the Belchen), another step was added: Above 1,100 metres above sea level, the high pastures emerged for the young cattle that did not need to return to the stable each day. They feature their own pasture huts – similar to the Alms in the Alps – and extend into the mountain summit (up to nearly 1,500 metres above sea level).

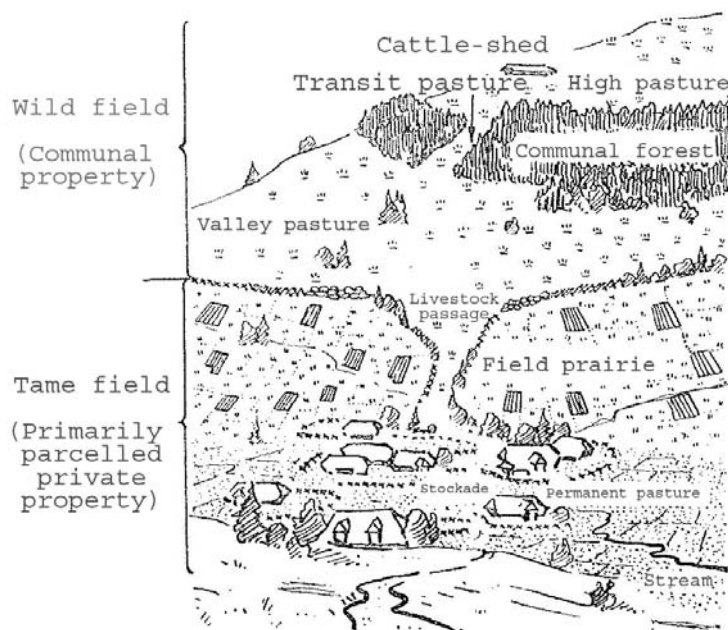


Figure 14: Typical open field system and settlement form of the municipalities with Allmend pastures in the Biosphere Reserve Black Forest. Heilmeyer 1954

As a result of centuries of farming, the natural resources were closely adapted to the considerable and limiting seasonal changes and used as well as was possible. A rich and engaging cultural landscape thus emerged from the mountain landscape. The expansion of agricultural land at the expense of forests lasted until the second half of the 18th century. At that time, the largest deforestation of the Southern black forest had been achieved. With the increasing economic importance of industry, the proportion of forests once again increased through the decline in agricultural use and the forestation of low quality pastures.

The biosphere reserve features numerous (typically small-scale) agricultural structures as culturally and historically interesting examples. They are the preserved remnants of early farming. Although they have lost their original function, they are worth preserving as witnesses to previous economic practices.

**Agriculture:** terraced slopes, stone walls, stone fences, stone heaps, water meadows with dilapidated moats, cattle paths, foundations of dilapidated cattle sheds

**Moors:** Peat, drainage ditches

**Forest:** Charcoal burning sites, skidding tracks, timber loading ramps, pasture beeches growing into the forest

**Water:** mills, canals, dams, barrage ponds for rafting (referred to as "Klusen" in the Southern black forest)

**Mining** Tunnels, heaps, pinging, quarries, sand pits (glass making);

**Traffic:** old passageways, narrow paths, footpaths, railway tunnels;

**History:** Castle ruins, military trenches, monuments, landmarks.

### 11.1.1 Description of the partial landscapes

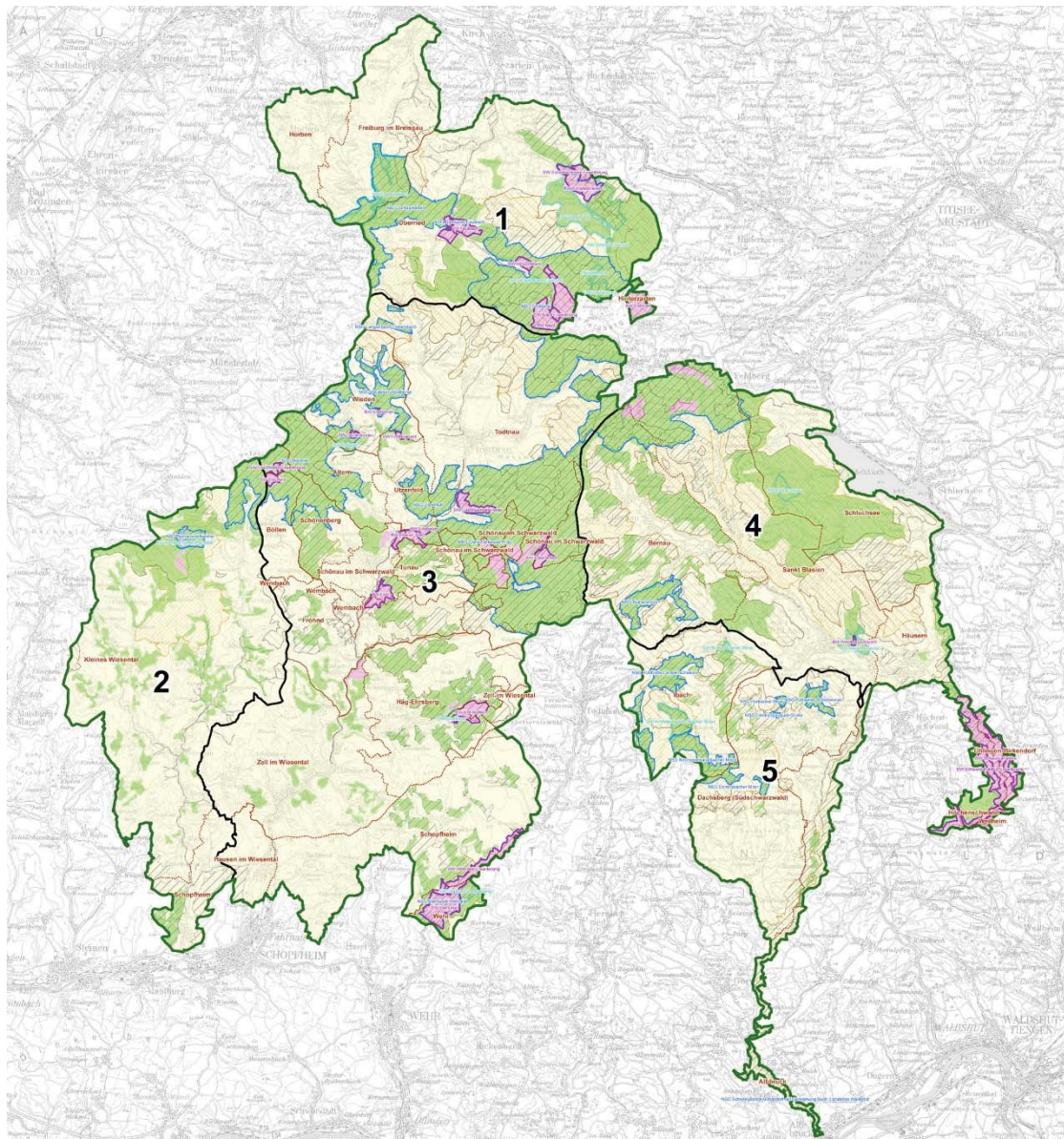


Figure 15: Partial landscapes of the Biosphere Reserve Black Forest

1: Dreisamthal

2: Kleines Wiesental

3: Großes Wiesental

4: Oberes Albthal

5: Oberer Hotzenwald

In light of geographical, cultural, and historical aspects, the biosphere reserve can be divided into five partial landscapes (Figure 15), which are described in more detail below.

## 1 – Dreisamtal

Partial landscape 1, the Dreisamtal, includes the Municipalities of Oberried and Horben, as well as the Kappeler Tal and Freiburger Bergwald, which belong to the City of Freiburg. The area covers approx. 9,800 ha.

The impressive mountain landscape on the southern edge of the Dreisamtal is the northern part of the biosphere reserve. It approaches the City of Freiburg. In only a few kilometres, the north-facing terrain decreases from 1,300 metres above sea level (Schauinsland, Stübenwasen, Feldberg) to 400 metres above sea level (Dreisamtal). Steep and deep glacial valley break up the massive gneiss mountains. The primeval valleys start in cirques that were carved from the bedrock by glaciers. The streams have cut several hundred metres into the mountains. The slopes are interspersed by rocks or overlaid by coarse scree.

The towering mountains and steep slopes are covered with large beech-fir-spruce forests. At higher elevations, the forests are interrupted by alm-like high pastures, which are used as pastures for young cattle. Only a few Black Forest farmhouses can be found in narrow valley. Only once the valleys open up towards Dreisam is there room for larger settlements.

South of Schauinsland (at approx. 1,050 m above sea level) is the Hofgrund hill settlement in an extensive clearing. Structurally rich pastures extend into highest summit (Schauinsland, 1,280 metres above sea level). Since the 11th century, the ore veins of the mountain range have been mined, particularly for silver, lead, and zinc (until 1954). Numerous tunnels and shafts at several hundred metres above sea level run through the rock mass; these can be accessed through the Schauinsland Museum Mine.

The Municipality of Horben is located on a small ridge in the northern foothills of the Schauinsland massif. Numerous assets are scattered throughout the meadowland, which is used as grassland.



Figure 16: Partial landscape 1: Dreisamtal. © Regional Authority of Freiburg



## 2 - Kleines Wiesental

Partial landscape 2 includes the Municipality of Kleines Wiesental, which emerged from the merger of eight small communities years ago, the communal district of Langenau of the City of Schopfheim. The total area covers approx. 8,600 ha.

The valley of Kleinen Wiese and its tributaries is a very diverse and distinct small-scale cultural landscape. The forested heights, the grasslands used for agriculture, the localities featuring Black forest buildings, and the deep valleys combine to create an attractive landscape in a small space.



Figure 17: Partial landscape 2: Kleines Wiesental. Pastures, forests and villages of the locality of Raich in Kleinen Wiesental. © Municipality of Kleines Wiesental

The widespread valley landscape

is located at 600–850 metres above sea level. In the North, it is surrounded by high, forested mountain ridges. This results in a comparatively favourable climatic situation. The valley is the result of prolonged fluvial erosion. The numerous streams have cut deep into the granite body. The unsettled topography is determined by the varying hardness of the rocks. Hard rocks (e.g. porphyry) is responsible for rugged shapes such as canyon-like valley portions or protruding spurs. Less resistant rock (e.g. well weathered gneiss) has resulted in more gentle valley forms. The ridges around the Belchen (1,414 m) and Köhlgarten (1,224 m) were formed during the ice age. Short glaciers (e.g. in the cirques of the Nonnenmattweiher at Heubronn) modelled out glacial landforms.

The numerous hamlets – there are 46 settlements – are widely scattered. The settlements are located on hilltops, spurs above the valley, slope planes, or in small widenings of the valley. The agricultural land is used as grassland by the part-time farmers.

Because of its scenic closeness and remoteness, Kleine Wiesental has been a historical unity for centuries. During colonisation in the middle ages, it became part of the Margraviate of Baden. Since the Reformation in the 16th century, it has been largely Evangelic. Also in terms of ownership, its special position is reflected in the biosphere reserve. Approximately 200 years ago, the Allmend pastures were divided amongst the local farmers. Today, the municipal area (grassland and forests) is privately owned, and the land is heavily fragmented. The Communal District of Neuenweg is an exception: Here, there are communal open spaces that extend to the summit of the Belchen. Near Neuenweg, there is a well preserved entrenchment from the Baroque era (originating in 1700, Figure 13).



### 3 - Großes Wiesental

Große Wiesental is composed of the three cities of Todtnau, Schönau, and Zell i. W. as well as the smaller municipalities of Aitern, Böllen, Fröhnd, Häg-Ehrsberg, Schönenberg, Tunau, Utzenfeld Wemach, and Wieden; in total, the area is approx. 25,200 ha.

Großes Wiesental between Feldberg and the coombe in Zell i. W. is the main geographical range of the jointly used Allmend pastures in the Black Forest. Many valley slopes and ridges are covered by expansive, extensively used pastures; they give these distinctly varied cultural landscape its own character.



Figure 18: Partial landscape 3: Großes Wiesental. View from the "Unterer Boden" pasture on Bubshorn to Große Wiesental by Fröhnd. © Regional Authority of Freiburg

On the Feldberg, the river Wiese originates at 1,200 metres above sea level (in the Feldberg Nature Reserve). The large differences in altitude in the area and the gradient of the meadow (800 m over 28 km) have ensured that the river and its tributaries are deeply embedded in the mountain, thus creating a magnificent valley landscape. The widespread valley basin, which is oriented towards the south-west, is surrounded by high and striking mountain ranges on all sides. Only a few passes fall below the 1,000 m contour line.

During the ice age, the Große Wiesental was glaciated. The large meadow glacier extends from Feldberg to Mambach. It was over 20 km long (about the length of the current Aletsch glacier in the Alps) and took up the ice streams from the valleys. It thereby grew to a massive 420 m. The large mass of ice in the central valley partially hindered the flow of the glaciers into the side valleys. This led to the creation of the Valley of Präg in which six smaller glaciers mutually pressed against each other and created an impressive cirque.

Up to over 1,000 m above sea level, Große Wiesental is permanently settled. The highest settlements in Todtnauberg-Büreten and -Rütte are even above 1,100 m. Wedged into the valley are the cities of Todtnau, Schönau, and Zell. They are the economic and cultural centres in the Großen Wiesental. The localities, which have been shaped by farmers, are mostly located on glacier valleys or planes amid the agricultural corridor. They consist of many small settlements or groups of individual farmyards – in the entire valley, there are over 100 settlements.

The south-west-facing location gives the Großen Wiesental a comparatively mild climate, which can be felt as a "heat island" until the environment of Utzenfeld. The valley is protected from cold waves from the North-east by the surrounding mountain ranges.

#### 4 – Oberes Albatal

Partial landscape 4 includes the City of St Blasien, the Municipality of Bernau i. Schw., and parts of the municipal district of Schluchsee. The Schwarzatal, which borders to the East, belongs to several municipalities (small portions of each). The area covers approx. 12,900 ha.

The valleys of the River Alb and their environment represent an impressive Black Forest landscape. Large portions of the area include large natural mountain forests. In striking contrast, the open landscape of the high valleys with its settlements is marked by dignified Eindachhöfer.



Figure 19: Partial landscape 4: Oberes Albatal. Menzenschwander Tal. © Regional Authority of Freiburg

The surface morphology of the region resulted during the ice age. In the eastward facing valley were large (up to 300 m) glaciers. These originated from the Feldberg Massif and reached lengths of over 20 km (most deeply situated terminal moraine of the Abtal glacier at Niedermühle was at 600 m). The highlands around St Blasien to Schluchsee have also been run over by ice. Especially in the high valleys of Menzenschwander and Bernauer Alb, there are well maintained glacial relicts such as rocky cirques, moutonnées, boulders, and moraines.

The high valleys of Menzenschwand and Bernau (both trough valleys) feature vast open landscapes with agriculturally-shaped localities in the valley floor. They are much wider and not cut so deep. They are fissures like the valleys of subregions 1, 2, and 3. The mountainous altitudes around St Blasien and south of the Schluchsee form an almost closed forest landscape. Small settlements (often consisting of only a few farmyards) with barren agricultural terrain appear in the forest; they have maintained their original character until this day.

In the narrow Albatal lies the City of St Blasien, which dates back to an early monastic foundation of the Benedictines in the 9th century. For nearly 1000 years (until 1806), it was the spiritual and political centre of the Southern black forest,

The south-east facing high valleys represent the eastern Black forest highlands. They have a cool, rainy climate with continental features. Cold and often snowy winters, moderately warm summers, and occasional frost – even in the warm season – are characteristic of this rough mountain landscape. Above all, this favours conifers, firs, and spruce.

## 5 - Oberer Hotzenwald

Partial landscape 5 consists of the Municipalities of Ibach and Dachsberg. In the East, it joins with the Albtal, which belongs to the cities of St Blasien and Albbruck. The area covers approx. 6,800 ha.

The Obere Hotzenwald is a varied plateau landscape consisting of many peaks and is located between 750 and 1,100 metres above sea level. Between the hills and flat crests, there are often wide moor-like troughs, which have form as a result of the high rainfall and poor drainage. This is one of the main geographic ranges of the lowland and high-land moors in the Southern black forest.

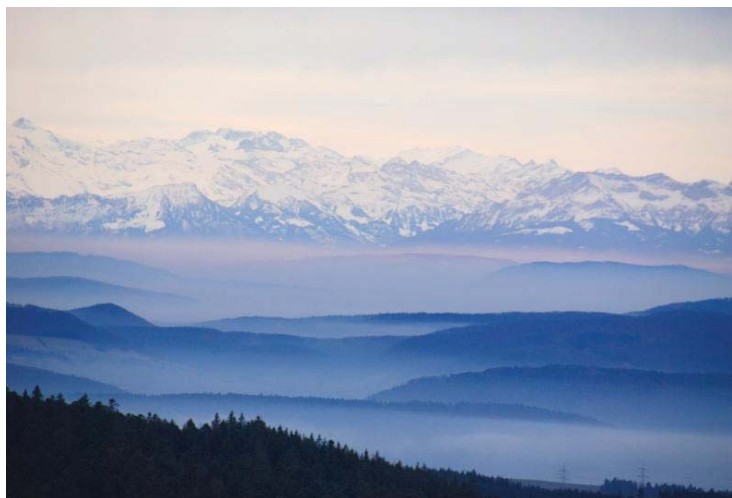


Figure 20: Partial landscape 5: Oberer Hotzenwald. View from Dachsberg to the Alps at dawn. ©: Klaus Hansen

During the last ice age, the Obere Hotzenwald was largely covered with ice. The large Albtal glacier obducted the terrain, carved out gentle troughs into the relatively flat landscape, and left behind hilly moraines. Ore veins run through the rocks; the exploitation of these was a driving force for the settlement of the area.

Because of the high altitude, the Obere Hotzenwald has a cool and rainy climate. The general southern exposure somewhat mitigates the climate of the intermediate altitudes around 800 to 1,000 metres above sea level.

In the hilly landscape, there are many small settlements consisting of old farmhouses. The parcelled grassland corridor lies within the localities. Further away are the expansive coniferous Bauernwälder, which are often criss-crossed by moors. The nutrient-poor soil and the cold climate allow for only modest agriculture. There are communal pastures in Ibach; on the Dachsberg, the Allmend pastures had been divided up. Most are now forested.

On the eastern border of the area is the rocky Albtal at approx. 200 metres above sea level. Below the locality of Niedermühle (location of a terminal moraine of the Albtal glacier), the Alb (approx. 20 km long) flows into a very narrow valley (without settlements) with forested and rocky slopes until Albbruck where it issues into the Rhine.

## 11.2 Height range

Table 8: Altitudinal distribution in the Biosphere Reserve Black Forest

	ha	
colline	1,958	
sub-montane	9,237	
montane	41,505	Highest point above sea level: 1,420 m (near Feldberg)
high montane	10,536	Lowest point above sea level: 310 m (near Albbruck)
total	63,235	

The Biosphere Reserve Black Forest is mainly located in the montane altitudinal belt (approx. 750–1,100 metres above sea level), cf Table 8 and Map VI in the Annex. Considerable portions are also found in the sub-montane (approx. 500–750 metres above sea level) and high montane altitudinal belt (approx. 1,100–1,420 metres above sea level). Some portions also lie in the colline altitudinal belt (up to approx. 500 metres above sea level).

## 11.3 Climate

The Biosphere Reserve Black Forest is located in Western Central Europe (cf Map VII in Annex). It thus has an Atlantic, rainy, temperate climate without droughts, which is typical for Germany. According to the Köppen-Geiger Climate Classification, it is a **Cfb climate** (moderately warm, permanently humid, warm summer). Because of the large elevation (more than 1,000 m) and the compact compartmentalisation with various landscape forms, the local climate, which influences the ecosystems, is highly differentiated. The region belongs to the area with the highest annual sunlight in Germany (annual global radiation over 1.300 kW/m<sup>2</sup>). Because of the general south-west orientation, the locations with the corresponding exposure benefit from the high sunlight.

- In the deepest sites of the biosphere reserve (at the outlet of the Wiesental or Dreisamtal), the annual average temperature is approx. 10°C, which corresponds to a wine and fruit growing climate. Such crops can be found only a few kilometres outside of the area.
- Because of the general south and south-west orientation, Kleines and Großes Wiesental have a favourable climate. The south-west winds lead to abundant rainfall and heat. The mountain ranges in the North and East protect the area from cold weather conditions. In Großes Wiesental, on valley slopes with southern exposure, there are therefore marked "heat islands" (e.g. rocky area of the Utzenfluh). This favourable climate can be felt as far as the area around Todtnau.
- In the eastward high valleys, there is a cooler mountain climate. Because of the flat position of the valleys, there are nocturnal frosts – especially during temperature inversions. The local climate has a pronounced continental character.
- In the summit areas of the Feldberg, Schauinsland, and Belchen (above 1,300 metres above sea level) there is a cool and wet sub-Alpine climate. Wind exposure, long snow cover and high daily temperature changes in cloudless conditions exacerbate the already adverse weather conditions. During inversion weather conditions the peaks are in the clear mountain air; this allows a view of up to 240 km. The long durations of snow cover have made the summit a winter sport centre of the Southern black forest.
- According to the Köppen-Geiger Climate Classification, this is a **Dfc climate** (snowy, permanently humid, cool summers).

### 11.3.1 Weather stations in or around the biosphere reserve

On the Feldberg, there is a weather station of the official German Weather Service (1,496 metres above sea level). This is surrounded by the biosphere reserve on three sides. The station has been in operation since 1925.

Table 9: Climate values from the weather station within or adjacent to the Biosphere Reserve Black Forest

Weather station	Business	Temperature (average)			Precipitation	Station representative for	Data sources
		Month (max.)	Month (min.)	year			
<b>Freiburg (236 m)</b>	Since approx. 1900	July 20.2 °C	February: 2.7 °C	11.1 °C	873 mm	Vineyards and orchards on the edge of the biosphere reserve	www.wetterdienst.de, values from 2004–2014
<b>Buchenbach (445 m)</b>	not specified	July: 18.9 °C	January: 2.1 °C	10.0 °C	1,149 mm	Lowlands of Dreisamtal in the North of the biosphere reserve	www.wetterdienst.de, values from 2004–2014
<b>Schopfheim (400 m)</b>	since 1869	July: 17.5 °C	January: approx. 0 °C	8.7 °C	1,095 mm	Lowlands at the outlet of Großes Wiesental	"The District of Lörrach", (district description, 1993), values from 1971–1980
<b>Obermünstertal (545 m)</b>	1957–1988	July: 17.0 °C	January: 0.4 °C	8.5 °C	not specified	Intermediate valley areas in the Großen and Kleinen Wiesental	"Der Belchen", 1989
<b>Lenzkirch (852 m)</b>	not specified	July: 15.7 °C	February: -1.8 °C	6.1 °C	1,078 mm	High valleys in the East of the biosphere reserve	www.wetterdienst.de, values from 2004–2014
<b>Feldberg (1496 m)</b>	since 1925	July: 10.9 °C	January: -3.4 °C	3.3 °C	1,912 mm	Highest sub-alpine locations of the Feldberg, Belchen, and Schauinsland	www.wetterdienst.de, values from 2004–2014

MeteoGroup maintains its own monitoring network at weather stations. This has been in operation since 1990 (an exact operating time is unknown).

The stations are located at the following sites within or immediately adjacent to the biosphere reserve:

- Todtmoos
- Belchen
- Bernau
- Buchenbach
- Endenburg
- Feldberger Hof
- Gersbach
- Görwihl-Segeten
- Hinterzarten
- Höchenschwand
- Krunkebachhütte/Bernau
- Notschrei
- Obermünstertal
- Schauinsland
- Schönau
- Todtmoos

## 11.4 Geology, geomorphology, soil

### Geology

The geological subsurface of the biosphere reserve consists of crystalline, siliceous bedrock. The rocks appeared during the Palaeozoic era and were reshaped several times by subsequent orogenies (cf Map VIII in the Annex).

The northern part of the biosphere reserve is part of the middle part of the Black Forest gneiss mass. Its distribution in the area ranges from the South until about a line Belchen – Todtnau – Herzogenhorn. The grey-coloured, slated gneisses is among the oldest rock in the Black Forest. During the Paleozoic era, they were formed from precursors in several steps during mountain-building processes and in great depths of the earth. On exposure to high pressure and elevated temperature, the mineral content was partially melted and converted to layered crystalline stone (gneiss migmatite). The massifs of the Schauinsland and Feldberg are composed of this gneiss.

South of the gneiss mass in a 4-5 km wide band running west to east is the rock mass of Badenweiler-Lenzkirch zone. In the Devonian and Lower Carboniferous periods (approx. 350–280 million years ago) very different rocks originated here.

Under marine cover, marine sediments (e.g. argillaceous shale) were deposited. Retraction of the sea led to terrestrial deposits as sandstone (greywacke) and conglomerates. Volcanic periods left igneous rocks such as tuff, porphyry, and eruptive breccias. Finally, molten rock penetrated from the deep and solidified to form "edge granite". During crustal movements, the layer was oblique. As a result, gneiss masses pushed over and sank into the Earth's crust. Only through the tectonic uplift of the Black Forest did it once again come to light.

The different resistance of the rocks in the Badenweiler-Lenzkirch zone is the reason for the alternating landforms. Through weathering, hard porphyry emerged as ridges, cliffs, or steep slopes with shallow soil sites. Softer sedimentary layers gave rise to wider hollow forms (valley around Schönau, glacial cirques of Präg, Bernau High valley).

In the southern part of the biosphere reserve, gneiss and especially granite once again predominate – they are the main components of the Black Forest bedrock. Here, the oldest rock is also the gneiss that dominates in the Große Wiesental and is widespread in the Hotzenwald. As early as the Carboniferous period (approx. 330 million years ago), magmatic melts penetrated into this foundation several times. These hardened to form granite stones of varying size (inclusion bodies), which now account for the bulk of the southern portion.

Malsburg granite forms the subsurface in Kleinen Wiesental. As their names suggest Bärhalde, St Blasien and Schluchsee granite are all widespread in the area around St Blasien, in the Hotzenwald, and around the Schluchsee. The granite and the resulting soil are nutrient poor.

In the Tertiary period, the Black Forest experienced several tectonic uplifts. The previous geological layers – especially those of the Triassic period – were removed, thereby freeing the bedrock (which primarily consisted of gneiss and granite). The most recent and most formative tectonic uplift of the basement shelf (approx. 1,000 m) in the Southern black forest occurred in the early Tertiary period. This was connected with the sinking of the Rhine Rift Valley located at the edge. Because of the high relief energy, the numerous watercourses dug deep into the mountain base and left a deep valley. This is considerably more pronounced in the western half of the area than in the eastern, where only a few remnants of the flat, old Danubian landscape could be preserved. The ice age also formed the Southern black forest and modelled special morphological forms.



The granite and gneiss are streaked with numerous porphyry and ore veins. The latter are the reason for the mining which was previously practised in the biosphere reserve. In the middle ages, silver ore and galena were mined. In modern times, sphalerite, pyrite, barite and fluorite were sought. In the last century, futile attempts were made to mine uranium.

## Soil

Acidic brown soil arose from the siliceous parent rocks of the Black Forest. This is the most abundant type of soil in the biosphere reserve. Gneiss also weathers relatively well and gives rise to fine-grained and loamy soils with moderate levels of nutrients. In contrast, granite forms gritty, often sandy brown soil with low thickness, little buffer capacity, and poor levels of nutrients. Strongly acidic brown soils tend to form podzols.

Despite the relatively poor source rock, the strong erosion and the primary weathering on the steep slopes continually provides new nutrients. The soil on the slopes is generally well supplied with nutrients. On the other hand, the flatter locations are characterised by poorer soils. This can be clearly seen in the vegetation.

In the alluvium of the valleys in the influence area of the groundwater, there are gleyic or fen soils.

Highland moors have developed in the glacially formed, waterlogged troughs of the Hotzenwald. In undistributed condition, they feature a layer of peat that is several metres thick.

## 11.5 Bio-climatic zone

Table 10: Aridity index using P/ETP; annual precipitation (P)/annual potential evapo-transpiration (ETp)

Area type	Rainfall throughout the year (mm)	Aridity index		Core area(s)	Buffer zone(s)	Transition area(s)
		Penman	(UNEP index)			
Hyper-arid	P < 100	< 0.05	< 0.05			
Arid	100-400	0.05-0.28	0.05-0.20			
Semi-arid	400-600	0.28-0.43	0.21-0.50			
Sub-humid, dry	600-800	0.43-0.60	0.51-0.65			
Sub-humid, wet	800-1,200	0.60-0.90	> 0.65	x	x	x
Perhumid	P > 1,200	> 0.90		x	x	x



## 11.6 Biological features

In the following, the most important ecosystem types are listed.

For each type, the following assessment instructions are specified:

- To assess the representativeness of each habitat or land-use type, use the term REGIONAL if the habitat or land-use type occurs frequently within the bio-geographical region in which the proposed biosphere reserve is located.
- To assess the uniqueness of each habitat or land-use type, use the term LOCAL if the habitat or land-use type only has a limited presence within the bio-geographical region in which the proposed biosphere reserve is located.

A cartographic representation of land use can be found on Map IX in the Annex. The ecosystem types will be described in detail in Section 14.1. The value-adding species will be presented in tables in the Annex.

**In the biosphere reserve, there are very diverse forest types with representative compositions and structures:**

### 1. Central European mixed forests

**Montane forests with beech and fir:** Beech-rich forests with strongly differing admixtures of fir and spruce (which are location and use dependent) on acidic, nutrient-poor soils; occur in all exposures. At high altitudes combined with lower slope angles or planes, often with a high proportion of spruce (use dependent). In the transition to the sub-montane altitudinal zone, there are natural admixtures of sessile oak.

**High montane beech forests with sycamore and tall perennials** (Sycamore-beech forest): Species rich, natural, and structurally rich forest community; only occurring in the highest locations of the area on nutrient rich locations with seepage.

#### **Ravine forests**

Ravine forests in cool, shady, humid locations; mostly on fertile locations well supplied with water and nutrients (humus); in the biosphere reserve, represented with several locally different species and their own composition.

#### **Natural coniferous forests**

Spruce-highland forest present in the highest (high montane to sub-Alpine) and most unfavourable shadowed locations of the Feldberg and Belchen massif; also in permanently cold ground layers with very coarse scree (ice holes at the base of boulder fields or in narrow ravines).

#### **Moor forests**

Mountain-bog pine forest on partially drained high more locations (also referred to as mountain pine forest in the region); in the border area (Lagg) of the highland moor, whip moss-spruce forest as natural coniferous forest type of the moor border.

#### **Heat-loving forests on shallow rocky locations**

Species rich forests (e.g. with oak and linden) on lime and silicate rocks can be encountered in heat-favoured locations, albeit it on a small scale.

- In the Alb tal near Albbruck on limestones in planar locations
- Rocks on the Utzenfluh (heat island in Großes Wiesental)
- Wehraschlucht
- Präg (core area pithead stocks)

**Strongly silvicultural forests**

Forests with a high proportion of spruce (*Picea abies*). Coniferous forests arising from silvicultural use; often originated from the forestation of pastures that were no longer used. Douglas fir also occurs, especially in the southern part.

**Evaluation of representativeness: regional**

**Natural processes:** Forest dynamics with rejuvenation, ageing, climax, and decay phases. The processes can take place in the existing forest reserves (some for decades), here also natural reactions to catastrophes (e.g. storm damage, pest infestation).

Anthropogenic influences:

Forestry use (except in the core areas) with removal of wood, forestation, thinning, and construction of paths; additional influences: Emission of air pollutants, hunting, recreational use.

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**2. Ecosystem of the cliffs and screes**

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The steep slopes in the biosphere reserve feature numerous cliff complexes and thereby scree and rocky pastures. These structures often shape the landscape. The central areas of the cliffs and scree complexes are primarily free of forests; in suitable locations in the border area, there are patchy yet shady forests.

**Silicate scree and rocky pastures**

The deritus of the open screes is dominated by drought-resistant lichens and moss. Areas at the border with some soil depth are occupied by birch trees, among other things.

**Silicate cliffs**

The surface of the cliffs is mostly covered by lichens. Short stature, drought tolerant plants (including specific ferns) grow in the crevices, sparse woody plans.

**Evaluation of representativeness: local**

**Natural processes:** further erosion, shading of open cliffs, movement in the screes, accumulation of fine soil on the border of open scree, internal weathering

**Anthropogenic influences:** Climbing, clearing of overgrown scree, construction of paths

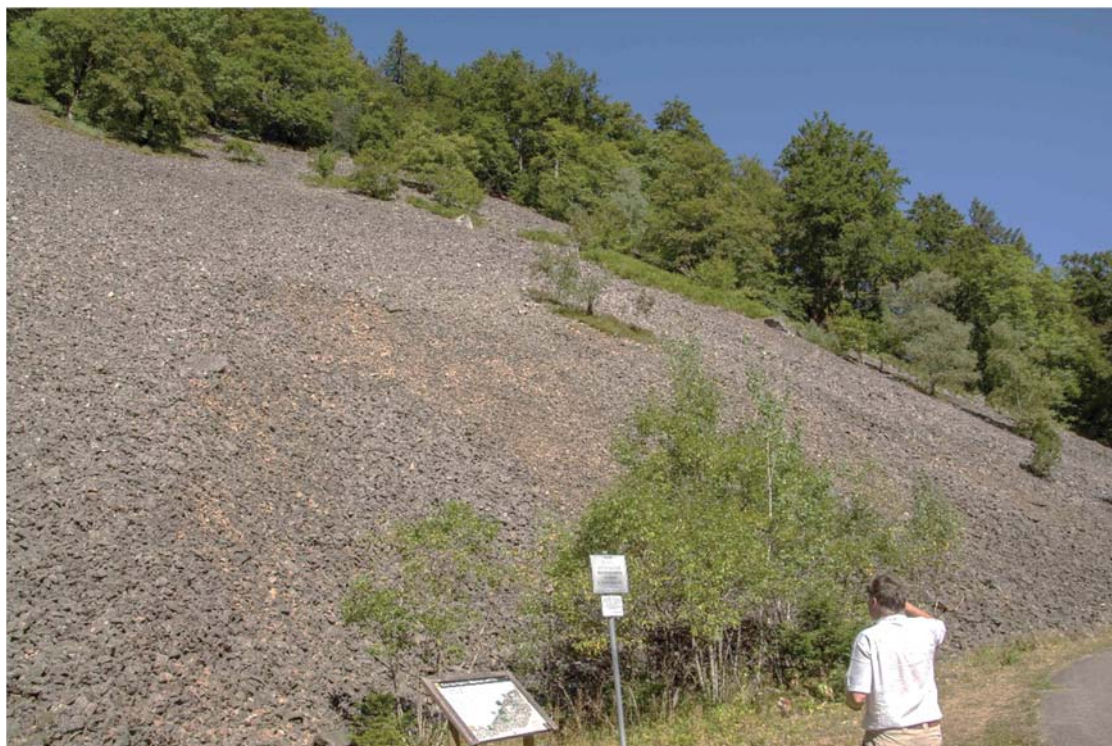


Figure 21: Screes such as these in Präg are a special feature of the biosphere reserve and provide habitats for endangered endemic species. © Regional Authority of Freiburg

### 3. Ecosystems of the sub-Alpine locations

#### **Avalanche tracks, bushes**

In the highest locations of the biosphere reserve, shady ridges form on the Belchen, Herzogenhorn, and Feldberg (here outside of the biosphere reserve); under certain snow conditions, cornices that can fall as avalanches. In the north-east exposure under the edges of the cornices, there are avalanche tracks that are free of trees. The steep, rocky slopes are covered by a natural complex of tall herbs, krummholz bushes (with flexible woody plants) and permanently humid lowland moor areas; adjacent rocky ridges have some forest cover

#### **Evaluation of representativeness: local**

**Natural processes:** Avalanches, regeneration after avalanches

**Anthropogenic influences:** currently none

### 4. Aquatic ecosystems

#### **Running waters**

In the biosphere reserve, there is a rich, partially dense network of waterways. As a rule, the streams have an excellent water and structural quality that has largely been unaffected. The watercourses originate from numerous, natural, and unaffected springs; on the upper course, they often have a very large descent. As a rule, the stream beds consist of coarse stone or debris; all structures in the waters are therefore strongly differentiated.

- In the area, there are also waterfalls and special descents (e.g. Todtnau waterfall) on glacially-influenced, steep terrain. Menzenschwand dam (among others).

- Larger bodies of water ((Große und Kleine Wiese, Alb, Brugga) have been used for hydro power and are therefore partially affected because of barriers in the water structure.
- Bodies of water usually with a riparian floodplain: often only very narrow forests in the flood area along the streams and rivers, often concentrated in canyon-like ravines or adjacent agricultural use.
- Two different lowland forest types in the area with a climate-landscape differentiation: deeper streams with a Bach ash forest, eastern-oriented streams of high altitude with grey alder forest (continental climate), the main distribution is therefore in Partial landscape 4 "Albtal"

#### Evaluation of representativeness: regional

**Natural processes:** Water dynamics with natural periodic fluctuations in water flow, erosion and sedimentation in the stream bed and adjacent bank areas, endangering of the main tree species (ash).

**Anthropogenic influences:** Riparian and transverse barriers for the use of hydro-power, disturbance from adjacent land uses, acidification, water abstraction, in larger bodies of water: Fish stock, fishing

#### Still waters

In the biosphere reserve, there are a few small still waters of natural and artificial origin, some of which have high importance as an amphibian habitat.

- Präg lakes (Todtnau-Präg): natural ponds
- Klosterweiher Horbach (Dachsberg): dammed up ponds with natural banks, dystrophic water, swimming ponds
- Nonnemattweiher (Kleines Wiesental): accumulated cirque hollow with former Moor, currently dystrophic water with floating peat islands, swimming ponds
- Schluchsee banks (Schluchsee): gravelly banks (granite crumb) of the Schluchsee (dammed lake of a pump storage plant)

#### Evaluation of representativeness: local

**Natural processes:** restricted water dynamics

**Anthropogenic influences:** Control of the water level; recreation: Treading on the banks, discharge and disturbance through bathing activities

## 5. Grassland ecosystems

### Extensively used rough pastures

Large-scale, complex, extensively used and landscape-shaping pastures (main distribution in partial landscape 3 "Großes Wiesental"), partially still used as communal pastures, also known as "wild field" in the region.

The rough pastures are highly differentiated:

- In montane locations (up to approx. 1,100 metres above sea level) as winged broom pastures),
- in high montane regions (from approx. 1,200 metres above sea level) formed as *Nardus* grasslands with sub-Alpine species.
- on scraggy sites with dwarf shrubs (heather or bilberry).
- Hardly grazed areas with partially extensive fallow such as bracken fern and brambles.
- lush corridors with dock, open areas for cattle troughs
- because of fertilisation, the pastures have been converted into red fescue pastures.

The pastures often have other structural features: Groves, cattle paths, stone fences as separating walls, individual willows (pasture beeches, increasing number of solitary spruce at higher altitudes), and briers pervade many areas.

In adjacent succession areas at the edge, the forest-pasture transition is often fluid (half-open pasture landscape).

### Evaluation of representativeness: regional

**Natural processes:** with reduction/abandonment of use, slow succession to forest (first scrub encroachment, then slow emergence of forest), migration of fallow, erosion of sites with little vegetation, natural ageing process of solitary trees.

**Anthropogenic influences:** Vegetation type caused by grazing, pasture care, browsing of emerging trees (emergence of pasture trees).



Figure 22: A species rich winged broom pasture. © Regional Authority of Freiburg



**Lowland hay meadows (oat grass meadows)**

Relatively species-rich grasslands (hay meadows and pastures) within the localities (parcelled terrain), occurring from the planar to the montane altitudinal belt. Uses for hay, mostly moderately fertilised, one to two swaths.

The lowland hay meadows differ with respect to location and use.

- Because of use, grasslands often smaller with different species,
- pronounced, extensively used species rich stands rare,
- montane species in shadowed areas and stands at higher positions
- occur in locations favoured by a warm climate as well as into high montane locations
- on easily cultivated, productive sites (valleys, hilly plateaus, slightly inclined slopes), mostly converted to species-poor stands with comparatively high profitability
- with intensified use (e.g. fertilisation, reseeding to improve grass cover), decrease in the number of species.

Grasslands often with additional structures (largely attributable to former uses): Terracing of the terrain (formerly arable land), grass paths, hedge and forest belts, dikes in former water meadow (usually only traces exist).

**Mountain hay meadows (yellow oat meadows)**

Extensively used, species-rich hay meadows with relatively low production value in the montane to high montane altitudinal belt (on the Schauinsland up to 1,200 metres above sea level) one to two swaths.

- mostly only on a small scale at locations that cannot be readily farmed.
- In shadowy and damp locations, high degree of moisture, fluid transition to wet meadows and lowland moors,
- In readily farmed highlands, the stands have been converted into species-poor, comparatively productive grasslands as a result of intensification.

**Evaluation of representativeness: regional**

**Natural processes:** Because of regular farming and use, hardly any natural processes possible, succession with groves

**Anthropogenic influences:** Vegetation type dependent on reaping (a certain continual disturbance), regular use of grass cover (removal of aerial plants), nutrient supply (fertilisation), for pastures: summer grazing, change of the species composition as a result of reseeding, fallow resulting from abandonment of use, pruning.

**Box hedges, shrubs, and individual trees**

In the open fields of the biosphere reserve there are numerous, locally occurring trees; they are structuring, partially landscape forming elements in the agricultural areas.

**Box hedges** (elongated shrubs, primarily consisting of bushes): on waysides, cairns, and embankments; they served to separate the uses (e.g. demarcating pastures from grasslands).

**Copses** (compact structures, mostly with trees): on unfarmed sites, originated more or less spontaneously, also planted in pastures to protect the cattle.

**Individual trees:** spontaneous growth of solitary trees, primarily on pastures

**Evaluation of representativeness: regional**

**Natural processes:** Succession, habitats for animals (breeding, hunting, food, hiding).

**Anthropogenic influences:** Pruning, interference from adjacent use, contamination

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6. Ecosystem of moors and springs

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**Highland moors**

Highland moors are primarily found in partial landscapes 4 and 5. They are located in larger-scale, flat, depressions that have been moor-like since the ice age; partially with several metres of peat. All highland moors have been previously damaged by earlier interference (e.g. drainage, peat cutting, forest management, and grazing), currently being regenerated through natural processes or restoration measures.

The highland moor vegetation is highly diverse; depending on conservation status, it is in more or less typical formation: Tussock and wet hollow vegetation, bulrush highland moor, and mountain pine forest dominated by peat moss (see also section on wildlife ecosystems). Dried moorland with dwarf shrubs, transitional moor.

**Lowland moors and spring swamps**

The main distribution of the lowland moors is in the rainy, cool, and flat highlands (Partial landscapes 4 and 5). Lowland moors are found in marshy, permanently wetted, lime-free, and acidic locations with low peat cover. They are species-rich, production-weak meadow stands, often in close interaction with rush- and sedge-rich wet meadows, degenerated highland moor areas and spring swamps

**Evaluation of uniqueness: local**

**Natural processes:** Peat formation, succession, withdrawal, non-native forests, water logging.

**Anthropogenic influences:** Late effects of anthropogenic interventions (drainage, mining, agricultural and forestry use), contamination (eutrophication), regeneration measures, recreation, hunting, agricultural use.

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7. Ecosystems near settlements

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**Scattered fruit areas**

In the environment of the small, rural settlements, there are relatively small-scale orchards with relatively dense tree coverage, primarily in the warm, sub montane Großen und Kleinen Wiesental (Partial landscapes 1, 2, and 3). The fruit trees primarily serve for personal use. Ecological function Integration of settlements into the landscape, nursery and habitat for birds.



**Natural processes:** Ageing process of the fruit-trees, pollination.

**Anthropogenic influences:** anthropogenically created, culturally formed biotope structure; ageing of trees as a result of lack of pruning or abandoned use, no replanting, loss of old varieties of fruit trees.

**Cottage gardens**

In small settlements, there are traditional cottage gardens to plant vegetables and ornamentals for personal use.

## 12 ECOSYSTEM SERVICES

### 12.1 Ecosystem services and their beneficiaries

Ecosystem services describe the value and benefits that people derive from ecosystems. In order to preserve and promote the ecosystem services, sustainable land use is necessary. Biosphere reserves are therefore an ideal instrument for preserving and promoting ecosystem services. Many services can be specifically traced back to certain ecosystems, while others arise from the interaction of various ecosystems, which generates numerous ecosystem services. Not only will the ecosystems and the services they provide be listed but also the important services that can be provided by the entire landscape of the Biosphere Reserve Black Forest.

Ecosystem services are divided into four groups (MEA, 2005):

1. Care services
2. Regulation services
3. Cultural services
4. Basic services

#### Care services

Care services are goods that we directly obtain from ecosystems.

- Nourishment: With only 0.3% arable land in the biosphere reserve, the benefits of agriculture can be ignored<sup>3</sup>. Because of the unprofitable soils, grassland management (over 25% over the area), plays an important role. Much of the land is used as pasture for suckler cow herds of local breeds. Beef represents the majority of the agricultural products. Beneficiaries are the local population as well as regional and national consumers. More details and the importance of grazing for the biosphere reserve will be described in more detail in Section 15.3.1.

The people in the biosphere reserve obtain another source of food from the forests. Because of the large forest area, the hunting of deer and wild boar has always played an important role. The primary beneficiaries of hunting are the residents of the biosphere reserve as well as consumers from neighbouring regions. Conversely, hunting also benefits the forests. Because of the absence of large predators such as wolves, lynx, or bear, a high density of wild animals would be detrimental to the forests. As a result of hunting, wild stocks are regulated, and the regenerative capacity of the forests is strengthened.

- Raw material wood: Because of forest area of almost 70%, forestry plays an important role in the Biosphere Reserve Black Forest. As elaborated in Section 15.3.2, the biosphere reserve has a large amount of usable wood mass, which can be used as a renewable resource. Forestry has always played an important role in this area. Even today, it is an important source of income for some municipalities. At the local level, residents who earn a living in forestry and the wood processing industry benefit. At the regional and national level, people living in less forested areas can obtain wood from the biosphere reserve.

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<sup>3</sup> Millennium Ecosystem Assessment (2005): Ecosystems and human well-being: Synthesis, Millennium ecosystem assessment series, Island Press. Washington, DC.

- **Renewable energy:** In the Biosphere Reserve Black Forest, many renewable resources have been used for decentralised energy supply. In the low mountain range, which is rich in surface waters and has a large include because of relief differences, hydro power generation has always played an important role. In the biosphere reserve, there are currently 93 hydro power plants that are generating electricity. In the forested landscape, the use of wood for energy also has a long tradition. In the past, wood coal was obtained through charcoal burning. Today, biomass combustion plants produce electricity from wood chips. In the last decades, wind and solar energy have gained considerable importance. The primary beneficiaries are the local and regional population. Examples of the use of renewable energy in the biosphere reserve are listed in Table 11.

Table 11: Overview of forms of renewable energy use in the Biosphere Reserve Black Forest

	Previously	Currently	In the future
<b>Hydro power</b>	Old mills, especially sawmills from the early days of hydro power	Within the biosphere reserve, 93 hydro power plants produce electricity. Schluchseewerk AG operates a pumped-storage power plant in Häusern (additional power plants in the area) In Schönau, the River Wiese is used to supply energy to a brush factory and a commercial park	Numerous rivers offers great potential for hydro power generation
<b>Biomass (wood)</b>	Former charcoal burning sites are witnesses to the production of charcoal of the last century.	Bernauer Energieholz GdbR operates 15 large heating systems (total output: 7.5 MW). Holzenergie Betreibergesellschaft mbH in Wiesental produces energy from wood chips from landscape management. Many private households use wood from the forests of the biosphere reserve as fuel.	The "Southern black forest Energy Region" project promotes other projects such as a local heating network in Kleinen Wiesental
<b>Wind energy</b>		Three wind turbines: Fröhnd wind park (generator output: 2 MW) Holzschlägermatten wind park with two wind turbines (generator output: 1.8 MW)	In the area of the biosphere reserve, the regional association of High Rhine-Lake Constance has designated three priority areas (total of 160 ha) for wind energy use.
<b>Solar energy</b>		Solar panels can be found on the roofs of numerous houses (Figure 4). In Germany, Schönau is the municipality with the highest production of photovoltaic power in relation to consumption in a closed network area.	

In collaboration with existing structures and initiatives, the Biosphere Reserve Black Forest can continue to promote the development of renewable energies. The ecosystem services can thus be better exploited. At the same time, the regional creation of value can be promoted.

## Regulation services

Regulation systems are provided by processes occurring in ecosystems.

- **Water filtering/regulation** The forest floor plays an important role in the filtering of pollutants and nutrients. It also regulates the water levels, thereby minimising the risk of flood damage. With almost 70% forest cover, the biosphere reserve make a considerable contribution to the filtration and regulation of the water. Not only does the local population benefit but also the agglomerations in the Rhine area, which also use the Black Forest water and are largely protected from flooding in the receiving water course.
- **Climate regulation:** For this ecosystem service, a differentiation between local/regional relevance and global relevance is important. At the local and regional level, the biosphere reserve plays an important role in supplying the region with fresh air. At the global level, it makes a small contribution to the worldwide CO<sub>2</sub> storage. In the biosphere reserve, there are over 1,000 ha of climate protection forest which protect populated areas, spa, medical and recreational facilities, agricultural land, and special crops from adverse cold air and wind effects. At the local level, a balance is created between temperature and humidity extremes. At the regional level, large-scale air exchange is ensured. The agglomerations around the Rhine also benefit from the fresh air of the Black Forest. Guests are drawn to the spa resorts of St Blasien and Höhenschwand.
- **Over 43,000 ha of forests and 590 of moor form a large CO<sub>2</sub> reservoir,** thereby contributing to global climate protection. In the context of regulation services, the promotion of natural forest management and the preservation of intact moors are important tasks of the Biosphere Reserve Black Forest.
- **Erosion protection:** Because of the high number of steep slopes in the biosphere reserve, protection against soil erosion (caused by water, wind, and anthropogenic influences) is particularly important. Because the biosphere reserve has over 14,000 ha of designated area, soil protection is one of the most important functions of the forests.

## Cultural services

Cultural services are non-material services that humans receive through contact with the ecosystems/landscape.

- **Recreation:** The biosphere reserve features over 11,000 ha of designated recreational forest. Recreation (in addition to soil protection) is therefore one of the most important function of the forests. Many recreation seekers enjoy hiking and staying in the forests. However, it is the diverse mosaic of forest and open land together with the unique geomorphology that make the Southern black forest so attractive. Every year, many visitors from the agglomerations of Freiburg and Basel as well as Stuttgart make their way to the region to find recreation in the diverse cultural landscape. The direct beneficiaries are therefore primarily found at the regional and national level. However, the local population also indirectly benefits from this ecosystem service because tourism is an important economic power in the region. The tourism intensity of the biosphere reserve exceeds the state average many times over (cf Section 15.2). Through the designation as a UNESCO biosphere reserve, the region is expected to attract even more tourists, thereby continuing to strengthen the benefits for the local population through the creation of jobs in the tourist industry. Higher numbers of tourists will also positively affect the development of infrastructure, which again benefits the local population.
- **Aesthetics:** The unique cultural landscape has a high aesthetic value, which cannot be expressed in figures. A beautiful landscape indisputably has a positive affect on our physical and mental well being. In contrast to the densely populated areas of the adjacent Rhine Valley and the Neckar country, the mosaic of forests, pastures, Black Forest farmhouses, and small villages has a high aesthetic value for both the local population and visitors to the biosphere reserve.

- Cultural heritage: As described in other sections, the Biosphere Reserve Black Forest is characterised by a variety of cultural features. Examples include the typical Black forest buildings, the woodcutting, the various dialects, the many clubs and societies, The Swabian-Alemannic carnival, or the social networking through common pastures. They all have a long tradition in the biosphere reserve and a high value for the local population. This value cannot be expressed in figures. However, its qualitative importance is reflected in the everyday life of the residents of the Black Forest. They allow these traditions to live on and thereby allow visitors from around to become acquainted with the charming cultural heritage of the Black Forest.
- Education, science, and research: Because of the large variety of habitats and the importance of sustainable land use, the biosphere reserve is an ideal environment for diverse research and education for sustainable development. In particular, the nearby University of Freiburg as well as researchers from other scientific institutes have conducted numerous studies in various disciplines in the biosphere reserve (cf Section 19.6). For example, there are many ways opportunities to research the effects of human use and management on natural and cultural landscapes in the biosphere reserve. Education for sustainable development has already been established in the biosphere reserve and can continue to be expanded (cf Section 16.2).

### Basic services

As the name suggests, these services are the basis for all other ecosystem services mentioned above. They include services such as soil formation, nutrient cycles, or primary production. They cannot be accurately quantified for the biosphere reserve and will therefore not be discussed any further. Another basic service that does, however, play an important role is biological diversity. The benefits of this will be discussed in Section 12.2.

### Interactions between land use and ecosystem services

In a cultural landscape such as the Southern black forest, one should not only consider how ecosystems benefit humans but also how humans benefit ecosystems. The preservation of grazing is thus important for maintaining grassland ecosystem services. Because of land abandonment and the associated succession, in many regions of Germany – including the Biosphere Reserve Black Forest – open pastures are disappearing.

Through sustainable development (as the main objective of the biosphere reserve) other ecosystem services can also continue to be promoted. Especially in cultural landscapes such as the Biosphere Reserve Black Forest, the combination of protection and use is of paramount importance for the ecosystem services.

## 12.2 Indicators of ecosystem services for evaluating the three functions

In the context of a research and development project (Kowatsch et al. 2011), indicators for integrative monitoring in German nature reserves were worked out. The indicator system can be used to evaluate the three functions of biosphere reserves. However, the authors point out that because of the complexity and the high cost, a comprehensive survey of all ecosystem services is not feasible. They therefore abstained from developing indicators for ecosystem services to evaluate the functions of protection areas.

### **12.3 Role of biological diversity in the provision of ecosystem services in biosphere reserve**

It is difficult to determine the direct benefits of biological diversity in the Biosphere Reserve Black Forest. It is more interesting on a larger scale. However, landscape, species, and genetic diversity all have value. The diverse landscape has a positive effect on tourism in the region. The species diversity is reflected in the various habitats. These include many protected species and biotopes, the value of which is evident in the protection status. Genetic diversity as a part of the biological diversity can be an important ecosystem service for humans – especially in the future. In the Biosphere Reserve Black Forest, there are endemic animal breeds such as Hinterwälder cattle, which are optimally adapted to the harsh alpine climate and the steep relief. Because the cattle can readily graze on slopes without slipping (even in rainy periods) and feed on woody (inferior) plant parts, feed costs and effort for pasture maintenance are reduced. Because Hinterwälder cattle have much larger intestines than other cattle breeds, they are particularly good at converting (inferior) food.

### **12.4 Evaluation approaches of ecosystem services**

An evaluation of the ecosystem services was only performed for a selection of services. Some care services, which are currently being utilised, were quantified. The regulation services were not evaluated using concrete figures but rather on the size of the ecosystem (e.g. forest areas of various functions). The cultural achievements could not be assigned specific figures and were therefore only presented descriptively. In summary, many ecosystem services can be optimally provided in the Biosphere Reserve Black Forest. The protection and development of these ecosystem services will play an important role in the conceptual framework.



## 13 KEY OBJECTIVES FOR THE DESIGNATION OF THE BIOSPHERE RESERVE

### 13.1 Main objective of the Biosphere Reserve Black Forest

#### Overall objective of the Biosphere Reserve Black Forest

The sustainable economic use should be linked to the maintenance and enhancement of the natural and cultural landscape and positively shaped.

The guiding principle for the Biosphere Reserve Black Forest is **participation** in the sense of “from the region, with the region”.

#### Detailed objectives

1. Protection and conservation of the diverse and characteristic ecosystems, which are important for biodiversity
2. Development of adaptive strategies with respect to climate change
3. Economic, social, and demographic stabilisation and development of the rural area
4. Promotion of sustainable tourism
5. Strengthening the equal participation of all people (those with an immigration background, men and women, individuals with disabilities)
6. Maintenance and development of the characteristic areas of common economic activity (historically: common land) as the most important element of the cultural landscape
7. Maintenance and development of competitive **agriculture and forestry**, taking into account the special significance of nature and landscape.
8. Development and strengthening of a **cultural identity**
9. Continuation and intensification of education for sustainable development
10. Support and promotion of a **research network**
11. Integration into the international **network** of biosphere reserves

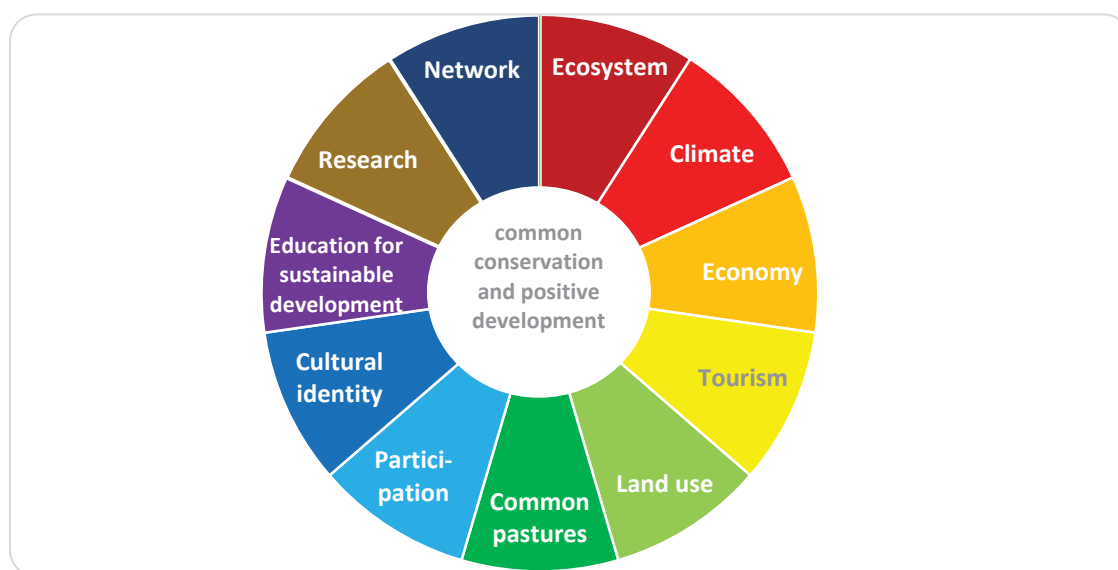


Figure 23: The 11 Objectives of the Biosphere Reserve Black Forest

The biosphere reserve setting is characterised by a close relationship between humans and natures, which has developed over centuries. The people of the region had to deal with the bare and climatically rough environment of a mountain landscape and be content with the little that the ecosystems provided. The considerable seasonal differences between long summer days and cold winters were other defining elements. This led to the creation of an elaborate system of sustainable soil, resource, and land use, which resulted in a richly structured and high-quality cultural landscape with locally adapted breeds as well as special cultural lifestyles, habits, and identities.

Preserving this diverse cultural landscape in the age of globalisation, mobility, and changing values as well as sustainably restoring it are the task and goal of the Biosphere Reserve Black Forest. The preservation of cultural identity is also an important objective.

In order to realise this overall goal, 11 sub-goals were developed. To a certain extent, these can be prioritised without detracting from the importance of the others.

The guiding principle is **participation** in the sense of “from the region, with the region”.

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In accordance with the tradition of the region, the goals of the biosphere reserve should only be achieved through common development and implementation processes. On one hand, this corresponds to the success mechanisms of the region (keyword: Allmend pastures). On the other hand, it is expected that the population and its interest groups will be included in the development and shaping of the biosphere reserve.

The successful development of the biosphere reserve can only be realised with the participation of the people.

1. Protection and conservation of the diverse and characteristic **ecosystems**, which are important for **biodiversity**

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The relief-rich landscape with glacial transformation and post-glacial V-shaped valleys combined with large altitudinal gradients, a topographically differentiated and compartmentalised climatic situation, and the open spaces resulting from grazing requires a wide variety of ecosystems. Characteristic and important ecosystems include large-scale extensively used pastures, glacially formed highlands with cirques, avalanche tracks, spring swamps, natural beech and beech-fir forests, ravine forests, block and talus forests, high montane mixed forests with naturally occurring spruce, open block and scree, rocks, and moors of varying degree. The diverse ecosystems provide habitats for endemic and relict species. In some cases, this is the only place in Germany where these unique species can be found. These include:

- Alpine club moss (*Diphasium alpinum*)
- Auricula (*Primula auricula*)
- Large thyme (*Thymus alpestris*)
- Thick-leaved stonecrop (*Sedum dasyphyllum*)
- Annual stonecrop (*Sedum annuum*)
- Swiss dandelion (*Leontodon helveticus*),
- Oblong woodsia (*Woodsia ilvenses*)
- White mountain saxifrage (*Saxifraga paniculata*)
- Wart-biter (*Decticus verrucosus*)
- Rock bunting (*Emberiza zia*)

Extremely rare species, which only occur in the project area include the Präg ground beetle (*Nebria praegensis*), the giant earthworm of Baden (*Lumbricus badensis*), and the freshwater snail of Baden (*Bythinella badensis*).

The plant and animal species include numerous species that are endangered throughout Europe and/or which are listed in the annexes of the SCI or Birds Directive out of common interest. With respect to the biosphere reserve, the following plant species should be mentioned:

- White fir (*Abies alba*)
- Alpine birch (*Betula nana*)
- Grey alder (*Alnus incana*)
- Monkshood (*Aconitum napellus*)
- Mountain arnica (*Arnika montana*)
- Flat sedge (*Blasmus compressus*)
- Downy hempenettle (*Galeopsis segetum*)
- Winged broom (*Genista sagittalis*)
- White beak-sedge (*Rhynchospora alba*)
- Rogers' gold hair moss (*Orthotrichum rogeri*)
- Buxbaumia moss (*Buxbaumia viridis*)
- Green broom moss (*Dicranum viride*)

This European category also includes mammals such as the beaver *Castor fiber*, lynx (*Lynx lynx*) and wildcat (*Felis sylvestris*) as well as all species of bat. The area is also characterised by numerous bird species including the wood grouse (*Tetrao urogallus*), the Alpine citril finch (*Carduelis citrinella*), Bonelli's warbler (*Phylloscopus bonelli*), the water pipit (*Anthus spinoletta*), and the Eurasian tree pipit (*Anthus trivialis*). With respect to aquatic species, the white-clawed crayfish (*Astropotamobius pallipes*) should be mentioned. This occurs near the north-eastern border of the area.

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## 2. Development of adaptive strategies with respect to climate change

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Climate change will affect the region, albeit probably not as intensively as lower lying landscapes. With respect to climate change, there are chances and risks, which must be considered equally. Because of lack of water in the summer, the water supply must be realigned. In the hot summer months, sufficient recreation space must be provided for guests from lower altitudes. Some ecosystems – especially moors and forests – should be stabilised against the effects of climate change. At the same time, measures for preventing and reducing CO<sub>2</sub> emissions contribute to the buffering of climate change (bio-energy region through the further expansion of renewable energy sources) Application for the *European Energy Award* as the expression of a sustainable region is being considered. Some communities autonomously produced their own energy – this should be expanded upon.

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## 3. Sustainable economic, social, and demographic stabilisation and development of the rural area

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The scenic value can be obtained only if the people remain connected with their region, consider it as worth living in, and define their existence in “symbiosis” with the landscape. Only if the region is viewed as an attractive living and working environment can a vital, diverse, and socially stable region – which accepts responsibility for the social world and receives value from the landscape – develop. Within a self-supporting regional economy that resists the emigration of powerful labour and achieves a democratic and socially balanced structure, this is certainly conceivable.

In terms of sustainability, the development should be carried out on ecological foundations. This entails the promotion of renewable energies (e.g. hydro power, solar energy, and wind energy), the promotion of climate-efficient technologies and architecturally adapted building methods, and the use of regional resources when creating economic value. Wood from the local forests plays a central role.

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## 4. Promotion of sustainable **tourism**

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The biosphere reserve is in constant competition with other national and international tourist destinations. Within the biosphere reserve, tourism has already reached a high level. It is an important income factor and promotes regional economic cycles. Therefore, as part of a moderated process, the development of tourism in this heterogeneous landscape should be promoted so that it remains a motor for the sustainable development of the biosphere reserve. The changing conceptual framework resulting from climate change has had a strong influence on winter tourism.

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## 5. Maintenance and development of competitive agriculture and forestry, taking into account the special significance of nature and landscape.

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In addition to tourism, land use through agriculture and forestry is a fundamental factor in the sustainable development and shaping of the region.

Using infrastructural and market-promoting measures, the nature-friendly management of both forms of land use should continue to be developed so that they can support themselves economically. In addition, all funding opportunities should be utilised.

6. Maintenance and development of the characteristic areas of common economic activity (historically: **common land**) as the most important element of the cultural landscape
- 

The areas of common economic activity (in local parlance, Allmends = commons) are a unique feature of the biosphere reserve. These communal grazing areas arose from the realisation that survival in the region would only be possible through joint action. The monasteries (and later the communes) were responsible for managing these areas. Only through the united efforts of all citizens could the areas be managed and income be obtained. This spirit of common action and thinking is still evident in some parts of the region.

From a nature conservation perspective, the value of the Allmend areas in this region is rather high. Because they were extensively cultivated, rare open land communities of species have formed. The goal is to establish contemporary collaborations and business models so that these extensive areas can be kept open with financial support.

7. Strengthening of the **equal participation** of all people
- 

The region should be aware of the diversity of social groups that are involved in the formation of a vital region. These include people with an immigrant background, people with disabilities, people of all age groups, and all men and women in general. All groups should be involved in the formation process on an equal basis and be able to meet individual needs.

8. Development and strengthening of a **cultural identity**
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Goals 3 through 7 indicate the importance of identifying with the region in order to enable sustainable stabilisation and development. The region offers the best conditions because it is rich in tradition and engagement in clubs and societies. Strengthening and developing cultural identity – also in future generations – serves to promote connection to one's homeland and making it attractive for generations to come. On top of this, the region is developing a distinctive character that is attractive for the native population as well as guests from near and which creates economic value (especially with respect to tourism). Regional identity is thus not an end in itself but rather serves as a source of power for a common socio-economic development.

9. Continuation and intensification of **education for sustainable development**
- 

Awareness of the need for sustainable development is essential for the region. Only in this way can it serve as a model region for other areas: By acting out of a deep responsibility for their region, people of all ages can serve as role models for others. Although education for sustainable development starts in the region, it should not stop at its borders but rather have a widespread impact as a result of various actions and measures.

Collaboration with both the formal and informal educational institutions of the region should therefore be intensified. Education for sustainable development should also be mediated at events, in businesses, or through PR measures.

Regional research institutes are available for the intensification for education for sustainable development.

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#### 10. Support and promotion of a **research network**

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The importance of the region is expressed in the large-scale protection projects (LIFE Project in Oberer Hotzenwald and the “Feldberg-Belchen-Oberes Wiesental” Nature Conservation Project) as well as other research projects. However, it should be studied in greater depth through basic and applied research. A favourable starting condition for this is the proximity to important research centres in Freiburg (Germany), Basel (Switzerland), and Strasbourg (France).

The research should extend well beyond a survey of ecological relationships. It is also important to work out and investigate social scientific and culturally-related relationships so that the interactions between humans and nature can be harmonised and solutions for a sustainable development can be optimised. Research activities are also important at the technical level e.g. energy technology and mechanical engineering (nature-friendly cultivation of the steep locations).

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#### 11. Integration into the international **network** of biosphere reserves

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The results and findings for a sustainable management of the region, the participation of the public in the biosphere reserve, and the interactions between humans and nature should not remain hidden. Instead, partnerships and sponsorships with other biosphere reserves of the World Network of Biosphere Reserves should be revived and supported.

The Biosphere Reserve Black Forest should serve as a model region in which viable mechanisms of management and the successful implementation of innovative measures are disseminated. It is advisable to work together – here in the sense of a partnership with biosphere reserves with similar landscape formations (low mountain ranges).

Partnerships with biosphere reserves that have similar challenges but successfully manage their region with their own differentiated management approaches are also useful. These serve as forums of exchange and give rise to mutual and intensification of the cultural and scientific collaboration as well as the research cooperations on ecosystems in low mountain ranges.



### 13.2 Goals of sustainable development in the biosphere reserve

The 17 goals of sustainable development were adopted by the General Assembly of the UN on 25 September 2015 and entered into effect on 1 January 2016. They are valid for 15 years. Those goals that are relevant for the Biosphere Reserve Black Forest will be explained below. In addition, the current level of achievement will be outlined, and goals for the Biosphere Reserve Black Forest will be substantiated.

Table 12: The goals of sustainable development of the UN, which are relevant for the biosphere reserve

Source: <https://sustainabledevelopment.un.org/post2015/transformingourworld>

UN 2030 agenda goals	Description	Actual condition in the biosphere reserve	Goal of the biosphere reserve	Explanation
<b>3. Quality of life</b>	Reduction of unnatural death and disease	In Germany, the quality of life is relatively high. However, medical care in rural areas (emergency medicine, family doctors) is no longer guaranteed everywhere.	3	The lack of doctors in the rural area is mainly structural and systemic. The biosphere reserve can provide momentum for the optimisation of the regional health care system.
<b>4. Education</b>	Equal participation in education for all people	Because of depopulation, it is becoming increasingly difficult to provide comprehensive education in rural areas.	3	The living environment (work, culture, infrastructure) in the biosphere reserve should be secured and developed. The out-migration of young families can thereby be stopped and possibly even reversed. This will stabilise the demographic development, thereby ensuring sufficient numbers of students.
<b>5. Equal rights</b>	Equal rights for men and women	In the biosphere reserve (and in Germany), this is guaranteed by law.	5	In the rural area, the important role of women in the economy, education, culture, and tradition should continue to be strengthened.
<b>6. Water</b>	Universal and equitable access to clean water and drinking water	In the biosphere reserve (and in Germany), this is guaranteed by law.	2	In light of climate change, an adequate water supply must remain in view.
<b>7. Energy</b>	Significant increase in renewable energy	Renewable energy has a long tradition in the region (especially hydro power). Across Germany, the region is a pioneer of decentralised and renewable energy supply. There are already several energy-autonomous communities. The District of Lörrach as well as the Municipalities of Wehr and Schopfheim have been honoured with the European Energy Award	2, 3	The use of renewable energy (hydro power, wood, wind power, and solar energy) should be expanded. A more efficient use of energy should also be promoted (insulation, use of wood). This corresponds to the main objectives of the current state government.
<b>8. Employment</b>	Full-time employment with fair payment for all people	In the biosphere reserve, the employment situation is changing. Even though the percentage of people employed in agriculture is disproportionately high, there is hardly any full-time farming; it is mostly done as a side business. In	3, 4, 7	Additional businesses must be established and maintained. Development opportunities for existing businesses. Preservation of existing jobs. Good employment opportunities support part-time farming and thereby

		<p>order to maintain the agricultural sideline, flexible working options in the other sectors of the economy are required.</p> <p>The number of jobs in the biosphere reserve is also insufficient; twice as many people commute out of the region as do into the region.</p>		<p>the preservation of the cultural landscape.</p> <p>Through regional marketing as well as the "BSG Black Forest" brand, the products and businesses of the region should become more attractive and thereby improve the income situation. Commercial enterprises should be sensitised to providing and expanding workplace models (part-time, working time accounts, flexibility) geared to local needs (part-time farms).</p>
<b>9. Infrastructure</b>	Complete development of an energy, sanitation, transport, and information infrastructure	Public transport and the Internet are not sufficiently ensured. This also applies to the local amenities (food, basic needs)	3, 4	Internet and public transport as well as local amenities must be improved
<b>11. Municipal development</b>	Accessible and liveable housing for all people	The biosphere reserve is a rural and not an urban space. The smaller settlements must be developed in a planning- and landscape-related manner.	3, 8	Existing structures that are typical of the landscape should be preserved. The quality of the architectural culture should be increased. The typical regional architecture should serve as a model, which should be further developed on the basis of current functionality and modern standards. Age-appropriate housing should be established for senior citizens.
<b>12. Consumer behaviour</b>	Stronger self-denial and installation of recycling systems.	<p>An optimised goods circulation system that is structured around the regional economy is currently in the works.</p> <p>In Germany, the recycling principle has a high standard.</p>	3, 9	A sustainable consumption concept should be part of the model region. Value should be placed on the regionality and quality of the products. The proportion of advance payment relationship must increase.
<b>13. Climate change</b>	Implementation of climate goals though national action	<p>The region has already implemented climate goals:</p> <p>Bio-energy villages, forests and moors for CO<sub>2</sub> storage, public transport.</p> <p>And adaptation concept has not yet been developed.</p> <p>Because of climate change, the importance of the region will increase. On one hand, the direct effect on ecosystems is not as severe as it is in warmer, lower lying areas. However, the indirect effects (reaction of the people) will create increased use conflicts (keywords: escape to cooler areas, water supply).</p> <p>The Districts of Lörrach, Wehr, and Schopfheim have received the European Energy Award</p>	1, 2	<p>Additional implementation as a "green region"; increase in renewable energies; comprehensive certification through the "European Energy Award".</p> <p>Adaptation strategies for the ecosystem must be developed.</p> <p>Adaptation strategies for the people (winter tourism, architecture, culture, consumption) should be developed and communicated.</p>

<b>15. Onshore species variation</b>	Re mediation and preservation of the ecosystems, especially the forests	The natural and cultural-related biodiversity is high The nature conservation project has ended; follow-up funding and management are required	1, 2, 6	Important core target (management of the Allmend pastures, moors, special locations, and forests)
<b>17. Cohesion</b>	More worldwide exchange and co-operation		11	Worldwide cooperations with biosphere reserves will be sought

### 13.3 Integration of the goals of the “Lima process”

As part of the “Lima process”, at its 27th meeting (UNESCO, Paris, June 2015), the international coordination council of the MAB programme worked out four “strategic goals” for the MAB programme covering the period 2015–2025. These four goals are also the basis for the *Lima Action Plan for the MAB Programme and the World Network of Biosphere Reserves*, which was adopted at the 4th World Congress of Biosphere Reserves in Lima (Peru, March 2016).

The four strategic goals will be listed below. These are to be achieved through various measures.

1. Protection of biodiversity, recovery and improvement of the ecosystem services, and the sustainable use of natural resources
2. Contribution to the creation of sustainable, healthy, and fair societies and economies as well as efficient settlements that are compatible with the biosphere
3. Promotion of biodiversity and sustainability science, education for sustainable development, and the strengthening of capacities
4. Support of risk mitigation and adaptation to climate change and other aspects of global environmental changes

All four objectives of the MAB programme are directly part of the biosphere reserve enactment or will be included in the design process for the biosphere reserve.

There is complete agreement between the goals of the Biosphere Reserve Black Forest and those of the MAB Programme.

### 13.4 Most important interest groups included in the management of the biosphere reserve

Participation is the fundamental guiding principle in the biosphere process. This was already reflected in the extended foundation phase with consultation of the region and will be continued during the actual management of the mandated biosphere reserve.

The tripartite formalisation of the participation form, which is expressed in the institutions of the office, the steering committee, and the council makes it clear that many interest groups are involved in the management of the biosphere reserve (Figure 7).

When assembling the steering committee and the council, great emphasis was placed on the representation of all interests of the region, and active participation in the management process was enabled. This was established in the binding cooperation agreement from 19 February 2016.

The “five pillars” of the interest groups were constituted in a discovery process. This takes place in several phases:

1. The Regional Authority of Freiburg publicly calls for active participation in the management of the biosphere reserve.
2. Organisations and individual persons report their interests and assign themselves to the “pillar” that most closely corresponds with their interests.
3. Each of the “five pillars” is constituted in a meeting.
4. In accordance with Figure 24, delegates from the interest groups will be sent to the council and the steering committee.

Each of the “five pillars” remains open for new prospects.

Furthermore, ad hoc and topic related working groups will be formed; it is also possible to collaborate in these.

The representatives of the political organisations formally remain fixed; many individuals and groups are involved in the composition of the “five pillars” These are exemplified in Table 13. In a public expression of interests, representatives of these groups can affiliate themselves with one of the “pillars” and articulate their interests.

Table 13: Potential participants of the political delegations and the “five pillars” in the Biosphere Reserve Black Forest

Interest groups	Potential participants
<b>Political representatives of the region</b>	<ul style="list-style-type: none"> <li>• Mayors as well as municipal and local councils as democratically elected representatives of the 29 communities.</li> <li>• District administrators as elected representatives of the three districts</li> </ul>
<b>Representative of land use (land use pillar)</b>	<ul style="list-style-type: none"> <li>• BLHV (Badischer Landwirtschaftlicher Hauptverband; Agricultural Federation of Baden)</li> <li>• Chamber of Forestry of Baden-Württemberg (political representation of private and communal forest ownership)</li> <li>• ForstBW (staatlicher Forstbetrieb; state forest management)</li> <li>• Landscape conservation organisations</li> <li>• Forest enterprise associations</li> <li>• Individuals</li> </ul>
<b>Representative of nature protection (nature protection pillar)</b>	<ul style="list-style-type: none"> <li>• BUND (Bund für Umwelt und Naturschutz Deutschland; Association for the Environment and Nature Conservation Germany)</li> <li>• WWF (World Wildlife Fund)</li> <li>• Naturfreunde</li> <li>• LNV (Landesnaturschutzverband; Land Conservation Association)</li> <li>• NABU (Naturschutzbund Deutschland; Nature Conservation Association of Germany)</li> <li>• Conservation authorities</li> </ul>

	<ul style="list-style-type: none"> <li>• Individuals</li> </ul>
<b>Representative from society and culture (society and culture pillar)</b>	<ul style="list-style-type: none"> <li>• Gender equality officer</li> <li>• Disability officer</li> <li>• Museums</li> <li>• Church congregations</li> <li>• Local clubs</li> <li>• Black Forest Association</li> <li>• Rural Women Associations</li> <li>• Cultural and historical societies</li> <li>• Carnival guilds</li> <li>• Individuals</li> </ul>
<b>Representatives from research, education, and education for sustainable development (“Education and education for sustainable development” pillar)</b>	<ul style="list-style-type: none"> <li>• University of Freiburg</li> <li>• School authorities of Freiburg and Waldshut</li> <li>• German Forest Protection Association</li> <li>• Nature park schools</li> <li>• Training institutes</li> <li>• Supporters of education for sustainable development</li> <li>• Individuals</li> </ul>
<b>Representatives from economy and tourism (“Economy and tourism” pillar)</b>	<ul style="list-style-type: none"> <li>• Industrie und Handelskammer [Chamber of Commerce and Industry]</li> <li>• Chamber of crafts</li> <li>• Black Forest tourism</li> <li>• Hotel and Restaurant Association</li> <li>• Black forest highlands tourism</li> <li>• Business representatives from the production and manufacturing sectors as well as the hospitality industry</li> <li>• IOW (Interessengemeinschaft Oberes Wiesental; Oberes Wiesental Interest Group)</li> <li>• Economic Development</li> <li>• Individuals</li> </ul>
<b>Southern black forest Natural Park</b>	<ul style="list-style-type: none"> <li>• Managing directors</li> <li>• Employees</li> </ul>

### 13.5 Process for consulting the population for the designation of the biosphere reserve

Upon deciding to found a biosphere reserve, it quickly became clear that this could only be successful with the acceptance of the region.

For this reason, a comprehensive participation process was brought to life. On one hand, this provided information about the meaning and essence of biosphere reserves in general. On the other hand, it pointed out the cooperation opportunities, chances, and risks in the specific situation.

This consultation process lasted from 2011 to 2016. The consultation process took place in different ways and in various forms. All meetings that took place in the past five years can be assigned to one of six categories:

- Meetings with elected officials
- Contact with authorities
- Discussions
- Citizens meetings
- Meetings with and for associations and churches
- Other meetings

The results of this classification are presented in Figure 24. Please note that there is some overlap between the categories. From Figure 24, it is clear that the participation process has been quite extensive to this point. In the past five years, approximately 250 meetings took place.

Contact with authorities (conservation authorities, forestry authorities, land consolidation authorities, general administration) accounted for the largest number of meetings (80). Contact with selected representatives, especially mayors, municipal, and local councils ranked in second place with 70 events. Almost 40

meetings were conducted as purely public events for citizens of the biosphere reserve. The formats were quite diverse (e.g. public information events at the municipal or local level, consultation hours for farmers, or workshops for a wide audience). The numbers of participants was also highly varied. These ranged from 7–20 participants at consultation hours to 250–300 participants at large public events. The consultation hours in particular offered the chance to openly and intensively discuss issues related to the biosphere reserve and zoning in individual meetings. Reservations about zoning were thoroughly discussed and in most cases dispelled. Of particular note were two large future workshops in which goals and possible project ideas were worked out in a large group and the organisational structure was amicably developed with the help of associations and communities as well as other representatives and authorities.

The professional discussions were often focussed on a single issue. The contact partners were authorities, research institutes, and experts. The following issues were addressed: The grouse topic, moors, wind power and turbines, hydro power plants, the core areas proper, and nature conservation conflicts (e.g. Natura 2000).

Only 11 meetings were held for associations and churches. However, the associations were also represented at the citizens' meetings and the public municipal council meetings. The associations included conservation associations such as NABU (Naturschutzbund Baden Württemberg; Nature Conservation Association Baden Württemberg) BUND (Bund für Umwelt und Naturschutz Deutschland; Association for the Environment and Nature Conservation Germany), and the WWF (World Wide Fund for Nature), professional agricultural organisations such as BLHV (Badischer Landwirtschaftlicher Hauptverband; Agricultural Federation of Baden), regional associations, industry and chamber of commerce, and tourism associations. The contact with the Southern black forest was also intensive. The head of the nature park is a member in the ongoing biosphere reserve working group at the Regional Authority of Freiburg and thus included in and informed about all activities. "Other" includes contacts with the national German MAB committee.

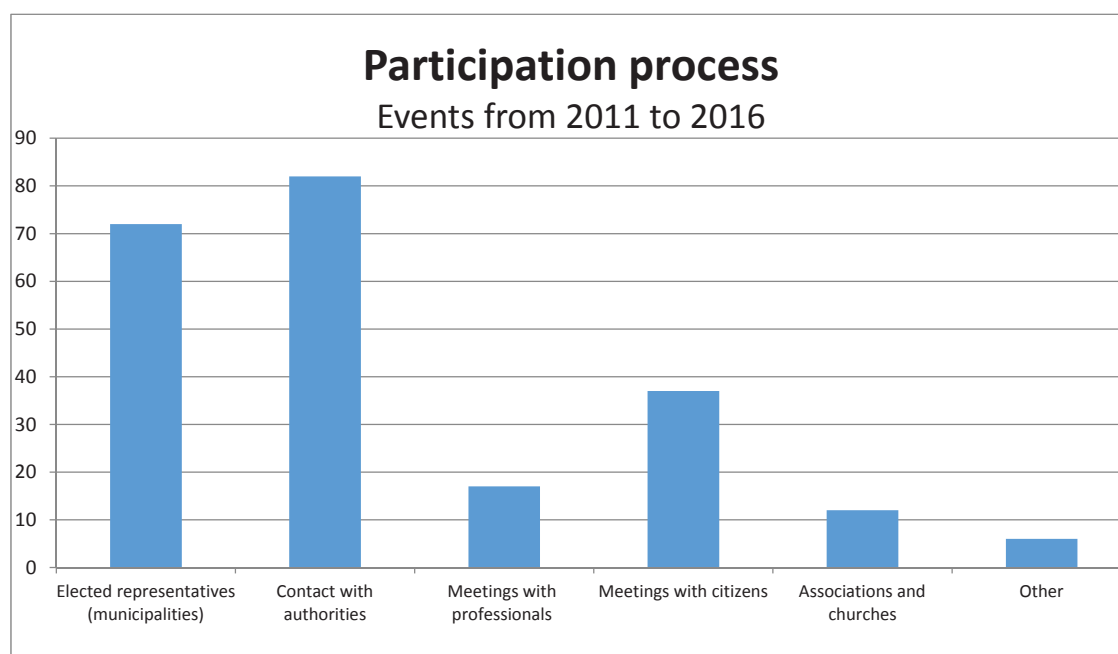


Figure 24: Participation process in the planning phase from 2011 to spring of 2016



As part of the consultation process, the design of the regional setting was discussed. The distribution of the buffer and core areas was continually developed. The interests of individual municipalities with respect to joining the biosphere reserve also changed.

The consultation process concluded in municipal council meetings with free and independent votes of each individual municipality on whether to join the biosphere reserve.

The result of this now valid regional setting is an expression of this intense consultation process and shows that even contrary to professional priorities, the democratic decision of the region was the decisive reason for joining.

### 13.6 Participation of the interest groups in implementation and management

The participation/collaboration of the interest groups is a central success factor for the Biosphere Reserve Black Forest. Without the identification with the region and the collaboration of the interest groups, the sustainable development of the biosphere reserve could not be realised.

The goal is therefore to excite the widest possible circle of interest groups for the idea of the biosphere reserve and involve them. These took place during the founding phase.

For the participation/activation, there are various suitable measures, which will be used in the biosphere reserve.

- a) Information and education
  - a. Permanent information centres
    - i. Biosphere information centre in Todtnau
    - ii. De-central information points
    - iii. Biosphere exhibits
    - iv. Information in "Haus der Natur" on Feldberg and in "WaldHaus" in Freiburg
    - v. Notices and signs
  - b. Tours and excursions
  - c. Biosphere rangers
  - d. School events
  - e. Education for sustainable development events in associations and businesses
  - f. Biosphere days
  - g. Information paths on various topics
  - h. Information via press, radio, television, and electronic media
- b) Networking and moderation
  - a. Mediation for conflict
  - b. Support of civil society activities and initiatives through coordination and networking
  - c. Activation and support of associations and organisations
- c) Financial and proprietary funding
  - a. Direct funding from the biosphere reserve
  - b. Indirect state, national, and EU funding, private foundations, and other third-party funds
  - c. Provision of material resources and infrastructure
- d) Possibilities for active participation
  - a. Participation workshops
  - b. Council meetings
  - c. Steering committee meetings
  - d. Project-related working groups
  - e. Action days with landscape management approaches

These measures will be taken up by the conceptual framework and expanded upon in the further course of the development of the biosphere reserve.

### 13.7 Financial, personal, and material resources for management

Table 14: Main financial sources of the Biosphere Reserve Black Forest (€ annually); **bold**: formal commitment; *italics*: planned

Site	Office (6 staff, 1 administration building)				Project funds			
	2016	2017	2018	Subsequent years	2016	2017	2018	Subsequent years
<b>Federal State of Baden-Baden-Württemberg</b>	<b>460,000</b>	460,000	460,000	322,000	<b>260,000</b>	200,000	200,000	140,000
<b>Communities of Baden-Württemberg*</b>					<b>120,000</b>	120,000	120,000	
<b>Communities</b>				138,000				60,000
<b>Total</b>	<b>460,000</b>	460,000	460,000	460,000	<b>380,000</b>	320,000	320,000	200,000

\*The Federal State of Baden-Württemberg has pledged an additional €60,000 in project funding for 2016–2018 if the communities (districts and municipalities) co-finance another €60,000.

The funds marked in bold are set in the state budget of Baden-Württemberg and are decided for 2016. The state has made pledges for the subsequent years. However, these will only become binding following preparation and decision of the budget.

For the office, there is initially €460,000 per year available for the building, maintenance, and five staff positions. For the promotion of sustainable development in the biosphere reserve, there is €380,000 in project funds for 2016, €320,000 (expected) for both 2017 and 2018, and €200,000 from 2019.

In addition to the management, the office of the biosphere reserve should be engaged with following disciplines.

- Nature conservation including monitoring and research
- Land use with focus on agriculture
- Economy/tourism/regional development/marketing
- Education/culture/society/social

For a “start team”, a managing director position and four positions from the aforementioned areas were advertised. The managing director position was filled in the middle of June. Another four positions will be filled. The staff of the office will then successively be expanded to ten positions.

The following qualifications were advertised as conditions for staff appointments:

Managing directors

University degree in environmental or natural sciences or a comparable course of study that qualifies for the proposed duties. Several years of work experience in the administration of a company or organisation are advantageous.

Education/culture/society/social

University degree (Bachelor's, Master's) in education or another suitable discipline (e.g. natural or social sciences, environmental sciences) that qualifies for the proposed duties. Sound knowledge and experience in the area of education for sustainable development are a prerequisite.

Conservation including monitoring

University degree (Bachelor's, Master's) in a landscape management and scientific discipline. Sound knowledge and experience in the area of nature conservation and landscape management are a prerequisite.

Economy/tourism/regional development/marketing

University degree in economics or a comparable course of study (Bachelor's or Master's degree) that qualifies for the proposed duties. Sound knowledge and experience in the area economics, tourism, regional development, and regional marketing are a prerequisite.

Land use with focus on agriculture

Degree (Bachelor's) in the area of agronomy, agricultural biology, forestry, or a similar discipline that qualifies for the proposed duties. Sound knowledge and experience in the area of agriculture and forestry in the context of sustainable use are a prerequisite.

Up to 10 positions (three of which are advanced) have been considered in the budget.

Once work has begun, additional funding can be acquired. There are many funding agencies available for this. The funding can be applied for with the help of the office. Funding opportunities include:

- LEADER funding by the EU and the Federal State of Baden-Württemberg (Sustainable Rural Development)
- LIFE (EU funding of nature and environmental protection projects and for climate protection)
- Foundation funds (earmarked subsidies pursuant to foundation purposes)
- Research funds from the country and federal state (research and testing projects, collaborative research centres, research training groups)
- Other third-party funding (e.g. conservation organisations, associations)

## 14 PROTECTIVE FUNCTION

### 14.1 Level of landscapes and ecosystems

#### 14.1.1 Ecosystems and area use types of the biosphere reserve

The biosphere reserve is located in the southern Black Forest, a mountain range in the South-west of the Federal State of Baden-Württemberg, which extends in the North-South direction. The structure-rich and glacially shaped area is characterised by a varied mosaic of forest and open land habitats. Pronounced relief differences between steep gorges and extensive high valleys lead to a large locational diversity with cool humid locations with a northern exposure and dry-warm locations with a southern exposure. This large diversity has led to the formation of natural ecosystems each adapted to their respective locations and micro-climates. The forests in particular are quite diverse. The open land is almost exclusively used as grassland. It extends into the highest sites (e.g. the Belchen or the Feldberg). The species- and structure-rich grassland (*Nardus* grasses) that shape the landscape of the biosphere reserve are frequently used as cattle pastures. In addition to the characteristic pasture beeches, there are lowland moors, spring swamps, rocks, small scree, and copses. In the South-east of the region, especially in Oberen Hotzenwald, there is a multitude of well-preserved highland moors.

The accumulation of landforms is quite remarkable. These were formed during the last ice age and have unique natural features (cirques with steep cliffs and still waters/paludification, moutonnées and moraines, and block and scree).

The area is characterised by a high diversity of ecosystems with a numerous rare and endangered plant and animal species, including those listed in the Habitats directive. The ecosystems not only have a large nature conservation importance at the national level but also at the European level (e.g. Natura 2000 network). In the following, each ecosystem will be described individually. A detailed listing of species that add value can be found in the Annex.

#### 1 Forest ecosystems

Beech forests and mixed beech forests are the forest types with the largest area in the biosphere reserve. In the colline altitudinal belt, there are pure beech forests. In areas favoured a warm climate (e.g. Alb tal), they are rich with orchids. The oak (sessile oak) is also admixed. In the montane locations, fir and spruce appear in alternation proportions. They form the extensive and landscape-shaping beech-fir forests of the mountain slopes. In the high-montane locations of Belchen and in the Feldberg area, Scottish maple-beech forests, which are rich with perennials, occur depending on use (selection forests, timber forests), the forests have different structural characteristics.

In the steep and rocky gorges of Wehra and Alb as well as in the Präg glacial cirques, there are species rich gorge, block and talus forests that are characterised by various maple species, ash, and large leaf linden and which feature humid locations. Typical of the flood area of the numerous streams are alluvial forests with black alder and ash as well as grey alder in the eastern part of the territory.

On the dry-warm and rocky slopes of the Utzenfluh, Unteren Alb tal, the Präg glacial cirques, and Wehratal, there are sparse birch-sessile oak forests

In the highest locations in the area of the cold air sinks as well as rocky and blocky locations, there are also structurally-rich natural spruce forests. Sparse mountain pine-bog forests can be found in small areas on moor locations. These forests also feature mountain pine (moor pine) in an upright form. These differ from the procumbent form in the Alpine area. In the high montane sub-alpine area of the Belchen and the Feldberg region, large-leaved willow-bushes appear in avalanche tracks. These are otherwise only known from the Alps.

## **2 Grassland ecosystems**

Extensively used and partially expansive pastures are the use type with the largest area extent in open areas. In particular, the extensive pastures of the highlands play a large role in shaping the landscape. These *Nardus* grasses are rich in glacial relicts and rare plant and animal species. Because of their structural diversity with rocks, scree, marshlands, and heaths as well as the characteristic pasture beech, they are highly valuable from the perspective of nature conservation – also for the European network Natura 2000.

On the northern slope of the Belchen and in the Feldberg area, alpine grasses occur with species that are not found anywhere else in Germany outside of their main Arctic-Alpine distribution area.

In the entire biosphere reserves, hay meadows are prevalent in the valleys as well as on the mountain slopes (albeit to a lesser extent). There are very species-rich and colourful stands in various forms. They are characterised by various animal and plant communities. Lowland hay meadows are widespread in Wiesental but also occur in higher locations around Gersbach. There are also transitions to the mountain hay meadows, which occur on the moderately steep slopes in the entire area. These are also concentrated in the expansive high valleys of Oberer Hotzenwald.

## **3 Ecosystem of moors and springs**

The typical ecosystems of the cool-humid locations are concentrated in the southern part of the biosphere reserve. The Obere Hotzenwald (Dachsberg, Ibach) as well as the Bernau valley and the Feldberg area are particularly rich in highland and lowland moors. Because of their genesis and the high number of rare and endangered plant and animal species, the highland moors are particularly valuable from a nature conservation perspective. The moors also have a general climatic importance with respect to carbon fixation.

The summit and the adjacent slopes of the three highest mountains in the area (Schauinsland, Feldberg area, and Belchen) harbour numerous springs with spring swamps, which are characterised by the occurrence of glacial relicts as well as an endemic species of snail.

## **4 Ecosystem of the cliffs and scree**

In the biosphere reserve, block and scree occur as witnesses of previous glaciations. They are particularly formative in the Präg glacial cirques. They are also found on a smaller scale in the entire region – both on open land and in forests. Of note is the occurrence of an endemic species of beetle in the Präg glacial cirques.

## **5 Aquatic ecosystems**

The biosphere reserve is criss-crossed by numerous streams. These are characteristic of central mountain streams. Especially in the upper reaches, they can be classified as close to nature. There are only a few near-natural still waters in the region. As a result of damming, they have formed in cirque hollows and primarily exhibit a well formed silting vegetation. Examples are the Klosterweiher or the Nonnenmattweiher, which features an island of transitional moors and fens.



Table 15: Forest ecosystem Part I in the Biosphere Reserve Black Forest

Forest ecosystem I			
	Occurrence	Meaning	Remarks
<b>Mid-sized beech forests and beech-mixed forests</b>	Beech forests with different degrees of admixture of fir and in highlands starting at 1000/1,200 metres above sea level of mountain maple and spruce occur throughout the entire region. In all highlands higher than 1,350 metres above sea level, the beeches start to thin out. At lower altitudes, natural proportion of sessile oak.	Location, exposure, and altitude lead to the differentiation of different beech communities including special such as in the high montane sycamore-beech forest, especially in the Napf forest reserve core area. In the lower Albatal, there are small selective orchid-rich beech forests. Habitat of an endemic earthworm species ( <i>Lumbricus badensis</i> ), legally protected biotope type, habitat type of the SCI Directive, occurrence of species of the SCI guideline	Beech and beech-mixed forests are the most expansive and characterise the landscape of the region. These forests are predominantly managed as municipal or state forests. In the municipalities of Wiesental and especially in Hotzenwald, there are more private forests. There are also strongly silvicultural forests with a high proportion of spruce ( <i>Picea abies</i> ).
<b>Heat-loving forests on shallow rock sites</b>	Hornbeam forests and birch-sessile oak forests selectively occur at special locations especially in the "Utzenfluh" Nature Reserve in Wiesental around Aitern, in the lower Albatal, and the Präg glacial cirques.	Legally protected biotope type	
<b>Biotope types</b>	<b>Remarks</b>		
<b>Wood rush-beech forest (Luzulo-Fagetum)</b>	The most common natural forest species in the region. It ranges from the deepest locations (approx. 450 m above sea level) to approx. 1,300 m above sea level and occurs on low alkaline, moderately nutrient-rich, and moderately dry to fresh sites. It is characterised by the predominance of the beech ( <i>Fagus sylvatica</i> ) with varying admixture of fir ( <i>Abies alba</i> ) in the tree layer and a very sparse ground vegetation with regular occurrence of white wood-rush ( <i>Luzula luzuloides</i> ). In the higher locations, certain spruce admixtures are regarded as natural. The population is closely interlinked with the beech-fir forests in which the proportion of conifers (firs and spruce) is naturally higher.		
<b>Beech-fir-spruce forest (Luzulo-Abietetum)</b>	Legally protected biotope type (55.12) and habit type of the SCI directive (9110)		
<b>Woodruff-beech forest (Galio-Fagetum)</b>	The second most common species of the region in somewhat more favourable locations of varying exposure. It occurs at lower elevations. The beech ( <i>Fagus sylvatica</i> ) dominates the tree layer. However, at increasing altitudes, the fir ( <i>Abies alba</i> ) gains importance. Distinctive species of ground vegetation are white lettuce ( <i>Prenanthes purpurea</i> ), golden dead-nettle ( <i>Lamium galeobdolon</i> ), male woodfern ( <i>Dryopteris filix-mas</i> ), woodruff ( <i>Galium odoratum</i> ), partially dog mercury ( <i>Mercurialis perennis</i> ), and various other ferns. The wood fescue ( <i>Festuca altissima</i> ) is typical and highly prevalent in montane areas. In dry and warm locations (e.g. in the lower Albatal), there are isolated sites rich in orchids. These are characterised by sedges ( <i>Carex alba</i> , <i>C. montana</i> ) and Cephalanthera species (transition to sedge-beech forest).		
	Legally protected biotope type (53.21 53.21) and habitat type of the SCI directive (9130, 9150)		

<b>High montane sycamore-beech forest (Aceri-Fagetum)</b>	Distinctive and highly diverse forest community of the highlands above approx. 1,200 m above sea level in Feldberg area, on Belchen, and in the forests of the Präg glacial cirque. Mountain maple ( <i>Acer pseudoplatanus</i> ) regularly occurs alongside beech ( <i>Fagus sylvatica</i> ). The presence of tall perennials of the sub-alpine zone including Alpine sow-thistle ( <i>Cicerbita alpina</i> ), Adenostyles ( <i>Adenostyles alliariae</i> ), northern wolfsbane ( <i>Aconitum lycoctonum</i> ), and aconite ( <i>Aconitum napellus</i> ). The locations are rich in nutrients. The water balance is fresh to seepage. The spruce can be naturally admixed.  Legally protected biotope type (55.40) and habit type of the SCI directive (9140)
<b>Cleaver-oak-hornbeam forests (Galio-Carpinetum)</b>	Small forest communities in the valleys of Utzenfluh im Wiesental (Aitern) and in lower Alb. As a result of low or medium forest management, these forests have emerged from beech forests and bear witness to a historical forest use. In the region, the oak has a secondary importance. The tree layer is primarily based on hornbeam ( <i>Carpinus betulus</i> ) and beech ( <i>Fagus sylvatica</i> ).
<b>Birch-sessile oak forest (Betulo-Quercetum petraeae)</b>	Small forests on shallow, rocky-stony soils e.g. in "Utzenfluh" nature reserve. Core area of Scheibenfelsen forest reserve  Legally protected biotope type (53.12)

Table 16: Forest ecosystem Part II in the Biosphere Reserve Black Forest

Forest ecosystem II			
	Occurrence	Meaning	Remarks
<b>Ravine forests, boulder forests, scree forests, and flood plain forests</b>	Ravine forests occur in the entire region – in the steep and deep valleys and side valleys.	Characteristic forest communities of humid ravines.  Legally protected biotope type as well as habitat type of the SCI Directive: occurrence of species of the SCI Directive	Forest types at special locations such as blocky, fresh, or humid locations and on steep slopes in humid locations.
<b>Krummholzbusches</b>	This community selectively occurs in avalanche chutes on the north slope of the Belchen and on Herzogenhorn	Occurrence of endangered and rare animal and plant species Legally protected biotope type	Vegetation type in sub-alpine area adapted to the specific site conditions.
<b>Biotope types</b>	<b>Remarks</b>		
<b>Maple-ash ravine forest</b>	In the area, linden-maple forests are only present on a small scale e.g. in humid forest rich in rock grus in the Präg glacial cirques. Maple-ash forests occur in narrow gorges throughout the entire region. These are structured forests with a species-rich shrub layer and a fern-rich herbaceous layer. At higher altitudes, mountain elms ( <i>Ulmus glabra</i> ) appear in the tree layer.		
<b>Maple-ash block forest (Aceri-Fraxinetum)</b>	Natural forest community on the south-facing rock and block-rich slopes. Leaved lime and Norway maple contribute to the structure of the forests. Occurrence in Sengalenhalde in the Präg glacial cirques. Legally protected biotope types (54.10, 54.21), habitat type of the SCI Directive; occurrence of species of the SCI Directive		
<b>Sessile oak-maple-linden block forest (Aceri-Tilietum)</b>			
<b>black alder-ash-floodplain forest (Alno-Fraxinetum)</b>	This forest community occurs in the flood areas of rivers, valley, and mountains. It primarily consists of black alder with admixture of ash in some locations.  Legally protected biotope type (52.30), priority habitat type of the SCI Directive (*91E0), occurrence of species of the SCI Directive		
<b>Grey alder-riparian forest (Alnetum incanae)</b>	Forests with small areas in the flood area of the mountain streams in the higher eastern elevations (Belchen, Feldberg area, Bernauer Alb, and along the Präg Stream in the Präg glacial cirque). These consist of grey alder ( <i>Alnus incana</i> ).  Legally protected biotope type (52.34), priority habitat type of the SCI Directive (*91E0), occurrence of species of the SCI Directive		

<b>Glen willows (<i>Salicetum ap- pendiculatae</i>)</b>	Characteristic wood community in avalanche chutes; occurrence of large leaved willow ( <i>Salix ap- pendiculata</i> ), rowan berry – possible in the high montane sub-Alpine sub special ( <i>Sorbus aucuparia ssp. glabrata</i> ) as well as green alder ( <i>Alnus alnobetula</i> ). In addition, a special bear's breeches sub- species ( <i>Heracleum sphondylium ssp. elegans</i> ) can be found here; this Alpine species only occurs in Belchen and Feldberg
	Legally protected biotope type (42.51)

Table 17: Forest ecosystem Part III in the Biosphere Reserve Black Forest

Forest ecosystem III			
	Occurrence	Meaning	Remarks
<b>Coniferous for- ests with spruce and fir</b>	Distinctive forest type of the highlands that can be found in the high montane and sub-Alpine area in cool-humid sites around the Feldberg summit and on the north slope of the Belchen as well as in Hotzenwald and Wehratal, although on a smaller scale.	Occurrence of rare and endangered species of animals and plants, le- gally protected biotope types, and habitat types and species of the SCI Directive	Forests valuable as a natural reserve. These are partially managed as selection forests and have very distinctive structures. They are primarily the habitat of the endan- gered wood grouse
<b>Bog woodland</b>	Occurrence in the "Taubenmoos" Nature Reserve and in the bogs of Hotzenwald as well as in Scheiben- lechtenmoos in the "Feldberg" Reserve in Menzenschwander valley.	In the area, bog woodlands occur on a small scale in special locations. They are sensitive and endangered habitats that are predominantly lo- cated within nature reserves. Occurrence of rare and endangered species of animals and plants, le- gally protected biotope types, and habitat types and species of the SCI Directive.	
<b>Biotope types</b>	<b>Remarks</b>		
<b>Highland spruce forest (<i>Luzulo- Piceetum</i>)</b>	The occurrence of this highland spruce forest is restricted to the high montane to sub-alpine loca- tions around the Feldberg summit and to a smaller scale on the north side of the Belchen. The tree layer is dominated by the spruce ( <i>Picea abies</i> ), which is indigenous to this location. Beech ( <i>Fagus syl- vatica</i> ) and fir ( <i>Abies alba</i> ) occur to a much lower extent. This forest type forms transitions to related wood rush-fir forest, which is more prevalent. Both forest types differ mainly in the proportion of spruce in the tree layer. In the herbaceous layer, which is quite dense in some areas, there is a simi- lar species composition, including rare species such as stuff club moss ( <i>Lycopodium annotinum</i> ). Legally protected biotope type (57.35) as well as habitat type of the SCI Directive (9410): occurrence of species of the SCI Directive		
<b>Woodruch-fir fo- rest (<i>Luzulo Abie- tetum</i>)</b>			
<b>Bazzania spruce forest (<i>Bazzanio-Picee- tum</i>)</b>	Natural spruce forests that occur in cold air sinks (Taubenmoos Nature Reserve and on a smaller scale in the Präg glacial cirques), on cool screes (Feldberg area and the north slope of the Belchen), or on north-facing cirques in Zastler Loch and Oberen Hotzenwald. The tree layer is dominated by spruce ( <i>Picea abies</i> ). In addition to blueberry ( <i>Vaccinium myrtillus</i> ), the herbaceous layer features nu- merous species of moss and peat moss.		
	Legally protected biotope type (57.20) as well as priority habitat type of the SCI Directive (*91D0), occurrence of species of the SCI Directive		
<b>Uncinate pines- bog forest (<i>Vaccinio uligi- nosi-Piceetum</i>)</b>	The mountain bog pine ( <i>Pinus mugo ssp. Arborea</i> ) occurs in the highland moors of the Black Forest in an upright form. It forms a sparse forest, the herbaceous layers of which include bog bilberry ( <i>Vaccinium uliginosum</i> ) and highland moor species such as sheathed cotton sedge ( <i>Eriophorum vag- inatum</i> ) and peat moss.		
	Legally protected biotope type as well as priority habitat type of the SCI Directive (*91D0), occur- rence of species of the SCI Directive		

Table 18: Grassland ecosystem Part I in the Biosphere Reserve Black Forest

Grassland ecosystem I			
	Occurrence	Meaning	Remarks
<b>Extensively used rough pastures</b>	Extensive pastures are the characteristic use type of the sub-montane to high montane locations of the biosphere reserve. Outside of the forests, this use type covers the largest area. It can be found on plateaus (Belchen, Schauinsland, Feldberg area) as well as on the slopes of the middle layers. Worth noting are the particularly well formed and structured extensive grazing areas near Blasiwald, in the "Wiedener Weidberge" nature reserve, the "Belchen" nature reserve, the "Feldberg" nature reserve, the "Präg glacial cirques" (Scheibenbuck) nature reserve, near Todtnau-Weg, in the municipalities of Ibach and Dachsberg within the "Rüttewies-Scheibenrain" nature reserve and the "Kohlhütte-Lampenschweine" nature reserve.	<p>Outstanding significance within the area and national importance as a use type with a high scenic, historical, and conservational value.</p> <p>Occurrence of pasture trees, especially pasture beeches, as a characteristic element of the extensive meadows of the Black Forest. Pasture beeches are also places of growth of rare lobaria lichens.</p> <p>The occurrence of glacial relicts, legally protected biotope types, and endangered animal and plant species as well as habitat types and species of the SCI Directive.</p>	The extensive pastures represent traditionally collectively used communal pastures, which are property of the municipalities. They exemplify sustainable mountain agriculture. They feature a mosaic of vegetation that reflects the local differences and intensities of the pastures. They are characterised by a special structural diversity, which leads to an above average diversity of plant and animal species. The landscape has been shaped by pasture beeches, screes that bear witness to glaciations, and boulders of various sizes.
<b>Alpine grasslands</b>	Extremely rare plant community of sub-Alpine sites. In the biosphere reserve, it is found exclusively on Belchen. Fragmentary occurrence also on Herzogenhorn.	<p>The only occurrence of Desvaux wood rush (<i>Luzula desvauxii</i>) in Germany.</p> <p>Legally protected biotope type and habitat type of the SCI directive</p>	
<b>Biotope types</b>	Remarks		
<b>Winged broom willow (Festuco-Genistetum)</b>	<p>The winged broom willow is the characteristic plant community of the extensively used pastures of the intermediate altitudes of the Black Forest at around 1,000 metres above sea level. These neglected grasslands are characterised by their exceptional extensiveness as well as structural and local diversity, which results in a great diversity of flora and fauna. Winged broom willows are the habitat of numerous endangered plant and animal species including mountain arnica (<i>Arnica montana</i>) and catsfoot (<i>Antennaria dioica</i>) as well as wart-biter (<i>Dactylis verrucosus</i>) and rock bunting (<i>Emberiza cia</i>). Landscape-shaping pasture beech as well as juniper (<i>Juniperus communis</i>) also occur. In some places, juniper forms small-scale heaths.</p> <p>Winged broom willows: legally protected biotope type (36.42); priority habitat type (*6230) of the SCI directive</p> <p>Juniper heaths: legally protected biotope type (36.30); habitat type (5130) of the SCI directive</p>		
<b>Nardus grasslands (Leontodo helvetici-Nardetum)</b>	<p>The Nardus grasslands of the Black Forest have their own characteristic features. The species composition of these grasslands is unique in Germany. This is expressed in the occurrence of numerous glacial relicts such as Swiss dandelion (<i>Leontodon helveticus</i>), yellow bitterwort (<i>Gentiana lutea</i>), Alpine club moss (<i>Diphysium alpinum</i>), and mountain thyme (<i>Thymus alpestris</i>) on the Belchen, the only place in Germany where this east pre-alpine species occurs. Nardus grasses occur in the highlands of the Black Forest and have been observed as high as 1,000 metres above sea level.</p> <p>Legally protected biotope type (36.41) and priority habitat type (*6230) of the SCI directive</p>		

<b>Desvaux wood rush community (Luzuletosum desvauxii)</b>	Luzula desvauxii Kunth occupied rippled fields of rock on the north slope of the Belchen. This is the only place in Germany where this species occurs.  Legally protected biotope type (36.41) and habitat type (6150) of the SCI directive
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Table 19: Grassland ecosystem Part II in the Biosphere Reserve Black Forest

Grassland ecosystem II			
	Occurrence	Meaning	Remarks
<b>Meadows</b>	Meadows for hay are a defining type of usage of the valleys. With respect to area, the meadow economy on the slopes into the montane locations is somewhat less important. The main focus is on the meadows in Wiesental, Kleinen Wiesental, Bernau valley, and Hotzenwald.	<p>The plant species composition of the meadows not only reflects the intensity of the use but also the various site conditions. Accordingly, there is a variety of meadow formations in the area – from wet to moist meadows at half-bog locations to fresh and dry meadows. This differentiation has resulted in a very high diversity of floral species and, in turn, a high diversity of animal species.</p> <p>The extensively used meadows in the biosphere reserve harbour numerous rare and endangered plant and animal species.</p> <p>Occurrence of legally protected biotope types and habitat types of the SCI Directive</p> <p>Special forms of use have cultural and historical significance (water meadows)</p>	<p>Meadow use is one of the oldest proven use forms in mountain regions such as the biosphere reserve. Since the early middle ages, the meadows have been used for hay. Of note are water meadows as witnesses of a meadow economy for optimising the yield of hay in edaphic and climatically disadvantaged regions such as Hotzenwald bei Ibach.</p> <p>In light of the special European responsibility for the conservation of lowland and mountain hay meadows, the biosphere reserve is particularly important for the preservation of extensively used grazing meadows.</p>

Biotope types	Remarks
<p><b>Lowland grazing meadows</b></p> <p><b>Tall oatgrass meadows (<i>Arrhenatheretum elatioris</i>) in various forms</b></p>	<p>Tall oatgrass meadows in various forms are the most common meadow community in the biosphere reserve. They occur from the planar to the sub-montane levels and gradually fade away into the montane locations. Depending on nutrient and water balance, a distinction is made between a moist formation with species such as the meadow foxtail (<i>Alopecurus pratensis</i>) and great burnet (<i>Sanguisorba officinalis</i>), a typical formation, and a dry formation in sunny and somewhat flat locations. The latter two form colourful meadow communities, which are characterised by species such as meadow salsify (<i>Tragopogon pratensis</i> agg.), spreading bellflower (<i>Campanula patula</i>), and meadow daisy (<i>Leucanthemum incutianum</i>) as well as meadow sage (<i>Salvia pratensis</i>), sainfoin (<i>Onobrychis viciifolia</i>) and orchid species such as blue butcher orchid (<i>Orchis mascula</i>) green-veined orchid (<i>Orchis morio</i>) in dryer formations. In locations favoured by warm conditions, brome-rich oat grass meadows occur. This transitions into semi-arid grassland (<i>Mesobrometum erecti</i>). This is very species rich and rare and occurs on a small scale in the lower Albatal, in Geschwend and Gersbach, and in the "Utzenfluh" Nature Reserve.</p> <p>Legally protected biotope type (33.43) and habitat type (6510) of the SCI directive</p>
<p><b>Mountain grazing meadows</b></p> <p><b>Golden oatgrass meadows (<i>Polygonum-/Geranio-Trisetum</i>) in various forms</b></p>	<p>Golden oatgrass meadows are the meadow community of the montane locations of the biosphere reserve. Depending on nutrient and water balance, the well supplied woodland geranium golden oat meadows with species such as woodland geranium (<i>Geranium sylvaticum</i>), black rampion (<i>Phyteuma nigrum</i>), and globeflower (<i>Trollius europaeus</i>) can be differentiated from bistort gold oat meadows on rougher sites, which feature species such as northern hawk's-beard (<i>Crepis mollis</i>), knappweed (<i>Centaurea nigra ssp. nemoralis</i>), bistort (<i>Persicaria bistorta</i>), and determinative spig-nel (<i>Meum athamanticum</i>).</p> <p>Legally protected biotope type (33.44) and habitat type (6520) of the SCI directive</p>
<p><b>Wetlands and wet meadows (<i>Calthion- and Juncion acutiflori</i>)</b></p>	<p>Wet meadows occur in aquiferous valley and sinks on permanently wet soils. The most common of this is the sharp-flowered rush wet meadow (<i>Crepido-Juncetum acutiflori</i>). Orchid species such as march orchid (<i>Dactylorhiza majalis</i>) and spotted orchid (<i>Dactylorhiza maculata</i>) can be found here. March marigold meadows occur on somewhat more alkaline sites. These perennial-rich stands are characterised by species such as marsh marigold (<i>Caltha palustris</i>), brook thistle (<i>Cirsium rivulare</i>), and bistort (<i>Persicaria bistorta</i>) as well as high perennials such as hairy chervil (<i>Chaerophyllum hirsutum</i>) and white bachelor's buttons (<i>Ranunculus aconitifolius</i>).</p> <p>Legally protected biotope type (33.23, 33.22)</p>
<p><b>Calcareous grasslands</b></p>	<p>Semi-arid grasses (<i>Mesobrometum erecti</i>) selectively occur in a small scale in locations favoured by a warm climate as well as sites where limestone comes to the surface (e.g. lower Albatal).</p> <p>Legally protected biotope type (36.50) and habitat type (6210) of the SCI directive</p>



Table 20: Ecosystem of moors and springs in the Biosphere Reserve Black Forest

Ecosystem of moors and springs			
	Occurrence	Meaning	Remarks
Highland moor Lowland moor Spring swamps	Highland and lowland moors primarily occur in higher areas with higher levels of precipitation. Large contiguous moors are primarily found in Oberen Hotzenwald (Municipalities of Ibach and Dachsberg). All highland moor of the area are located within nature reserves such as the “Taubenmoos” Nature Reserve in the Municipality of Bernau, the “Feldberg” Nature Reserve (Scheibenlechtenmoos im Mennenschwander Tal), the “Kirchspielwald-Ibacher Moor” Nature Reserve and “Horbacher Moor” Nature Reserve in the Municipality of Ibach as well as the “Ennersbacher Moor” Nature Reserve in the Municipality of Dachsberg.	Highland and lowland moors are the habitats of countless rare, endangered, and partially highly specialised plant and animal species. In addition to shaping the landscape, moors are also important from the perspective of nature conservation.  Occurrence of legally protected biotope types as well as habitat types and species of the SCI Directive	In the rainy elevations of the Black Forest, highland moors formed after the last ice age in Geländesenken as a result of peat growth. Lowland moors formed as a result of mineral influence and extensive cultivation. They are among the particularly vulnerable habitat types. Hanging bog are also typical of the area.  With respect to climate protection, moors are also gaining importance as CO <sub>2</sub> sinks.
Biotope types		Remarks	
<b>Colourful sphagnum population</b> <b>(Oxycocco-Sphagnetum)</b>	The colourful peat moss community is the characteristic and most widely distributed plant community of the highland moor in Black Forest. Through the growth of varicoloured species of peat moss, the community is characterised by a constantly changing hummock-hollow complex, which displays a high diversity (also floristic) in a relatively small area. In addition to peat moss species such as <i>Sphagnum magellanicum</i> , <i>S. rubellum</i> , and <i>S. fallax</i> , additional characteristic plant species such as bog rosemary ( <i>Andromeda polifolia</i> ), northern cranberry ( <i>Vaccinium oxycoccos</i> ), sheathed cotton grass ( <i>Eriophorum vaginatum</i> ), and round-leaved sundew ( <i>Drosera rotundifolia</i> ) occur on the extremely dry tussocks. In some highland moors, dwarf shrubs such as heather ( <i>Calluna vulgaris</i> ), lingonberry ( <i>Vaccinium vitis-idaea</i> ), bog bilberry ( <i>Vaccinium uliginosum</i> ), and blueberry ( <i>Vaccinium myrtillus</i> ) occur. The vegetation of the wet hollows is characterised by the occurrence of the bog sedge ( <i>Carex limosa</i> ) or the white beak sedge ( <i>Rhynchospora alba</i> ) along with other species of peat moss.		
<b>Bog sedge-hollow</b> <b>(Caricetum limosae)</b>			
<b>Beak sedge-hollow</b> <b>(Rhynchosporietum albae)</b> <b>(Rhynchosporietum fuscae)</b>			
	Legally protected as biotope type (31.11) and habitat type (7110) of the SCI directive		
	In places, highland moors occur. These have mainly been degraded by dehydration. Here, moor regeneration stages rich in dwarf shrubs have formed both naturally and partially through re-wetting measures.		
	Legally protected biotope type (31.31, 31.32) and habitat type (7120) of the SCI directive		
<b>Mountain pine-highland moor</b> <b>(Pinus mugo-Sphagnetum magellanicum)</b>	The mountain pine-highland moor is characterised by the occurrence of moor pine ( <i>Pinus mugo</i> ssp. <i>rotundata</i> ) together with additional highland moor species. In the project area, the moor pine occurs only in upright form. This rare tree species is endemic to Middle Europe. It relies on highland moor with a largely intact water balance for its continued existence.		
	Legally protected biotope type (31.11) and habitat type of the SCI directive (7110)		

<b>Bulrush-highland moor</b> <b>(Eriophoro-Tri-chophoretum cespitosi)</b>	<p>In the area, bulrush-highland moors occur in higher, rainy locations (sub-Alpine coniferous forest stage). It occurs in Taubenmoos (Municipality of Bernau), a moor characterised by particularly low average temperatures. The determining aspect in the bulrush-highland moors is the bulrush (<i>Trichophorum cespitosum</i>) together with the northern bilberry (<i>Vaccinium uliginosum</i>), the few-flowered sedge (<i>Carex pauciflora</i>), and the poorly developed hummock- Attention should be given to the occurrence of Alpine bulrush (<i>Trichophorum alpinum</i>).</p> <p>Legally protected biotope type (31.11) and habit type of the SCI directive (7110)</p>
<b>Brown sedge-swampts</b> <b>(Caricetum fuscae)</b>	<p>As a result of extensive cultivation, low-growing brown sedge swamps have developed on lime-free, peat-like sites. These are characterised by the occurrence of numerous species of sedge. Characteristic is the occurrence of silvery sedge (<i>Carex canescens</i>), black sedge (<i>Carex nigra</i>), and prickly sedge (<i>Carex echinata</i>) as well as rarer and endangered species such as marsh orchid (<i>Dactylorhiza majalis</i>), marsh cinquefoil (<i>Potentilla palustris</i>), and march trefoil (<i>Menyanthes trifoliata</i>). Attention should be given presence of glacial relicts e.g. velvet bells (<i>Bartsia alpina</i>) and dwarf birch (<i>Betula nana</i>). In the Black Forest, the dwarf birch was thought to be extinct. It was rediscovered in the highland moor area of the Taubenmoos. Heartleaf-brown sedge swamps occur on lime-free yet basic substrates, often in alternation with brown-sedge swamps. This community is characterised by the additional occurrence of species such as bog star (<i>Parnassia palustris</i>), beanweed (<i>Pinguicula vulgaris</i>), low sedge (<i>Carex demissa</i>), yellow sedge (<i>Carex flava</i> agg.), and Davall's sedge (<i>Carex davalliana</i>) in highly alkaline soils. As a special feature, the rare flat sedge (<i>Blasmus compressus</i>) occasionally occurs. This extends to the lime flat moors.</p> <p>Legally protected biotope type (32.11, 31.12) and habitat type of the SCI directive (7230)</p>
<b>Blink-stream corridor</b> <b>(Montio-Philonitidetum fontanae)</b>	<p>Spring swamps in which blinks (<i>Montia fontana</i>) and bog starwort (<i>Stellaria alsine</i>) as well as countless mosses occur can be found selectively in the immediate vicinity of spring outlets or in seepage areas along streams as well as is in the entire area on a small scale. Of note is the occurrence of glacial relicts such as star saxifrage (<i>Saxifraga stellaris</i>) in the spring swamps of the Belchen and Feldberg area. Trickled, stony areas in shady locations are populated by leaved golden saxifrage. Cold-stenothermic springs are habitats of the endemic snail species, <i>Bythinella badensis</i>.</p> <p>Legally protected biotope type (34.30) and priority habitat type (*7220) of the SCI directive</p>
<b>Saxifrage-corridor</b> <b>(Chrysoplenietum oppositifolii)</b>	

Table 21: Ecosystem of the cliffs and scree slopes in the Biosphere Reserve Black Forest

Ecosystem of the cliffs and scree slopes			
	Occurrence	Meaning	Remarks
<b>Open stone and scree slopes</b>	Scree slopes primarily occur in the higher locations of the region.	Scree slopes were formed through glacial processes. Of note is the occurrence of an endemic species of beetle ( <i>Nebria praegensis</i> ) on the Seehalde, a scree slope in the "Gletscherkessel Präg" Nature reserve	Because of the parent material, scree slopes and rocks are of siliceous origin. In certain places, there are veins of calcite in the stone, which has led to species of limestone vegetation.
<b>Natural rock locations</b>	They occur in the "Gletscherkessel Präg" Nature Reserve (Seehalde and Sengalenhalde), in Zastler, and in Wilhelmer Tal. Larger and landscape-shaping rocks primarily occur on Belchen, in Oberrieder Tal, in St Wilhelmer Tal, in Zastler Tal, and on the Utzenfluh. Smaller cliffs are regularly found in the highlands on the Allmend pastures.	The occurrence of legally protected biotope types and habitats of the SCI Directive, occurrence of species of the SCI Directive, habitats of rare and endangered plant and animal species (glacial relicts)	

Biotope types	Remarks
<b>Downy hempnettle</b> ( <i>Galeopsietum segetum</i> )	Pioneer community of open siliceous scree characterised by the occurrence of the species downy hempnettle. They are well represented in the "Utzenfluh" Nature Reserve and the Präg "Glacial Cirque" Nature Reserve.  Legally protected biotope type (21.32) and habitat type of the SCI directive (8150)
<b>Juneberry shrubbery</b>	Characterised by the occurrence of the garden service berry ( <i>Amelanchier ovalis</i> ); fragmented occurrence on the rocks of the south slope of the Belchen as well as the Utzenfluh.  Legally protected biotope type
<b>Community of the brittle bladderfern</b> ( <i>Cystopteridetum fragilis</i> )  <b>Community of the maidenhair spleenwort</b> ( <i>Asplenium trichomanes</i> )  <b>Community of the polypody</b> ( <i>Polypodium vulgare</i> )  <b>Community of the northern spleenwort</b> ( <i>Sileno-Asplenium septentrionalis</i> )	Prevalent crevice and ledge community dominated by various species of fern, the determining factors of which are aridity and sun exposure; example of the small-scale alternating vegetative mosaic in the area. The damp and shady rocks are mainly home to the community of the fragile bladderfern. The shady to half-shady rock locations are home to communities of the black spleenwort and the polypody. The sunlit rocks are populated by the community of the black spleenwort.
<b>Auricula community</b> ( <i>Primula auricula</i> - <i>Hieracium humile</i> )	Rare community of the crevices that selectively occurs on sunny rocks on the Belchen. It features rare species classified as glacial relicts such as auricula ( <i>Primula auricula</i> ) and livelong saxifrage ( <i>Saxifraga paniculata</i> ).  Legally protected biotope type (21.11)
<b>Woodsia community</b> ( <i>Woodsia-Asplenietum septentrionalis</i> )	Selectively occurring on the south-facing rocks in the "Utzenfluh" nature reserve. A rare southern woodsia ( <i>Woodsia ilvenses</i> ) occurs here. It is only found in a few other locations in Germany.  Legally protected biotope type (21.11) and habitat type (8220) of the SCI directive
<b>Rock campion community</b> ( <i>Sileno-Sedetum annui</i> )	This community occurs on the rock ledges and also has a number of rare, glacial relict species such as rock campion ( <i>Silene rupestris</i> ) as well as rare stonecrop species such as annual stonecrop ( <i>Sedum annuum</i> ) and leafy stonecrop ( <i>Sedum dasyphyllum</i> ).  Legally protected biotope type (21.11) and habitat type (8230) of the SCI directive

Table 22: Ecosystem of waters in the Biosphere Reserve Black Forest

Aquatic ecosystems			
	Occurrence	Meaning	Remarks
<b>Running waters</b>	In the region, running waters are a widespread habitat type, which have shaped and continue to shape the landscape. They occur in both forests and in open country. They traverse the entire biosphere reserve from the highest elevations into the valleys. Larger rivers include the Wiese and the Kleine Wiese as well as the Wehra and the Alb.	Depending on altitude, slope, and substrate, running waters harbour their own biological communities. They are habitats for highly specialised species of animals and plants.  In the area, the headwaters feature undisturbed river dynamics with natural biotopes and biological communities. They partially harbour rare and endangered animal species such as clawed crayfish and stone crab, bullhead, and brook lamprey as well as the European beaver in the Alb.  Legally protected biotope type, habitat type of the SCI Directive, occurrence of species of the SCI Directive.	In the biosphere reserve in the area of Feldberg, Belchen, and Schauinsland, numerous mountain rivers originate. These drain in the direction of High Rhine or Upper Rhine.
<b>Still waters</b>	Still waters are relatively rare in the biosphere reserve. Of particular note is the Nonnenmattweiher within the nature reserve of the same name as well as the Klosterweiher in Oberen Hotzenwald in the "Friedrich-August-Grube" nature reserve.	The mainly oligotrophic standing waters mainly feature well formed siltation zones and areas with floating leaf vegetation (e.g. on the Klosterweiher). The Nonnenmattweiher is characterised by a floating peat island with fenlands and transitional moors.  Occurrence of legally protected biotope types, habitat types, and species of the SCI Directive	The still waters of the area are primarily of anthropogenic origin. They often used to be used as extinguishing ponds or fishing ponds as well as reservoirs in connection with power generation and electricity storage (Wehrtal). These are not considered further here.
<b>Biotope types</b>	<b>Occurrence</b>		
<b>Natural running water</b>	The region exclusively contains highland rivers. The larger rivers such as the Wehra, Alb, and Kleine Wiese also show characteristics of mountain rivers. They are fast flowing and do not meander to any great extent. The bed consists of boulders as well as coarse sand and gravel substrate. In places, a vegetation from occurs from water mosses (e.g. <i>Fontinalis antipyretica</i> ). Noteworthy is the occurrence of the clawed crayfish in the southern area of the SCI "Weidfelder bei Gersbach und an der Wehra". This species of crab occurs only in the south west of Baden-Württemberg and reaches its north-eastern distribution boundary.  Legally protected biotope type (21.11) and habitat type (3260) of the SCI directive		
<b>Oligotrophic and dystrophic waters</b>	The Nonnenmattweiher in its present form was created by the damming of a former cirque lake. In the Weiher is a peat island with flat and transitional moor vegetation. Here, the south-west occurrence of the inundated club moss ( <i>Lycopodiella inundata</i> ) is to be noted.  The Klosterweiher also originated through the damming of a cirque hollow and served as fishing waters of the St Blasien Monastery. This pond features an outstanding and unique (for the region) silting zone with endangered plant species including small bur reed ( <i>Sparganium minimum</i> ).  Legally protected biotope type (13.20, 13.80) and habitat type (3130) of the SCI directive		

#### 14.1.2 Conditions of the trends of the aforementioned ecosystems and area use types

The rough grass vegetation of the pastures is a particular value factor for the region. As a rule, the cultivation of these areas is rather extensive (i.e. the minimum stocking density required for agricultural promotion is sometimes barely reached). To preserve the rough grasses and the value-adding species, a

minimum degree of maintenance, which is not guaranteed on all pastures, is required. On such pastures, the number of trees is increasing, thereby increasing the threat of reforestation.

There are also pastures that are at risk because of intensification (e.g. the excessive use of manure). This leads to direct locational changes and/or the endangerment of adjacent habitats (e.g. moors) as a result of leaching. Because of the intensification, the habitats of rare plant and animal species are affected and placed at risk.

In numerous moors in the area, numerous amelioration measures (e.g. drainage ditches) were taken to improve the possibilities of use. However, these led to an impairment of the moor habitats. Such measures can be partially reversed, thereby contributing to the revitalisation of the original moor functions.

Most of the forests are used commercially. The regular harvesting of forests can have adverse effects on the habitats of value-adding species (e.g. through the loss of old trees).

The non-forested highlands (e.g. of the Belchen and Herzogenhorn) are habitats for plant and animal species considered to be glacial relicts that were originally found in the Alps and/or Northern Europe. Because of global climatic changes, which are connected with rises in temperature and seasonal changes in rainfall patterns, these habitats are at risk.



Figure 25: Rough in Präg (Municipality of Todtnau). As part of the “Feldberg-Belchen-Oberes-Wiesental” nature conservation project, in 2006 trees were removed from the rough grasslands that were increasingly overgrown with spruces. © Regional Authority of Freiburg



### 14.1.3 Protective regulations for the core areas and the bufferzones

The core areas of the biosphere reserve were designated as forest reserves. These formal protective categories ensure the flow of natural development processes, which are influenced by humans. According to the accompanying enactment, any actions that counteract this purpose are forbidden.

The core areas are mainly surrounded by forests and protection areas. Any external disturbance to the core areas is therefore kept to a minimum.

The majority of the non-forested buffer zone is part of the European Natura 2000 network. The Natura 2000 areas were designated to safeguard habitats and species with communal importance. These SCI mainly include nature reserves that have been established by the Federal State of Baden-Württemberg to safeguard their protective function and biodiversity and in which all uses are subordinate to this protective purpose.

### 14.1.4 Indicators or data for evaluating the efficiency of the measures/strategies

As part of the official grassland mapping and the surface monitoring of Natura 2000 sites, the area sizes and quality (trophic condition, vegetation aspect) of the rough grassland and pastures worthy of protection as well as the lowland and mountain hay meadows is monitored.

Data from the environmental monitoring network (deposition monitoring network, soil condition, forest reserve monitoring, water condition) also serve to identify changes to the landscape and optimise strategies.

## 14.2 Level of species and ecosystem diversity

### 14.2.1 Important groups of species or species

In agricultural open land, especially the rough grasslands of the communally cultivated pastures (former Allmend pastures), plant species on rough terrain (e.g. arnica (*Arnica montana*), catsfoot (*Antennaria dioica*), and vanilla-scented (bog) orchid (*Leucorchis albida*)) are of particular importance. The form the plant community of the winged broom willows and the Swiss dandelion-Nardus grasses in the highest locations. In addition, special animal species that are dependent on the vegetation structure occur here. Among them are butterflies such as the niobe fritillary (*Fabriciana niobe*), large blue (*Maculinea arion*), and purple-shot copper (*Lycaena alciphron*) or locusts such as the wart biter (*Decticus verrucivorus*) and the mountain grasshopper (*Stauroderus scalaris*). In addition, the rock bunting (*Emberiza cia*), alpine citril finch (*Carduelis citrinella*), and the meadow pipit (*Anthus pratensis*) are important and characteristic bird species of the meadows.

Pasture beeches are formative landscape elements of the common pastures. These trees originated through the browsing of grazing cattle and are also the habitat of rare communities of lichen.

Noteworthy is the occurrence of glacial relicts (both plant and animal species). The primarily occur in the highlands and on special sites such as scree slopes, avalanche tracks, spring swamps, and moors. These species, which include Alpine club moss (*Diphasium alpinum*), velvet bells (*Bartsia alpina*), stinking primrose (*Primula hirsuta*), rock campion (*Silene rupestris*), and Desvaux woodrush (*Luzula desvauxii*) feature an Arctic-Alpine area of distribution. This sometimes involves species that have developed into area-specific ecotypes. In 2003, the Präg ground beetle (*Nebria praegensis*) was detected in a scree (Seehalde in Todtnau-Präg) and is considered an endemic species. The giant earthworm of Baden (*Lumbricus badensis*) also only occurs in the Southern black forest as does the freshwater snail of Baden (*Bythinella badensis*).

From the perspective of natural conservation, the highland moors are also of high value as they are the habitats of numerous rare species of plants and animals. Worthy of mention are the Paleno sulphur (*Colias*

*palaeno*) and the azure hawker (*Aeshna caerulea*), which only occur in the few moors of the area. With respect to climate protection, moors also act as CO<sub>2</sub> sinks.

The area is important for cave-dwellers and bird species that depend on a high proportion of dead and waste wood. These include species such as the northern three-toes woodpecker (*Dendrocopos tridactylus*), the black woodpecker (*Dryocopus martius*), the boreal owl (*Aegolius funereus*), and the Eurasian pygmy owl (*Glaucidium passerinum*). In particular, the biosphere reserve is important for forest species with boreo-Alpine distribution. These include the wood grouse (*Tetrao urogallus*), which occurs in coniferous forests and is the topic of extensive conservation efforts.

The area is also home to numerous species of community interest. This includes numerous bat species, the yellow-bellied toad (*Bombina variegata*), the warty newt (*Triturus cristatus*), the brook lamprey (*Lam-petra planeri*), the European bullhead (*Cottus gobio*), and the river crayfish (*Austropotamobius pallipes*). Various moss species of the SCI Directive also occur. *Dicranum viride*, *Buxbaumia viridis*, and *Orthotrichum rogeri*, among others



Figure 26: The giant earthworm of Baden (*Lumbricus badensis*), which is endemic to the Feldberg region. © Naturschutzzentrum Feldberg



### 14.2.2 Threats

The areas that are most important from the perspective of nature conservation are often steep slopes or areas that are difficult to reach with machines. Such areas are threatened through lack of care/cultivation. This is connected with socio-economic conditions as well as the difficult terrain. With respect to their temporal constraints, part-time farmers must use machines as effectively as possible. Especially in difficult terrain, machines should only be used to a limited extent, and manual labour (machine-based) should take precedence. The situation is reinforced by an insecure farm succession and the reduced efficiency of ageing farmers.

In contrast, the areas suitable for the use of machines (especially with regard to the slope) are used as optimally as possible. This can lead to the profit-oriented cultivation of these areas. As a result of this intensification, the value-adding plant and animal species are placed at risk.

The moors are still partially disturbed as a result of drainage. These mainly oligotrophic ecosystems are eutrophicated by the discharge of nutrients. The eutrophication through nitrogen emissions from the air also threatens the rough meadows and pastures in the biosphere reserve.

### 14.2.3 Indicators and measures for monitoring the species and their threats

- Agricultural land: Survey of high nature value (HNV) farmland indicator
- Natura 2000 (SCI habitat type and SCI species; SPA species): Management plans/reporting requirements every 6 years
- State species protection programme for highly endangered animal and plant species
- Grouse monitoring of the Forest Research Institute
- Permanent observation areas (vegetation) of the State Institute for Environment, Measurement and Nature Conservation
- Logging of species as part of the "Feldberg-Belchen-Oberes Wiesental" Nature Conservation Project.
- Permanent academic plots (Flüh Forest Reserve)
- Forest structure images of the Forest Research Institute in forest reserves (e.g. core areas in the Napf Forest Reserve)
- Post evaluation of the NSGP (2017)
- Forest management works

### 14.2.4 Measures currently taken to reduce pollution

- State agri-environmental programme (FAKT) and maintenance agreements and orders according to land stewardship policy
- Maintenance actions of the conservation/forestry administration (e.g. within the nature reserve areas)
- Measures under the moor protection program
- Species protection programme of the Federal State of Baden-Württemberg
- Baden-Württemberg Grouse Action Plan

### 14.2.5 Measures planned to reduce pollution

A central goal of the Biosphere Reserve Black Forest is the continuation of the care measures that have been initiated by both projects (Feldberg-Belchen-Oberes Wiesental Nature Protection Project; LIFE Project of Oberer Hotzenwald). This particular concerns the keeping the landscape open.

Both structural and financial strategies are required. From a structural perspective, new cooperation models for the common management of the pastures must be found. This also includes the further provision of infrastructure (e.g. fence systems, livestock shelters, mobile milking points, stables, haylofts, and cattle troughs).

On the other hand, subsidies for landscape conservation measures must be used extensively in order to be able to financially compensate for the lack of profitability of the extensive grazing.

It is necessary to improve the overall working conditions and improve the marketing and added value of regional products so that the commitment to part-time farming is worth it.

The rewetting measures in moors and the promotion of naturalness in the forest should also be continued.

When creating the conceptual framework, policy packages will be concretised, and permanent solutions will be worked out.

## 14.3 Genetic diversity

### 14.3.1 Important species and breeds

The preservation of biological diversity is recognised as necessary at the national and international level.

So far, the genetic potential of plants has only been investigated to a very limited extent. Here there is a large reservoir for the breeding of crops and the production of medicinal products. Many plants such as arnica and buckhorn plantain contain substances that can be used in medicinal products.

The permanent safeguarding of native breed population is important for preserving genetic diversity. This genetic resource can also be used to “refresh” other breeds.

The milk production, meat production, and towing capacity of the native breeds were generally linked to the requirements of the natural environmental conditions<sup>4</sup>. Today, individual characteristics are largely selected for. The native breeds can no longer compete with those bred for milk or meat production. Towing capacity no longer plays an important role.

Because of the difficult environmental conditions such as scarce food and an adverse climate, undemandingness and robustness were important selection criteria. In the area of the former monastery in St Blasien in the current biosphere reserve, Hinterwälder cattle developed as a genetically distinct breed.

Hinterwälder cattle have their main distribution in the biosphere reserve. In 2012, there were only 1,694 suckler cows and 527 milk cows. The breed has therefore been classified in Category II (endangered) according to the red list of the Society for the Conservation of Old and Endangered Livestock Breeds. The breed was most widespread at the beginning of the 20th century. In 1904, as part of a livestock census in the former Grand Duchy of Baden, 30,607 Hinterwälder cattle were counted. The first targeted breeding began in 1859 in Schopfheim. In 1889, the Hinterwälder breeders organised a pedigree breeding association in Schönau, which now lies in the centre of the current biosphere reserve.

Hinterwälder cattle are described as a “Black Forest race” with “a deer-like appearance, a finely proportioned round physique, a thin neck, short legs, fine hair, and thin, round, clean, and supple horns” (Hennisch, 1856; cited in Wanke, 2008).

Because of the remoteness of the main breeding area, the characteristic properties of the Hinterwälder cattle, which had emerged in adaptation to the extreme feeding and housing conditions, are preserved. There has hardly been any displacement breeding in favour of other features. The Hinterwälder cattle are now considered the smallest Central European cattle breed. They have a height at withers of 115 to 125 cm and a weight of 380 to 480 kg. The head is mostly white, the remaining fur has light yellow to dark red-brown spots on a white background.

Many rough pastures and pastoral mountains in the biosphere reserve were traditionally grazed by Hinterwälder cattle. Because of their robustness, their low weight, excellent food conversion, and suitability for pastures, they are adapted to the climatic and site conditions in the biosphere reserve. Although the milk yield is only approx. 3,5000 kg/year, it is still relatively high considering the low weight. The milk cows also have a high life expectancy and can continue to produce milk for many years despite low feed quality. Calving also has above average success. The meat has a high quality.

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<sup>4</sup> Diethildis Wanke (2008): On-Farm-Management Konzept zur InSitu-Erhaltung der Vielfalt landwirtschaftlicher Nutztierassen am Beispiel des Hinterwälder Rindes im Südschwarzwald.

Hinterwälder cattle represent a unique selling point for the biosphere reserve. Increased efforts should therefore be taken to achieve a sufficiently large population so that this cattle breed can be permanently safeguarded. Because of its properties (especially robustness and undemandingness), Hinterwälder cattle are well suited for use in certified organic farming (Wanke 2008).



Figure 27: Hinterwälder cattle. A native breed of the Southern black forest, which is well adapted to barren and steep slopes. © Peter Schach

The Black Forest Horse is a cold-blooded horse with a slight to moderate frame, a striking head, a short and strong neck, strong muscles, and hard hooves. This old horse breed was specially bred for the , hard work and unfavourable conditions in the Black Forest . There are currently 79 stallions and 979 mares reported (as of 2013). Like the Hinterwälder cattle, it is also included in the red list of endangered native breeds in Germany.



Figure 28: Two black forest horses harnessed to a sled. © Peter Schach

**Black Forest goat**

In 1866, the term “Black forest goat” first appeared in the herdbook of the Tuttlingen Goat Breeding Association. In 1934, the designation disappeared, and it was classified under the breed “Bunte Deutsche Edelleitziege”. The black forest goat is a regional breed adapted to the environmental conditions in the Black Forest. This should be increasingly considered in breeding.

**14.3.2 Threats to these species or breeds**

The industrialisation and mechanisation of agriculture also established a specialisation in the biosphere reserve. This led away from the three-purpose breed (milk production, meat production, and towing capacity) and towards a one- or two-purpose breed. As a result, the old native breeds such as the Hinterwälder cattle and the Black Forest Horse were gradually displaced. Nevertheless, the modest Hinterwälder cattle are increasingly being used outside of the Southern black forest as an “extensive breed”.

**14.3.3 Current or planned indicators and measures for monitoring**

- Agricultural land: Survey of high nature value (HNV) farmland indicator
- Post evaluation of the nature conservation project (2017)
- Evaluation of the herd registry; collaboration with the breeders association

**14.3.4 Measures currently taken to reduce strain**

Since the beginning of the 1990s, the husbandry and breeding of the Hinterwälder cattle has been supported by subsidies to preserve the breed as a genetic pool. As a result, this powerful, robust and extensively usable cattle breed will also be available for future use.

An intensive marketing of milk and meat products from both Hinterwälder cattle and goats increases the economic attractiveness of these traditional domestic animal breeds.



## 15 DEVELOPMENTAL FUNCTION

### 15.1 Potential for the funding of socio-culturally and ecologically sustainable economic and human development

#### 15.1.1 Unique selling points and essential characteristics as a model region for sustainable development



Figure 29: Diagram of the unique selling points and essential characteristics of the Biosphere Reserve Black Forest using the example of Präg. © ö:konzept, own representation

The Biosphere Reserve Black Forest is characterised by various factors that make it a model region for sustainable development (Figure 29). On one hand, unique characteristics that set the area apart from other areas play an important role. On the other hand, the area combines features that are typical of rural areas or central European low mountain ranges in a relatively small area. The strategic management of these can serve as an example for similar regions.

The following unique selling points and essential characteristics are important:

- Richly-structured, glacially-influenced mountain landscape with large altitude and climate gradients.

The Riss and Würm glacial periods drastically influence the landscape. Steep slopes and wide U-shaped valleys, rock massifs, moraine hills, cirques, and moors are just some of the elements that characterise the landscape. Peri- and post-glacial phenomena (e.g. deep V-shaped valleys) also characterise the landscape. The wide-area Danubian landscape in the East and the far more rugged and profound Rhenish landscape in the central and western areas simultaneously combine extremely diverse locations and elevations ranging from colline in the extreme South and North of the biosphere reserve to extensive upper montane areas with special sub-Alpine locations.



- Highly diverse ecosystems with associated plant and animal communities

The diverse landscape gives rise to a large diversity of both near-nature and culturally-influenced ecosystems, which are highly valuable from the perspective of natural conservation. Both near-natural mixed forests of the sub-montane to high montane altitudinal belts, which feature diverse populations of coniferous trees and large-scale rough pastures and meadows, which have been kept open as a result of cultivation, are represented. There are also many moors and hydrologically shaped habitats. There are also ecosystems with extreme conditions on exposed, rocky, and heavily sunlit sites or cold and shady sites. This diversity of ecosystems creates a high biodiversity. Well over 400 plant and animal species (some of which are endemic, relicts, or classified as endangered) inhabit the region of the biosphere reserve. These must be protected in order to achieve stable populations.

- Jointly managed areas (Allmend pastures, cooperative pastures)

The once widespread tradition of Allmend pasture cultivation is now only rudimentary. Many former Allmend pastures have been permanently leased by the communities. Nevertheless, the spirit of the Allmend pasture tradition is reflected in the landscape – many former Allmend pastures continue to be extensively cultivated, and in some communities, the tradition is still practised. The communal farming allows marginal land to be kept open without fertilisation. This necessitates the high conservational and touristic value of this area. The communal farming also creates a cohesion and a sense of tradition, which can serve as a driving force for the development of the region.

A modern example of communal economic activities are energy cooperatives in which citizens come together to operate the power grid and power generation plants in the legal form of the cooperative. An important catalyst for this were the referendums on atomic energy in the City of Schönaue, which were held as a consequence of the nuclear reactor disaster at Chernobyl.

- Long and special settlement tradition

The Black Forest is not an “old-settlement site”, although it is disputed when the first settlement took place. With relative certainty, it can be said that the Germanic tribe of the Alemanni penetrated the outlying areas of the Black Forest, which had been settled by the Celts, starting in 500 AD. Numerous Celtic toponyms such as Belchen and Dreisam bear witness to the Celtic culture. Abnoba, a mother goddess of Celtic religion, personified the Black Forest. In the 8th and 9th centuries, monasteries were founded by missionaries. However, real development in the form of transport routes only took place in the 18th and 19th centuries. The inhabitants of the Black Forest lived a secluded life, especially because of the snowy winters. They responded to the local conditions with special architecture (the typical Black Forest farmhouses with widely projecting hipped roofs, which were ideally suited to the snowy conditions; Figure 11) and communal customs (costumes, festivals, carnival, and handicrafts), which have continued to this day and which should be preserved.

- Long tradition in water use and management

The large availability of water (rainfall often far greater than 1,500 mm per year) and the high gradient led to the use of water as a source of energy. As a result, many commercial enterprises, especially those in the textile industry, settled in the Black Forest. The energy from hydro-power was an important factor. In the Wiesental, textile production is closely linked to Switzerland. Later, several dams were built as pumped storage plants. These are adjacent to the biosphere reserve (Hornbergbecken, Schluchsee). The Black Forest also plays an important role as a water supply source for the metropolitan region of Freiburg and the settlements on the western and eastern edges of the Black Forest.

- History of mining

The Biosphere Reserve Black Forest has a centuries-old underground mining tradition. This has manifested itself in many culturally and historically important mining sites (especially mine shafts). This resulted in lively traditional customs that were practised until the 1950s. In the meanwhile, mining has been all but discontinued. Nevertheless, the mining sites (as didactic mines) and customs still remain and should be preserved.

- Economic tradition and innovation

Although the accessibility to the Southern black forest was restricted, an amazingly diverse and innovative manufacturing industry was established in the biosphere reserve. The traditional mainstay was the textile industry. Textiles were sometimes even produced in the monastery in St Blasien, although the industry was concentrated in the Wiesental. The Swiss were particularly active in the industry. They founded companies in the neighbouring Black Forest in order to circumvent German tariffs.

The Second World War, and the globalisation that took place in the 1950s increasingly hindered the economically viable production of textiles. The region therefore had to develop new lines of production. This process of “conversion” continues as before.

Brush manufacturing – from the production of simple brushes to the construction of complex machines for brush production – continues to be a special feature of the region. The region has produced innovative and sustainable enterprises that can compete at the international level.

Tourism has a long tradition in the area and is in a high qualitative state.

Forestry, the wood processing industry, the high proportion of organic agriculture, and the numerous farms that have voluntarily renounced pesticides and chemical fertilisers are the traditional mainstay of the regional economy and should be promoted because of their importance for landscape conservation and regional identity.

There are also various initiatives that can be considered forerunners to a self-sufficient and sustainable energy supply.

The essential features listed above already indicate where the challenges of the region lie. The way in which these challenges are met can serve as an example for other regions.

The following **challenges** play a large role in the biosphere reserve:

- Demographic change

The population density is approx. 63 inhabitants/km<sup>2</sup> and is stagnating. Young families find it difficult to establish themselves in rural areas and prefer to move to the agglomerations at the edge of the Black Forest. Younger people are becoming less interested in the agricultural management of the land. Productive forces that could help shape the region are decreasing, while the number of people requiring help (i.e. seniors) is increasing. This is reflected in the rising average age of the population in the biosphere reserve.

- Infrastructure weaknesses of rural areas

The low population density and the difficult development of the mountain illustrate the problems of a economically underdeveloped region with insufficient basic services (goods for medium-term needs, medical care, education and culture, public transport, and Internet connection). These problems increase the demographic shift to an ageing society, which is also the cause of these problems. A vicious cycle

- Climate change

Warmer winters with less snow as well as hot and dry summers will also increase in the region. It is certain that tourism in particular will change. Because of climate change, there may not always be sufficient snow cover. This will change winter tourism in other parts of the biosphere reserve. On the other hand, summer tourism in the biosphere reserve can gain importance because people require alternatives to the hot regions in the lower-lying areas. The adjacent Upper and High Rhine is characterised as the hottest region in Germany. The agglomerations of Freiburg, Basel, and Lörrach are also found here.

There are early indications that the water supply will no longer be guaranteed for the entire year because even reliable springs in the highlands have temporarily dried up.

- Energy supply and consumption

In light of climate change and the scarcity of fossil fuels, it is necessary to make the conversion to sustainable energy. Energy consumption plays only one of many roles. Energy-efficient constructions with insulation, efficient production methods, and an energy infrastructure based on short distances are equally important. There is a great deal of development potential here.

- Changes to the landscape

Because of increased competition from more favourable agrarian areas and cheap imports from abroad, the decreased interest in the cumbersome management of the steep slopes, and the constant threat of succession by wild plants, meadows and pastures are succeeding to forests. More arable locations are at risk of being intensified as a result of more extensive fertilisation and thereby losing their conservational value. The combination of these factors also has ramifications on the landscape and possibly also on tourism.

The goal of the biosphere reserve is to promote the sustainable socio-cultural and ecological development of the region. Based on the comparison between the unique selling points and main characteristics of the region (strengths and chances) as well as the challenges of the region, there is developmental potential, which can also serve as an example for developments in other regions. This potential can also be found in the goals of the biosphere reserve (Section 13.1).

The following **development potential** are to be singled out:

- Development of a common identity

The multitude of traditions, especially the tradition of the Allmend pasture and the local ties of the population harbours a spiritual source of power for the development of a common identity. The region of the future will only be able to tackle challenges together. Socio-cultural and socio-economic measures for creating individual identities should be initiated and implemented with the help of the office of the biosphere reserve in order to jointly work out model solutions.

- Increase in the creation of regional value

The foundations for a regional value chain preexist. There are sufficient resources for products from agriculture and forestry. There are already structures that can maintain the value creation in the region (e.g. handicrafts, commercial enterprises, marketing organisations, tourism facilities, and the Southern black forest Nature Park). This system should be optimised and further development so that the rate of the creation of value in the region is increased and the rural area become a more attractive location.

In addition to agriculture and forestry, attention is focussed on businesses (which develop innovative products based on close regional interconnection) as well as the tourism industry (which develops sustainable concepts taking into consideration the diversity of the landscape and communities) so the all – including nature – can benefit. There are already many good approaches – there is a high level of tourism in the Black Forest, and this can serve as a model for other regions.

- Keeping the landscape open

The exemplary and pioneering cultivation model should ensure that the valuable meadows and pastures continue to be used and preserved, thereby remaining attractive for humans and nature. To this end, co-operative models that are flanked by financial support schemes can be developed. The maintenance of an open landscape can also be indirectly promoted. The deciding factor is exciting the people in the region and creating added value. Agricultural products (especially meat and milk) must be marked as economically as possible in order to increase the appeal of keeping the landscape open. The region can thus serve as an example for other regions with low-yield soils.

- Expansion of municipal-state-region relationships

The proximity to the metropolitan region of Freiburg as well as Switzerland and France afford a diverse cultural and economic interconnection. Goods flow, experiences are shared, cooperation in the border region is enhanced, and cross-border purchasing power is brought into the region. The Biosphere Reserve Black Forest exemplifies how this can be achieved in harmony with nature, the landscape, and society.

- Optimisation of rural areas

All development potential ultimately results in the goal of sustainably stabilising the rural area. This includes the aforementioned potential as well as the good approaches to an optimised public transport system (the KONUS card: free travel in the Southern black forest with all modes of public transport; E-mobility) as well as cooperative retail models or inter-communal solutions in health care. These can be expanded and improved with new ideas and solutions.

- Exploration, deepening, and documentation

The proximity to important research facilities provides a conservational, ecosystemic, and socio-economic basis for a sustainable development and further increases the understanding of the relationship between humans and the environment. This makes a considerable contribution to the process of education for sustainable development.

### 15.1.2 Previous changes and successes

For the relatively young biosphere reserve, important developments were initiated by the six-year consultation process. This created an unprecedented consciousness for regional togetherness. The reflection on a common identity was a major step.

When the “Feldberg-Belchen-Oberes Wiesental” Nature Conservation Project was completed in 2009, a socio-economic evaluation was performed. This primarily investigated the attitudes and values of participants and visitors. In conclusion, because of the numerous measures and especially the constant communication, the basic attitude towards conservation measures is very positive. This realisation led to the regional need for follow-up structures to continue this process. The idea for the biosphere reserve was thus born.

In the “Oberer Hotzenwald” LIFE Project (2005–2011), which was co-financed by the EU, measures were undertaken to support the plant and animal species of the “Oberer Hotzenwald” SCI region. Approximately €1.7 were invested in the project. Around 80% of this 2,100 ha project area is located in the Biosphere Reserve Black Forest.

Both projects had the goal of increasing the protection function of the area. At the end of the project term, both projects will be evaluated using various factors.

A more important catalyst in the Southern black forest is the Southern black forest Nature Park, which has initiated many projects on sustainable development. The biosphere reserve can use these as inspiration and re-focus its objectives.

The positive attitudes concerning the landscape, their meaning, and the region can be incorporated into the biosphere management. The sustainability ideas can also be put into a broader base that also includes macroeconomic elements. The desire of the population of the biosphere reserve to participate in the process of sustainable development is apparent.

## 15.2 Tourism

### 15.2.1 General description of the significance of tourism

#### a) Tourist facilities and attractions

The Biosphere Reserve Black Forest has many tourist facilities and attractions in municipal areas which are completely or partially located in the biosphere reserve. The area is characterised by the 1414-m-high Black Forest mountains. Some of these are quite well known as vantage points. These include the Schauinsland (height: 1,284 metres above sea level) at Freiburg. This features ski lifts, toboggan lifts, Rodellifte, a cable car with mountain station and lookout tower, an exhibition mind, teaching and themed trails, and a local history museum. Mount Belchen, which is the most famous lookout mountain of the Black Forest, is also located in the biosphere reserve. The Belchen (height: 1,414 metres above sea level) has the highest relief energy of a mountain of the Central German Uplands. It also features a cable car, ski lift, and cross-country ski trails. It boasts the best views of the Alps, the Jura Mountains in Switzerland, and the neighbouring Vosges in France.

Other tourist attractions include the Todtnauer and Menzenschwander Falls, the Schluchsee, which is directly adjacent to the biosphere reserve and is the largest recreational lake in the Black Forest, and smaller mountain lakes such as the Nonnenmattweiher. The biosphere reserve also offers moors such as the Ibacher-Moos highland moor or the “Horbacher Moor” Nature Reserve in Dachsberg.

Another highlight is the Wehraschlucht, which is part of the Schluchtensteig, a popular hiking trail. The Albtschlucht is also a special landscape feature. A new premium hiking trail, the “Albsteig”, is planned.

Because of the attractive altitude and the high relief energy of the entire biosphere reserve, there are numerous winter sport facilities such as ski lifts, cross-country ski trails, winter hiking paths, snow shoe paths, toboggan runs, and ski jumps. Strongholds of winter sport in the biosphere reserve include the Municipalities of Bernau and Oberried, and Schönau as well as Todtnau.

With respect to health tourism, the Radon Vital thermal springs in St Blasien-Menzenschwand is one of many special features. Further attractions are the family recreational facility Steinwasenpark in Oberried and the Hasenhorn year-round toboggan run with bike park in Todtnau. In this context, the game reserve in Zell im Wiesental is also worth mentioning.

Numerous museums for art, customs, and traditions complete the picture of an attractive tourist region. There are important museums in Bernau, Dachsberg, Hausen, Häusern, St Blasien, Ühlingen-Birkendorf, Weilheim, and Wembach. Also worth visiting is the traditional jam production in Utzenfeld near Schönau. In addition, power station exhibits in Häusern and a historical sawmill in Fröhnd can be toured. In Bernau, there is a permanent exhibit on the tradition of wood. In Höchenschwand and Schluchsee, there are natural sport and recreational facilities for group and corporate events. Many churches and monasteries can also be visited. Probably the most famous monastery in the Black Forest is the one in St Blasien, which features the largest dome structure in Germany. An extensive list of the tourist attractions in the municipalities in the proposed biosphere reserve can be found in the tables in the Annexes.

#### **b) Types of tourism**

With respect to the expectations of visitors to the biosphere reserve, naturalist tourism featuring hiking, cycling, and winter sports are in the foreground. Health-related tourism and family vacations are also important.

##### **Hiking**

The main issue for the biosphere reserve is hiking tourism. Twelve sites of the biosphere reserve have been designated as "excellent hiking places" by Black Forest Tourismus GmbH. The Westweg hiking trail, which extends 285 km through the Black Forest, plays an important role in the biosphere reserve. Twelve localities of the biosphere reserve are located along the hiking trail. The Schluchtensteig hiking trail, which was established in 2008, is tangent to seven localities of the biosphere reserve.

In six localities in the biosphere reserve, there are five shorter hiking paths with a total length of around 70 km.

The basis of the certified trails is the well-developed network of marked hiking trails of the Black Forest association. In Germany, it is exemplary with respect to its trail markers, its trail conditions, and its trail maintenance. In nearly all localities of the biosphere reserve, there are local groups of the Black Forest hiking association that voluntarily maintain the trails and trail markers as an important infrastructure.



Table 23: Premium hiking trails

Name of the path	City	Length km
<b>Hochtalsteig</b>	Bernau	15.5
<b>Turmsteig</b>	Bernau, Todtnau	21.6
<b>Geißenpfad (Goat path)</b>	St Blasien	10.0
<b>Jägersteig</b>	Schluchsee	11.2
<b>Wasserfallsteig</b>	Todtnau	11.3
<b>Sum</b>		69.7

Source: Black Forest Tourismus GmbH, own survey

### Cycling

Six localities of the biosphere reserve are organised in the cycling working group of Black Forest Tourismus GmbH. Thanks to E-bikes and pedelecs, cycling – even in the mountains – is an attractive free-time activity for all age groups.

The biosphere reserve is also tangent to mountain bike crossing (long distance cycle route through the summits of the Black Forest) as well as numerous regional cycle paths. There are also marked mountain bike trails and single trails for ambitious mountain bikers. On the Hasenhorn, a downhill mountain bike route awaits athletic bikers.

### Winter sport

16 locations in the biosphere reserve are organised in the winter working group of Black Forest Tourismus GmbH. Numerous ski lifts, cross-country trails, snow-shoe routes, and toboggan runs within the biosphere reserve await winter guests. In the Black Forest, 34% of the overnight stays occur in the winter season. It is therefore of major importance. The biosphere reserve is among the highest and thus most attractive winter sport locations in the Black Forest. Special features such as the sled dog race in Bernau or the biathlon complex in Todtnau round off the attractive winter sport activities.

### Health holiday

In addition to the broad range in spa hotels, the biosphere reserve offers special features such as the Radon Vital thermal springs in St Blasien-Menzenschwand. In addition to wellness, the issue of health also plays an essential role in the medical area. There are also clinics within the biosphere setting in St Blasien. They are found in Hinterzarten, Höchenschwand, and Schluchsee, which are directly adjacent to the area.

### Special municipal tourism

Freiburg is also involved in the biosphere reserve (with 14% of the urban area, which is still relatively sparsely populated). Nevertheless, the biosphere reserve is an important recreation destination for the approx. 223,000 inhabitants of the city.

## **15.2.2 Number of visitors**

The proposed biosphere reserve involves an attractive tourist area in the southern Black Forest, where tourism has been an important industry for many decades. In this rural area, tourism makes a substantial contribution to the income of the population and also supports the agriculture through sideline revenue.

A tripartite model has been used to best represent the importance of tourism in the proposed biosphere reserve:

- **Category A** includes all 29 localities that completely or partially belong to the biosphere setting. These are meant when the totality of the biosphere reserve municipalities is discussed.
- **Category B** includes all 22 localities that are completely located in the biosphere reserve.

- **Category C** includes 7 localities that only partially belong to the biosphere reserve – the main residential area is not located within the biosphere reserve. These are the following localities: Albrück, Freiburg, Hinterzarten, Höchenschwand, Schluchsee, Ühlingen-Birkendorf, and Wehr.

#### a) Arrivals and overnight stays by tourists

When evaluating the importance of tourism, the observation of overnight stays and tourist arrivals prevailed as measurement variables. In addition, tourism intensity is used as a basis for comparison. For tourism intensity, the overnight stays were expressed relative to 1000 inhabitants.

Based on overnight stays in commercial businesses with more than nine beds (according to official statistics), the average national tourism intensity is 4,621. In the Black Forest holiday region, this is 7,000.

On the same basis, the tourism intensities for the Biosphere Reserve Black Forest are 10,522, 15,663, and 9,263 for Categories A, B, and C, respectively.

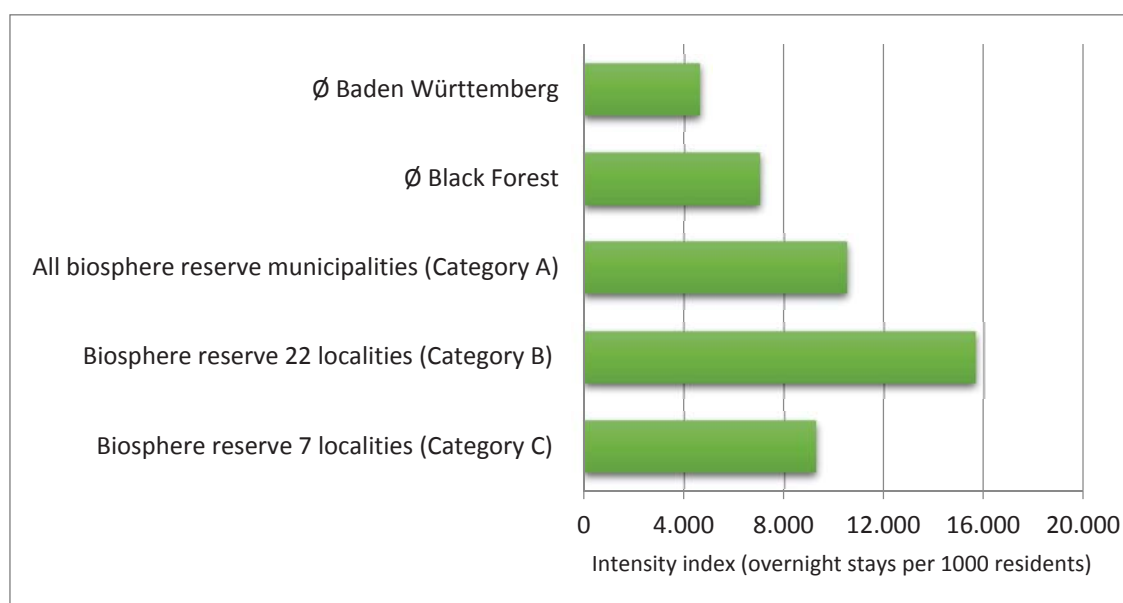


Figure 30: Comparison of tourist intensity of the Biosphere Reserve Black Forest. Source: Black Forest Tourismus GmbH, based on the data of the State Statistical Office

Of the 309,556 residents of the biosphere reserve, 17.5% live in Category B and 82.5% live in Category C.

If overnight stay in businesses with fewer than 10 beds are included in the calculation of tourism intensity, the importance of tourism for rural areas appears to be even higher: For the 22 municipalities of Category B, there was a tourism intensity of 21,233. In the 7 localities of Category C, this was 10,300.

**b) The importance of excursion and leisure travel should not be underestimated**

In addition to the already very high tourism intensity resulting from overnight tourism in the biosphere reserve, it must not be ignored that the regional setting is also used as a recreational area by a large portion of the 1,029,137 overnight guests in the seven localities of Category C.

A large portion of the 254,827 residents of Category C are also expected to use part of the biosphere reserve as a leisure and recreation area (e.g. the Schauinsland region for the residents of Freiburg).

**c) Developmental trend**

All municipalities in the biosphere reserve experienced an increase in overnight stays for three of the last five years. In total, the number of overnight stays has increased by 3.7% over the last five years. This positive trend is expected to continue. In 2014, of the 1.3 million arrivals to all 29 localities of the regional setting, around 0.3 million were to the 22 municipalities of Category A.

With respect to the origin of the overnight guests, the proportion of foreign guests (33%) was higher than average (all of the Black Forest: 27%). In the last years, there were increasing numbers of foreign guests. This trend is expected to continue.

**d) Accommodation facilities**

The importance of individual accommodation facilities in the 22 rural municipalities of Category B naturally differs from the seven localities in Category C (hereinafter listed in parentheses).

In 2014 199 commercial businesses with more than nine beds were opened in Category B (225 in Category C) 57 (104) can be attributed to the category of hotel or bed and breakfast. Guest houses and inns accounted for 59 (43) businesses. There were also 43 (39) larger holiday apartment complexes, 6 (12) camping places, and 5 (3) preventative care and rehabilitation clinics as well as 29 (18) rest homes, hostels, and shelters. In Category B, 35.5% of the sleeping facilities were utilised. In Category C, 43.6% were used. This is considerably higher than the average for the Black Forest (37%).

**e) Economic importance**

In order to emphasise the importance of tourism for the biosphere reserve, overnight stays in private households as well as day trip and business trip traffic must be considered in addition to overnight stays in commercial businesses. The basis for calculation is the surveys of the German Academic Institute for Tourism (dwif).

For the 22 municipalities of Category B, there was a gross turnover of €244,069,136, a municipal tax revenue of €5.37 million, and a net value added of €116.24 million. This corresponds to a workplace effect of 5,254 direct full-time positions and 15,762 part-time positions. Tourism therefore contributes to 9.6% of the primary income in the municipalities of Category B.

In Category C, for a net value added of €314.08 million, this is "only" 5.5%, which corresponds to a workplace effect of 14,192 direct full-time positions and 42,577 part-time positions.

All municipalities in the biosphere reserve (Category A) have a gross revenue of approx. €886 million. The municipalities of the biosphere reserve accrue tax revenue of approx. €19.5 million. The net economic value added is approx. €421 million. This corresponds to a workplace effect of approx. 19,000 full-time positions and an additional 57,000 part-time positions. The share of primary income in the biosphere (6.14%) is considerably higher than the average of the holiday region (4.35%).

## f) Summary of number of visitors and importance of tourism

In the biosphere reserve, the economic factor of tourism plays a very important role. This shows the disproportionately high rates of arrivals and overnight stay in relation to the resident population. In the 22 “core municipalities” of Category B, the tourism intensity (21,233, including overnight stays in private rooms) is more than twice as high as it is in Category C (10,100). In Category B, the proportion of primary income (9.6%) is also considerably higher than that in Category C and more than twice as high as in the whole holiday region. All data from tourism development display a positive trend in the last five years. It is expected that designation as a UNESCO biosphere reserve will continue to strengthen this positive trend.

### 15.2.3 Tourism management

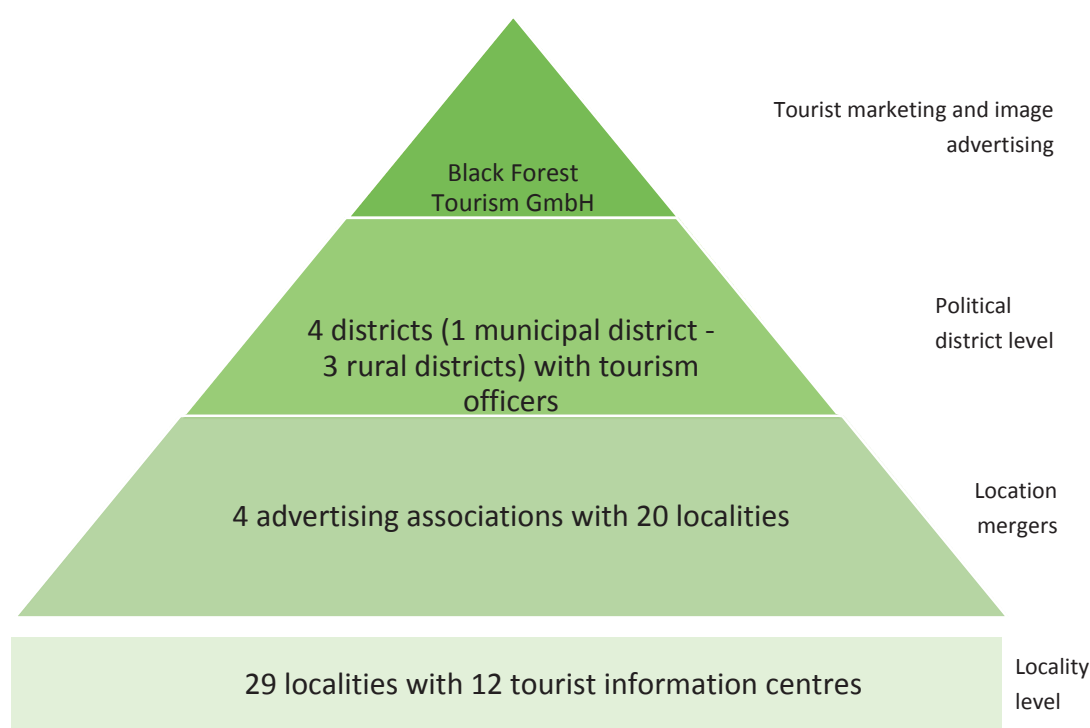


Figure 31: Tourism management in the biosphere reserve Source: Black Forest Tourismus GmbH, own illustration

In the biosphere reserve, tourism is organised in four hierarchical levels. There are also numerous cooperations and working groups into which the local communities are also organised. The central marketing and imaging facility responsible for tourist concerns and also the biosphere reserve is Black Forest Tourismus GmbH. The shareholders of Black Forest Tourismus GmbH are the districts (14 rural districts and 4 urban districts) of the Black Forest. In the biosphere reserve, these are the Rural Districts of Breisgau-Black forest highlands, Lörrach, and Waldshut as well as the Urban District of Freiburg. In all districts, tourism officers (as employees of the corporation of the district) support the needs of tourism in their respective districts. The localities have joined forces to establish voluntary marketing associations or regional communities. In the biosphere reserve, there are five marketing associations, some of which are tightly run companies (e.g. Black forest highlands Tourismus GmbH). Individual localities have ceded sovereignty over the tourism administration of this regional community. There are also loose marketing associations (e.g. Black Forestregion Freiburg) in which the localities remain self-sufficient and only joint marketing projects are carried out. The marketing associations are formed at the local level at which the municipal council and the mayor often address the tourist concerns of the localities together with a local tourism agency. In the biosphere reserve, there are 12 tourist information points. Three of these are recognised as international information centres.

Table 24.: Tourism management: Advertising associations

Advertising association	Number of localities on the biosphere reserve	Name of the locality in the biosphere reserve
<b>Southern black forest holiday world</b>	6	Albbruck, Bernau im Schwarzwald , Dachsberg, Höchenschwand, Ibach, Wehr
<b>Black Forestregion Freiburg</b>	3	Freiburg im Breisgau, Horben, Oberried
<b>South holiday region</b>	5	Häg-Ehrsberg, Hausen im Wiesental, Kleines Wiesental, Schopfheim, Zell im Wiesental
<b>Black forest highlands Tourismus GmbH</b>	6	Häusern, Hinterzarten, Schluchsee, St Blasien, Todtnau, Ühlingen-Birkendorf
<b>Without marketing association</b>	9	

Source: Black Forest Tourismus GmbH

In addition to the administrative organisation, there are voluntary cooperations and working groups with tourist services. These include the working group of the Black Forest Tourismus GmbH (which deals with the topics of hiking, cycling, and winter sport), the working group of Baden-Württemberg tourism marketing (family-friendly locations), and the working group of the KONUS locations (free use of public transport for holiday makers in the Black Forest). Twenty-five localities of the biosphere reserve are members of the KONUS project and provide holiday makers with free public transport (bus and train). In addition, all localities in the biosphere reserve are members in the Southern black forest Nature Park in which many tourist issues are addressed and tourist projects are implemented.

The "Feldberg 2020" concept deals with the question of how the Feldberg region should deal with the management of winter tourism in light of climate change so that the region can continue to develop in a sustainable manner. Although the municipality of Feldberg itself is not located within the regional setting of the biosphere reserve, areas of the concept extend into the biosphere reserve and the biosphere reserve is directly affected by the effects of the intensive tourism on the Feldberg. This is an example of one of many concepts for developing tourism in a sustainable manner.

Table 25: Tourism management: Participation of communities in tourist cooperations

Organisation/cooperation	Total number	Number in the biosphere reserve	Name of the locality in the biosphere reserve
<b>PAKT (pool working group) hiking</b>	11	9	Hinterzarten, St Blasien, Todtnau, Häusern, Höchenschwand, Dachsberg, Ibach, Bernau, Schönau
<b>PAKT bicycle/mountain bike</b>	5	4	Todtnau, Hinterzarten, Schluchsee, St Blasien
<b>Winter sport resort working group</b>	16	7	Hinterzarten, Schluchsee, St Märgen, St Blasien, Häusern, Ühlingen-Birkendorf, Todtnau
<b>Family friendly locations</b>	3	3	Hinterzarten, Schluchsee, Todtnau
<b>KONUS guest pass for public transport</b>	24	24	Aitern, Böllen, Bernau im Schwarzwald , Dachsberg (Southern black forest) Fröhnd, Schönenberg, Schönau im Schwarzwald , Schluchsee, Oberried, Kleines Wiesental, Ibach, Horben, Höchenschwand, Hinterzarten, Häusern, Zell im Wiesental, Wieden, Wembach, Wehr, Utzenfeld, Tunau, Todtnau, St Blasien
<b>Southern black forest Natural Park</b>	29		all

Source: Black Forest Tourismus GmbH, own survey

#### **15.2.4 Effects of tourism on the Biosphere Reserve Black Forest**

In the proposed biosphere reserve, there is no mass tourism with negative effects. If anything, low-impact and sustainable tourism contributes to the preservation of the largely intact cultural landscape and supports the cultural and traditional heritage of the region.

##### **Preservation of cultural values and traditions**

The numerous events, museums, and tours, which are present in nearly all municipalities of the biosphere preserve the traditional values and the special cultural features of both the individual localities as well as the entire region. Numerous traditional costume associations and club devoted to the maintenance of local/regional traditions and characteristics ensure a vibrant cultural life. One of the primary motivations of these clubs is the opportunity to share their cultural values with guests and tourists.

##### **Preservation of scenic beauty**

The special beauty of the Southern black forest including its open areas is preserved through grazing. Through the marketing of regional agricultural products, the landscape can be kept open. Under the motto "Landscape maintenance with knife and fork", nature park hosts (many of whom are located in the biosphere reserve) have prescribed the typical regional cuisine, which heavily relies on products from local rural communities. The interests of tourists (who would like to see a preservation of the natural landscape) also play a role in the planning of developments and transport routes.

##### **Resource/climate protection**

In the biosphere reserve, there are numerous EMAS-certified hotels, which have taken up the causes of resource conservation and climate protection. There are also concepts for the resource-saving and CO<sub>2</sub>-reducing mobility of holiday guests. In particular, the KONUS model project should be mentioned. For 10 years, it has successfully encouraged holiday guests to use buses and trains instead of private transport. Through the complimentary use of all public transport in the Black Forest, the use of public transport by holiday makers has increased by over 40%. In addition E-mobility concepts have been developed for the individual transport of holiday guests. In the region, there is a dense network of charging stations for E-bikes. In addition, electric vehicles can be sometimes be used free of charge in connection with the Black forest highlands Guest Pass.

##### **Nature conservation**

Tourist planning of infrastructure, hotels, and recreational facilities is always done in coordination with nature conservation and the nature conservation authorities. The top priority for tourism is assuring recreational value for holiday guests. Tourist management measures have also been successfully implemented in places where many guests and tourists are on the move. For example, on the Schauinsland, some roads have been closed to promote regeneration measures and prevent damage caused by erosion. In the biosphere reserve, there are numerous educational trails that can brings guests closer to ecological subjects.



### **15.2.5 Dealing with the effects**

All infrastructural measures, whether newly planned or supplemented, are discussed with the nature reserve before they are implemented and partially also approved by the conservation agencies. With respect to hiking, this is primarily the Black Forest Association, which is also a recognised nature reserve association. When creating hiking or cycling trails, the forest authorities, the conservation agencies, and all higher authorities are consulted. In some cases, approval is required. In other working groups (like the winter working group), the measures are discussed and must go into the planning and approval stages.

An important controlling and compensating element is the organisation of the Southern black forest Nature Park, which combines the various conflict and interest groups into several working groups in order to work out compromises and establish sustainable concepts.

### **15.2.6 Summary: Chances and risks of the biosphere reserve for and through tourism**

In the biosphere reserve, only a few attractions experience limited problems with peak times. One can hardly speak of mass tourism. Therefore, tourism does not pose any risks to the biosphere reserve.

Conversely, the biosphere reserve offers positive development chances for regional tourism. In addition to the enhanced image resulting from the UNESCO designation from which all tourist bodies will benefit, tourism segments that have lost market share in the last years can be revitalised and expanded. This mainly involves the providers of private rooms, holiday apartments/cottage, and farm vacations. Through the biosphere reserve, there is a change to promote sustainable naturalist and family-oriented holidays and thereby support the segment of smaller providers.

## **15.3 Land use forms of primary production**

### **15.3.1 Gainful agricultural activities**

#### **15.3.1.1 Characterisation of the agriculture in the Biosphere Reserve Black Forest**

In the biosphere reserve, 14,200 ha of land are cultivated as meadows and pastures. On the other hand, arable farming is only practised on a few hectares in the lowlands on the edges of the biosphere reserve. In the biosphere reserve, a higher-than-average number of farmers operate according to certified ecological criteria (22% of all farmers, Figure 32) and/or participate in the funding programme for agri-environment, climate, and animal welfare (FAKT) with a complete renunciation of chemical/synthetic pesticides and fertilisers. This concerns an additional 69% of all farmers.

Altogether, over 90% of the farmers in the biosphere reserve refrain from the use of chemical/synthetic pesticides and fertilisers. Approximately 10,000 ha of agricultural area are extensively farmed on this basis.

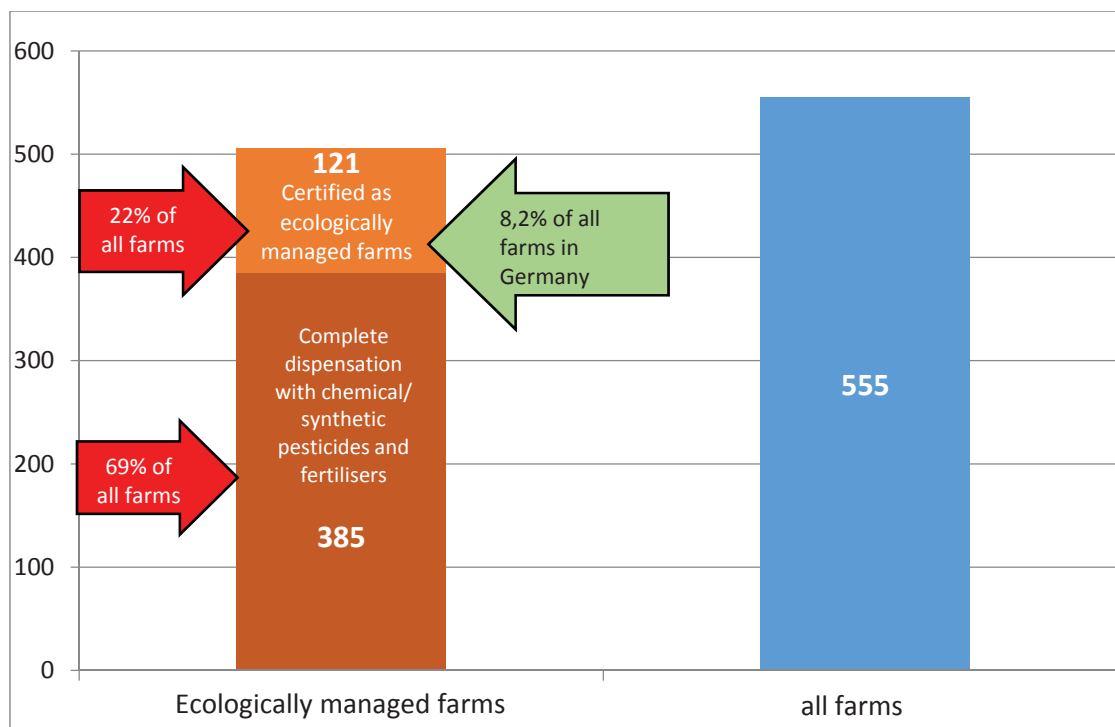


Figure 32: Ecologically managed farms in relation to the total number of all farms; source: Agriculture department (2014), LBV BW (2016), BMEL (2016)

The forest occupies the largest area (44,000 ha). The settlement and transport area covers approx. 3,550 ha. The agricultural area is continually decreasing (17,454 ha in 2014), while the forest and residential areas are continually increasing.

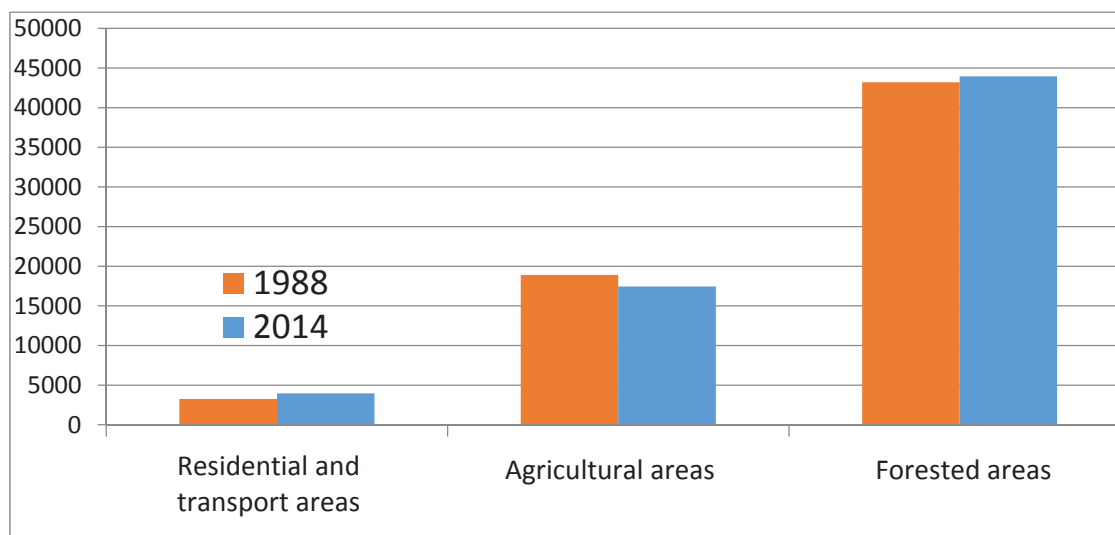


Figure 33: Area use in the biosphere reserve in ha; Source: Statistical Office of Baden-Württemberg, 2016

A special feature is the communal management of the pastures. This is present to a large extent in the biosphere reserve. These former Allmend pastures are owned by the communities. Members of the communities were traditionally allowed to use these Allmend pastures for their animals. An intensification of use by the farmers is not possible because the communities have decision-making authority. Through this long-standing traditional use, many species-rich, ecologically-valuable locations have emerged over the years. These are very rare today and have only resulted from this extensive use. There are also pasture beeches that can only develop if they are exposed to browsing by cattle.

The areas are used for cattle farming. Mostly suckler cow herds are used with the goal of meat production. Milk is produced to a lesser extent. The number of cattle – also dairy cows – is declining. In addition, a few sheep are kept. To a small extent, areas are used by migrant shepherds. At the same time, the trend towards goat farming should be noted. In 2010, 2,550 goats were kept on 230 farms. The goats are generally not used for meat production but rather to keep the landscape open and repress the bushes and encroaching forest.

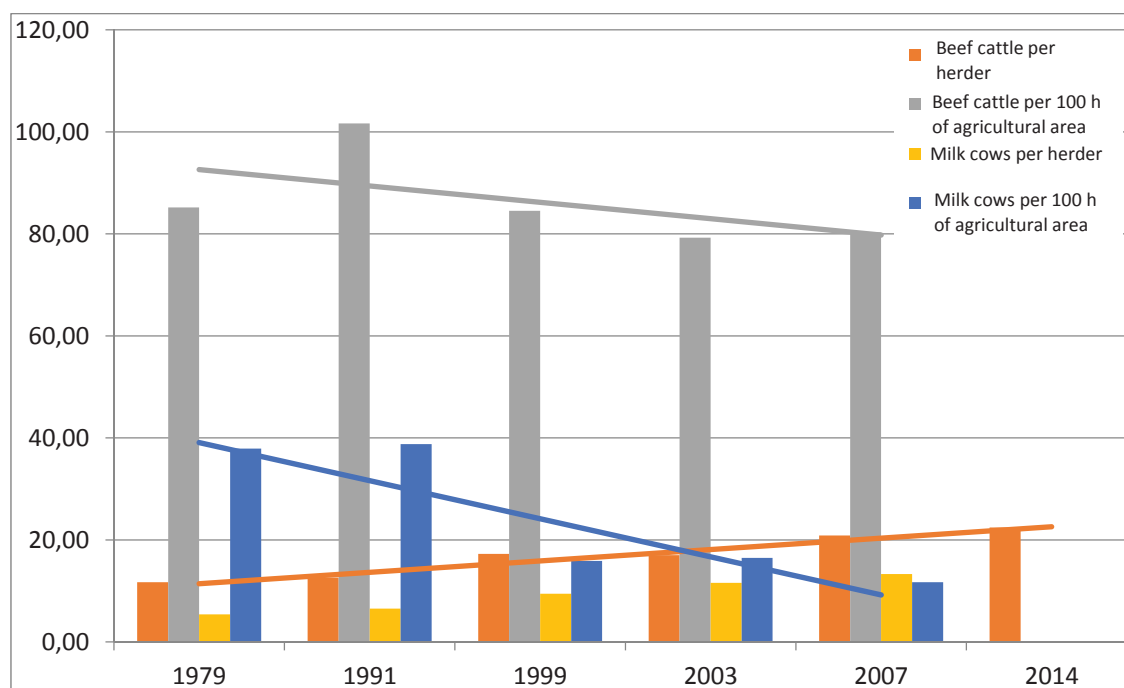


Figure 34: Development of cattle farming in the biosphere reserve; Source: Statistical Office of Baden-Württemberg, 2016

In 2014, milk cows were no longer singled out in the statistics. Therefore, only the total cattle population is presented in Figure 34 .

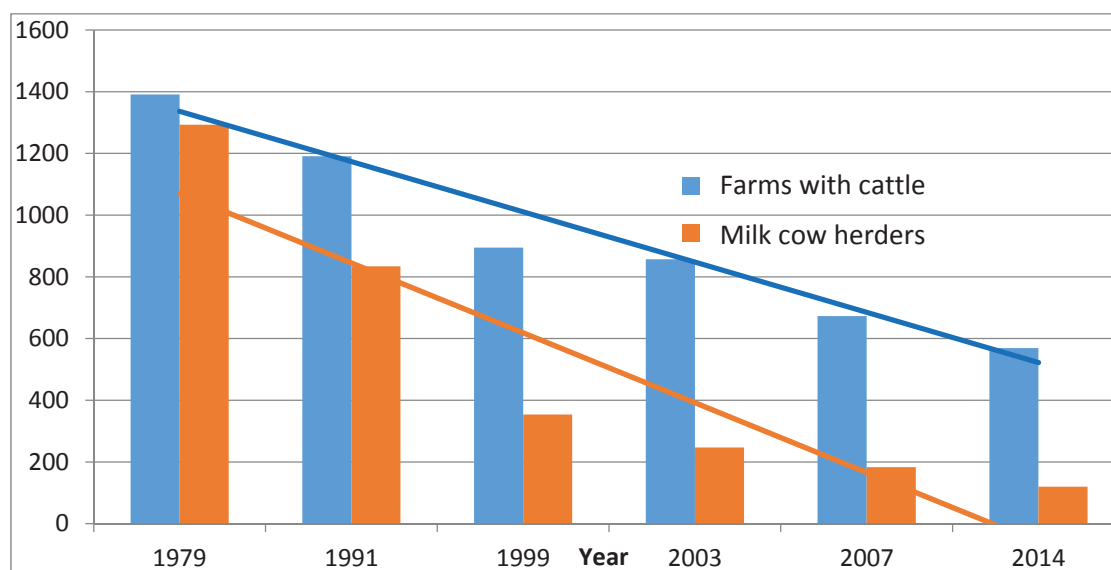


Figure 35: Development of cattle holdings in the biosphere reserve; Source: Statistical Office of Baden-Württemberg, 2016

When it comes to cattle farming, primarily local breeds – Vorderwälder and Hinterwälder cattle are used.

Vorderwälder cattle are common in the central and lower areas of the Black Forest. They are included in the red list of the Society for the Conservation of Old and Endangered Livestock Breeds “for stock monitoring”. 1,443 suckler cows and 6,295 milk cows are maintained on 569 farms.

Hinterwälder cattle are discussed in detail in 14.3.2 .

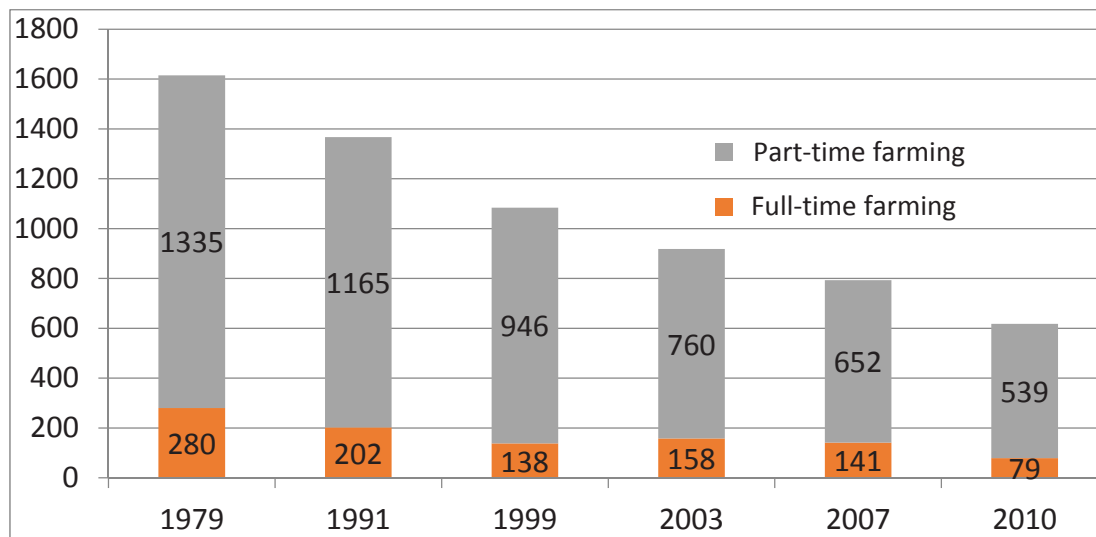


Figure 36: Development of the number of agricultural holdings; Source: Statistical Office of Baden-Württemberg, 2016

In Germany, men and women have equal access to jobs. Of all those gainfully employed, 45% are women and 55% are men. Because of the physically demanding work, it is assumed that fewer women are employed in agriculture. Because the number of part-time farms has traditionally been quite high (currently almost 90%, Figure 36), it is assumed that women and older generations contribute to the farm work to a certain extent.

In the Black forest highlands, agriculture was only ever able to contribute to a portion of the income. In earlier times, people mainly farmed in order to be self-sufficient. Especially during the long winter months, farmers also engaged in handiwork in order to generate additional income. Because of the abundance of wood in the biosphere reserve, this was primarily woodwork i.e. wheel-making, carving of basic utensils (e.g. spoons and bowls), and the production of wooden shingles and brushes.



Figure: 37 A typically furnished wood carver's workshop in which various woodworking tools are displayed. In such workshops, which could be found in many farmyards, everyday household objects were produced. © Peter Schach



Figure 38: Tools from traditional brush manufacturing. Many large companies have developed from this craft. They continue to operate in the Black Forest and produce quality products for the global market. © Peter Schach



Figure 39: An old handcart that was pulled by cattle and used for hay making. Wooden brake shoes can be seen in front of the rear wheels. On steep terrain, these were placed under the wheels so that the cart slid down the mountain on skids. They could otherwise not be braked. Such carts were also built in the workshops over the winter months. © Peter Schach

Nowadays, over 90% of farmers earn most of their income with non-agricultural work (Figure 36). They find employment in handiwork enterprises both within the biosphere reserve and in the adjacent cities. Farm work is often done in the evenings or at the weekends. Some farmers also take holidays to make hay. This work requires flexibility on the part of the employer because hay making and mowing depend on the weather.

#### 15.3.1.2 Trends that affect the achievement of goals in the biosphere reserve

##### Positive trends:

- a) Good employment opportunities for part-time farmers  
The labour market is current so gut that part-time farmers have good chances of finding work in the region. Many agricultural holdings are diversifying. The supply of holiday apartments for overnight tourists plays an important role here.
- b) Both political leaders and farmers are aware of the high value of the landscape and the species diversity in the forest and corridor. They are willing to commit themselves to the preservation and further development of these.
- c) People interested in agriculture, nature protection, and tourism have long been regularly involved in the positive development of the biosphere reserve. This is evident in the active participation in the “Feldberg-Belchen-Oberes Wiesental” nature conservation project (2002–2012) as well as the “Oberer Hotzenwald” LIFE nature project (2005–2011).

##### Negative trends:

- a) Decline in the number of farm animals as a result of the currently low milk prices.

Because of the lower milk yields of the Hinterwälder cattle and lower milk prices, the production of milk on the extensively used agricultural areas is often unprofitable. Farmers are thus less willing to maintain milk cows.



- b) Fluctuations and/or decline in farming income.

Globalisation is also affecting agricultural production: Regional products must compete with internationally produced products, which are often also publicly traded. At the same time, production fluctuates as a result of the changing climate conditions in the uplands. A secure income can often not be guaranteed.

- c) Decreasing connection of the population to agriculture and regional food production.

Although the connection to regional products has increased in the past years, price is still often a deciding factor in the purchase. Because the less educated urban population is often no longer aware of the interrelationship between production and landscape management, it is less willing to purchase regional products for idealistic reasons.

Finding successors for agriculture is becoming increasingly difficult because most of the younger generation is no longer prepared to take on the arduous work involved with caring for cattle for the entire year. As a result, the agricultural profession is not known and praised among the general population.

- d) Although the migration tendency of the younger generation is still relatively low, the average age of the population is increasing.

The migration trend in the region is fortunately relatively low. However the age pyramid is continually developing in the direction of age dominance. As a result, the working capacity for the farming of agricultural areas is decreasing.

#### **Indicators for evaluating the trends**

The following indicators are suitable for evaluating the trends because they are quantitative, meaningful, clear, and ascertainable with reasonable effort.

- Development of the number of farms and those employed in agriculture
- Development of non-agricultural jobs in the biosphere reserve and within reachable distance outside of the biosphere reserve
- Development of the cattle and goat population
- Development of the area extent of grassland, forest, settlements, and transport routes
- Participation of farmers in agricultural and conservation related support programmes (e.g. land stewardship policy, FAKT).

#### **15.3.1.3 Current and planned measures for the management of agriculture by the biosphere reserve**

Both in the EU and the Federal State of Baden-Württemberg, there are agricultural and conservation-related support programmes designed to make farming on difficult terrain (slopes) and/or in climatically and edaphically disadvantaged regions more attractive. The Federal State of Baden-Württemberg established the market relief and cultural landscape offsetting scheme (MEKA; 1992–2014) as well as the funding program for agri-environment, climate, and animal welfare (FAKT; 2015).

With the land stewardship policy, a support programme geared to the requirements of nature and species protection was established in Baden-Württemberg in the 1980s. As part of this programme, many areas worthy of protection were contractually secured. The use of this programme is widespread in the biosphere reserve.

In the past, several projects were implemented in sub-regions of the current biosphere reserve.

From 2005 to 2011, the “Oberer Hotzenwald” LIFE Nature Project was implemented. This entailed the implementation of comprehensive measures for landscape maintenance and nature reserve education in the Southern black forest.

From 2002 to 2012, the “Feldberg-Belchen-Oberes Wiesental” nature conservation project was implemented. The long-term goal of this project was the preservation and development of the diverse cultural landscape of the Southern black forest including the rare habitats for rare and endangered plant and animal species. Keeping the pastures open, especially with the native Hinterwälder cattle, was intended to play an important role. In the forest, the conditions for species protection were improved through the establishment of nature conservation-oriented institutions and the creation of linear structures. In parallel, the proportion of high montane deciduous trees and firs in the forest structures should be increased.

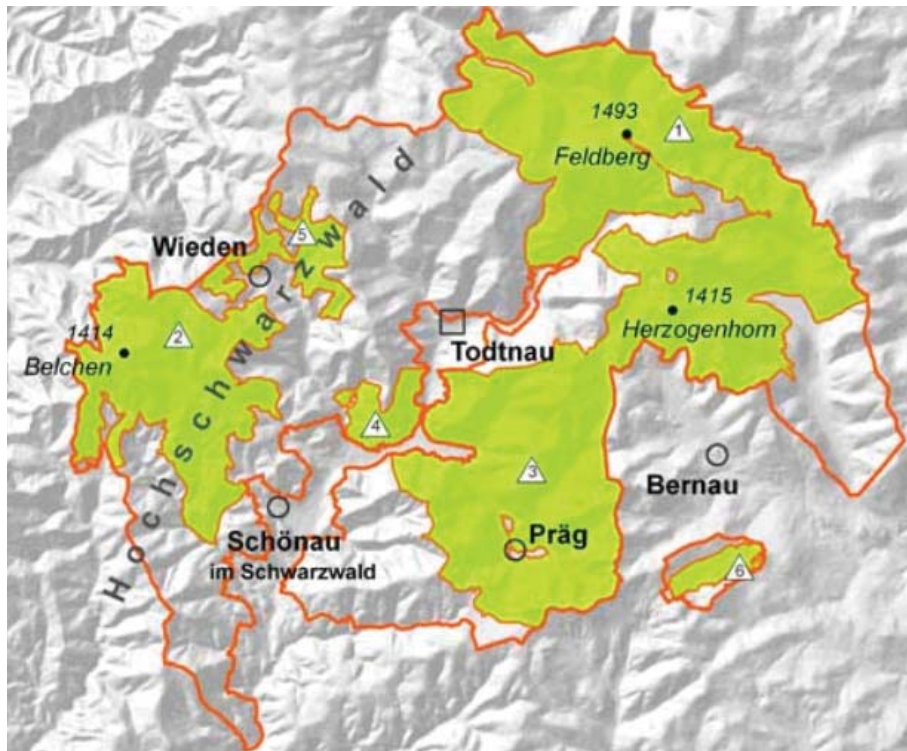


Figure 40: Nature Conservation Project Feldberg - Belchen - Oberes Wiesental



Figure 41: "Oberer Hotzenwald" LIFE Nature Project area

Both the project managers and the local actors were committed to sustainably implementing the goals of the two projects. With the international designation by UNESCO, the results that have been achieved in the biosphere reserve will extend well past the borders of the biosphere reserve as examples for other areas.

### 15.3.2 Forestry

Approximately 70% of the area of the Biosphere Reserve Black Forest is covered by forest (Table 26). In terms of area, forest is the most important area use form in the region. The communities manage the largest area of forest (40%), while the Federal State of Baden-Württemberg and private owners each managed around 30% of the forest area. Approximately 70% of the forest is publicly owned.

Table 26: Data on forest distribution in the Biosphere Reserve Black Forest (source: ForstBW 2016)

Forest ownership	Forests (ha)	Non-forest (ha)	Total area (ha)	Forests%	Share%
<b>State Forest</b>	12,698				29%
<b>Corporate forest</b>	17,379				39%
<b>Private forest</b>	14,074				32%
<b>Sum</b>	44,151				
		19,088	63,235	69.8	

In the biosphere reserve, the total timber volume in the Black Forest was just under 16 million stock cubic metres (2012; Figure 42). The volume has increased substantially since 1987. The average volume per hectare of forest land is 400 stock cubic metres, which is a higher value.

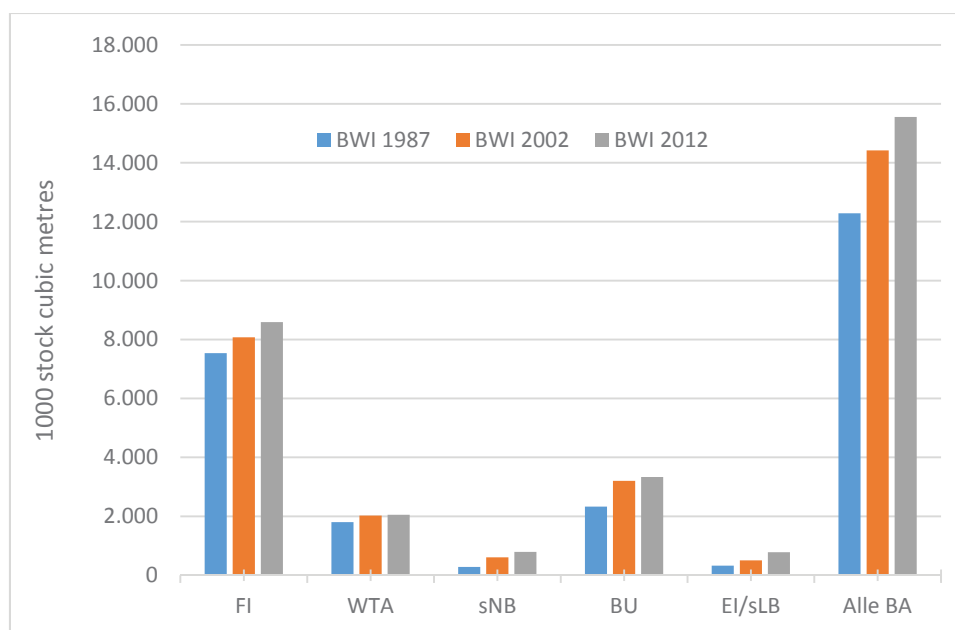


Figure 42: Stock distribution and development in the forests of the Biosphere Reserve Black Forest based on the evaluation of the National Forest Inventory. Fi: spruce; WTA: white fir; sNB: other conifers; BU: beech; Ei/sLB: oak, other deciduous trees; all BA: all tree species (Source: FVA, based on the National Forest Reserve)

Table 27: Annual ongoing growth performance and annual destocking per hectare in the Biosphere Reserve Black Forest (2003–2012; source: FVA)

Tree species group	Ongoing growth stock cubic metres/ha/year	Destocking stock cubic metres/ha/year
<b>Fi</b>	14.0	12.5
<b>Ta</b>	14.4	12.9
<b>sNB</b>	16.0	7.3
<b>Bu</b>	8.2	5.9
<b>Ei/sLB</b>	6.7	2.1
<b>All tree types</b>	12.1	9.8

In the biosphere reserve, the ongoing growth was 12 stock cubic metres (Table 27). In light of the high average volume, this increase can be fully utilised. This results in 490,000 stock cubic metres of usable wood per year; the 3% core areas have already been factored out.

The destocking for 2003–2012 (Table 27) and also before was considerably below the usable quantity of wood; this is reflected in the increasing volumes since the first National Forest Inventory of 1987.

With a wood quantity of approx. 400,000 harvested cubic metres (stock cubic metres are multiplied by a factor of 0.8 in order to account for residual tree parts that could not be used), the region has an extensive renewable resource at its disposal.

For forest-rich communities as well as private forest owners, the forest is one of the most important sources of income.

The forest and wood cluster study of Baden-Württemberg (MLR 2010<sup>5</sup>) revealed that in the south-western region of Baden-Württemberg in which the biosphere reserve is completely located, there are even higher use reserves of coniferous and deciduous trees. The values of the National Forest Inventory support this.

In the region and adjacent areas, wood is processed by over 20 sawmills. There is only one large sawmill with cutting capabilities over 100,000 m<sup>3</sup>. Special orders in particular must be handled by the smaller sawmills. Wood is exported to neighbouring Switzerland and France as well as Asia.

Smaller handiwork operations, especially around Bernau, have specialised in handicrafts. Timber companies that offer wooden constructions have also been established in the region.

In light of the extensive wood resources, the biosphere reserve will promote the branding of wood processing in the region. This includes competence centres involved in the development of innovative wood products.

Wood is also gaining increasing importance as a renewable energy source – not only as a waste product from forestry but also as a co-product in wood processing and/or end product as part of cascaded use.

The primary use of wood as an energy source is a welcome co-production when it comes to keeping the landscape open.

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<sup>5</sup> Baden-Württemberg Ministry of Rural Affairs and Consumer Protection (2010): Clusterstudie Forst und Holz Baden-Württemberg Analysis of the specific competitive situation of the forest and wood cluster and the formulation of recommended actions

## 15.4 Activities in the second and third economic sector

### 15.4.1 Type of activities as well as related area and employment figures

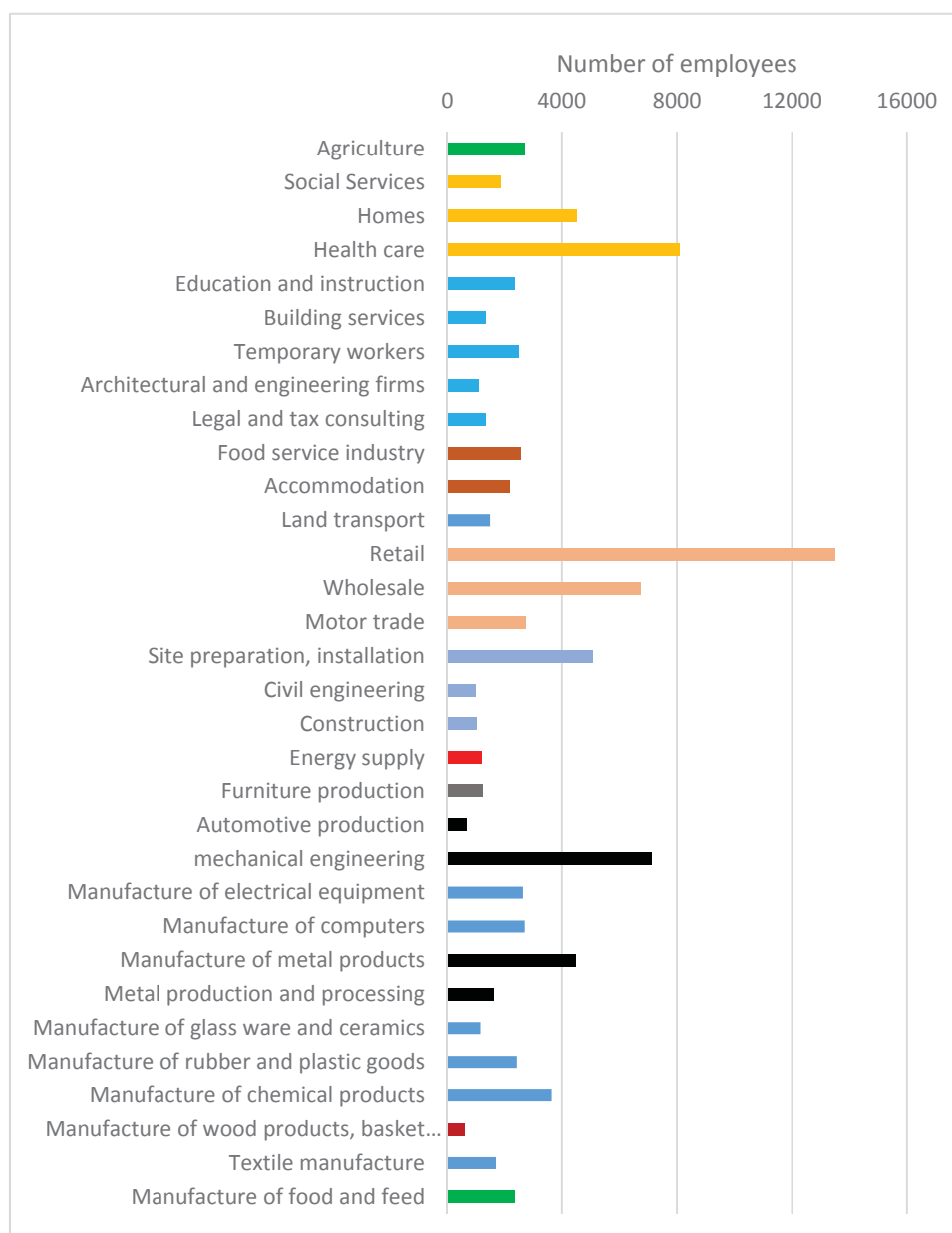


Figure 43: Employees in companies in the Districts of Lörrach and Waldshut in 2012, selection. Source: Statistical Office of Baden-Württemberg, 2016





Figure 44: Businesses in the region of the Biosphere Reserve Black Forest listed in the Chambers of Industry and Commerce of High Rhine/Bodensee as well as the Southern Upper Rhine.

The traditionally strong textile industry, which was primarily established in Kleinen and Großen Wiesental, hardly exists today (Figure 43). Large building complexes often remain empty. This act of conversion is largely completed. The larger production sites in particular await other uses. For example, the office of the biosphere reserve will occupy the administration building of the Irisette textile company from Schönaue.

The biosphere reserve is home to many innovative companies that are attached to the region. Examples include the company Zahoransky, which produces brush machines and markets them worldwide, or the company Faller, which produces fruit products.

Figure 43 depicts the number of employees in the districts of Lörrach and Waldshut – in both of these districts, the bulk are in the biosphere reserve. Because many residents of the region commute to other regions (Figure 45), Figure 43 is an indication for employment opportunities within the region and neighbouring areas.

The focal points of employment are in retail and wholesale. There are also important employment opportunities in other branches such as mechanical engineering and health care.

The chambers of industry and commerce in High Rhine/Lake Constance as well as the southern Upper Rhine list 302 businesses in the immediate region of the Biosphere Reserve (Figure 44). Retail and industrial production play the largest role. Mahle Ventiltrieb in Zell and Hella Innenleuchten-Systeme in Wembach each have more than 500 employees. Zahoransky in Todtnau and Heinzmann in Schönaue each have more than 200 employees. There are also many small operations with less than 10 employees. Tourism has a high economic importance in the biosphere reserve (Figure 44). It ranks in third place after industry/production and retail.

The chambers of crafts list around 400 handiwork operations located within the Biosphere Reserve Black Forest.

All local businesses ensure that the distances between home and work are kept as short as possible. The larger businesses in particular have declared themselves willing to offer flexible part-time employment opportunities so that part-time farmers can reliably secure their existence.

Just under 4% of the area in the biosphere reserve is used for residential areas and production. The topography of the biosphere reserve, especially in the centre and in the north, does not allow for any considerable expansion of commercial and residential areas. In the flatter areas in the East and South, this is somewhat more feasible. However, connection to highways and railway lines is lacking. The establishment of production operations strongly dependent on logistics is therefore not particularly worthwhile.

#### **15.4.2 Effects of these activities on the goals of the biosphere reserve**

The Biosphere Reserve Black Forest is considered a structurally weak area in need of development (cf Map IV in Annex). The goal of sustainable development is therefore existential for the region.

By enhancing the region with respect to infrastructure, culture, and landscape, it will become a more attractive location for processing companies. In this way, a labour force can be acquired and retained.

The employment opportunities in the secondary and tertiary economic sector are important for the survival of the numerous part-time farmers. Only through this second mainstay is it possible for many farmers to contribute to agriculture and thus the maintenance of the cultural landscape. The interconnection between all three economic sectors is therefore essential for the biosphere reserve. This must continue to be supported by the management of the biosphere reserve.

Considerable negative effects of the activities on the goals of the biosphere reserve could not be identified.

#### **15.4.3 Indicators for evaluating the current state and trends**

- Gross domestic product: Total indicator for the regional creation of value
- Number of employees in the region
- Company sizes
- Income development in the branches
- Number of businesses with part-time employment opportunities and flexible working models

#### **15.4.4 Measures for managing the effects on the goals of the biosphere reserve**

A certified brand, "Biosphere Reserve Black Forest", as a label of origin for products from the Biosphere Reserve Black Forest can bring competitive advantages. This is particularly advantageous for products that would not be marketable without a designation of origin and could only guarantee the producers survival through a regional brand with positive connotations.

Tourism would also considerable benefit from the certified biosphere reserve and contribute to the sustainable creation of value within the region.

The connection between job security and ensuring the management of the cultural landscape was discussed in Section 15.4.2.

Promotional measures should be undertaken to make the rural area more attractive and thereby ensure sustainable development.

## 15.5 Benefits of economic activities for the local population.

### 15.5.1 Effects on the local population

The Biosphere Reserve Black Forest has a long tradition of tourism. Job et al. (2013) were able to demonstrate that large regio-economic effects can be achieved in biosphere reserves if they are viewed as a “brand” and “marketed” as a destination. It allows for the development of additional target groups in the field of eco-tourism.

Tourism is one of the most important economic vehicles for the biosphere reserve because a high degree of added value with a high supply chain can be achieved.

Upstream services and handiwork businesses (and thus the local population) directly benefit from the increased sales volume.

In the biosphere reserve, the primary economic activities are found retail, metal processing, handiwork, tourism, and agriculture and forestry (Figure 44). Approximately 5% of all employees work part-time in agriculture, while only 1% of all employees work full time in agriculture. This situation leads to extensive commuting into the agglomerations on the edge of the Black Forest. Every day, over 10,000 people commute outside of their municipal boundaries. Approximately 6,000 commute into the biosphere reserve. This results in a considerable volume of traffic.

The most important residential and working areas in the biosphere reserve are Zell, Wembach, Schöna, St Blasien, and Todtnau as well as the City of Schopfheim on the southern edge of the biosphere reserve.

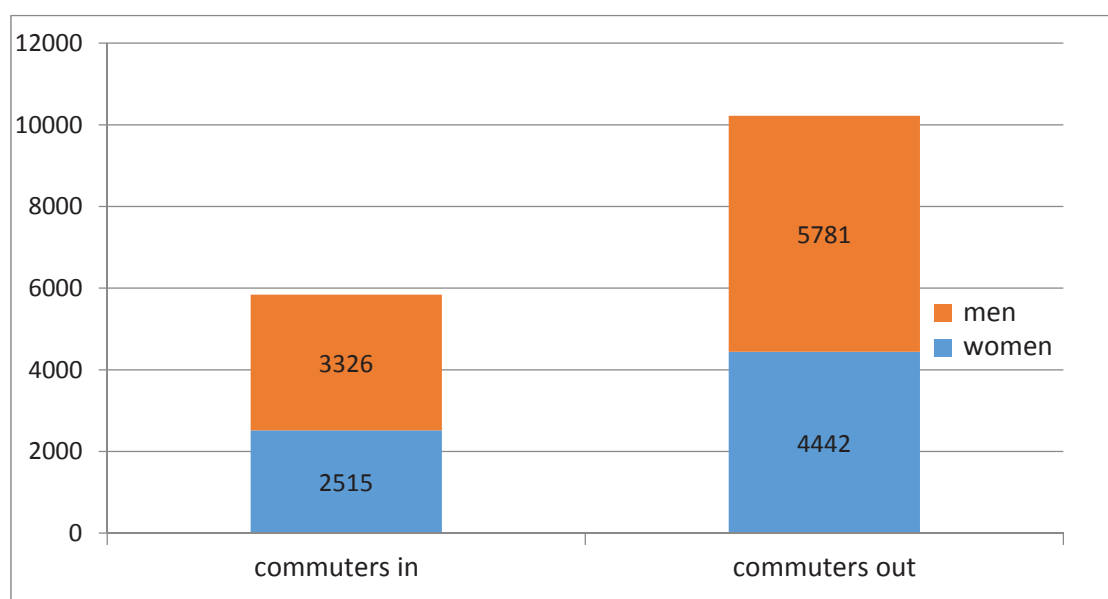


Figure 45: Commuters beyond the municipal boundaries in 2014. Source: Statistical Office of Baden-Württemberg, 2016

In summary, the biosphere reserve can support the sustainable economic stability of the region through the following measures:

- Support of organic farming through infrastructural aids, cooperation models of joint cultivation, and marketing
- Qualitative development of tourism in the sense of sustainable tourism, which leads to additional income and increased added value in the region
- Promotion of the marketing of local products (e.g. cheese, milk, bread, handicrafts, and art)
- Promotion of the local food service industry in the form of advisory services, marketing aids
- Promotion of regenerative and climate-neutral business forms
- Promotion and support of regional business cycles

**15.5.2 Which indicators are used to measure such income or other advantages?**

The state statistical office has generated extensive statistics on the income and assets of the various population groups.

The following indicators can be used, among others:

- Gross income from independent work
- Gross income from non-independent work
- Annuity payments
- Reserve for pensions
- Employment rate
- Amount of payments for daily needs
- Average savings rates
- Income distributions

## 15.6 Spiritual and cultural values and customs

### 15.6.1 Summary of spiritual and cultural values and customs

Table 28: Synopsis of important customs and traditions in the Biosphere Reserve Black Forest

Custom or tradition	Description	Hazard
<b>Alemannic dialect</b>	Very high diversity of dialects; in some cases, each village has its own form of the Alemannic dialect	Fundamentally endangered, especially because of the influx of other population groups and mixing; the influx, however, is encouraged.
<b>Alemannic carnival</b>	A tradition that has constantly change over the centuries. This combines rich meals, celebration, and masquerade before lent. The first carnival guilds in the region were founded at the beginning of the 20th century. Since 2014, The Swabian-Alemannic carnival has been included in the list of intangible cultural heritage of the German UNESCO Commission	No fundamental threat However, the carnival guilds are in competition with the many other clubs and leisure activities. Youth development is essential
<b>Strong involvement in clubs and associations</b>	Based on the tradition of collaborative work (agriculture, building construction) and the need for companionship in the winter months, a strong involvement in clubs and associations developed. Many locals are simultaneously involved in several associations	Generally stable However, the continued maintenance of cultural and communal responsibility as well as the strengthening of youth development are important.
<b>History of mining</b>	Especially in Regions 1–4, a considerable amount of iron and silver ore was mined – even uranium in Menzenschwand. The last mines were closed in the last decades. In connection with mining, many customs such as mining bands and guilds were developed. However, these customs barely play a role today.	Endangered Mining traditions and related customs as well as awareness of the history are at risk of disappearing completely, even though there are still many relicts and sites from the mining time.
<b>Local ties</b>	Strong ties with the “native soil” – therefore a above-average number of farms (as a secondary occupation or for self-supply) as well as the characteristic cottage garden. Although younger people are moving away from the region, this is still only limited.	Not endangered The connection to one's home is currently experiencing a rebirth, although mainly for reasons of tourism. The maintenance of local ties and traditions is an ongoing task.
<b>Large tradition of handiwork (wood carving), especially in the greater area of Bernau.</b>	The long winter evenings as well as the sparseness of the region led to a great deal of creativity and inventiveness in dealing with the scarce resources. The abundance of wood and quartz in the region enabled additional income from woodworking and glass work.	Vulnerable. Old skills (wood carving) are at risk of being lost. Handiwork is no longer very economic and is primarily aimed at tourists.
<b>Seasonal celebrations</b>	Throughout the year, there are many festivals and meetings – especially religious. These include church consecration festivals and Corpus Christi processions as well as wedding and funeral processions, which feature local costumes and special procedures.	Vulnerable. Many festivals are no longer celebrated; however this differs greatly from region to region and municipality to municipality.

<b>Black Forest building culture</b>	The Black Forest is also characterised by its typical Schwarzwaldhöfe with hipped roofs that were optimally adapted to the topography and climate as well as the residential and economic area.	Vulnerable. Many old Schwarzwaldhöfe are empty and at risk of becoming run down. New Black Forest buildings should continue with the style of the Black Forest building culture. A modern architecture that is linked to old traditions and in which wood plays a central role should be developed.
<b>Winter sport tradition</b>	Downhill skiing emerged in the Southern black forest in 1890. The local community is proud of this tradition. In 2015, the 125th anniversary was celebrated with numerous activities and exhibits.	Partly endangered. Winter sports will only be endangered if the increasingly wilder and snowless winters in the central altitudes make the operation of ski lifts unprofitable.
<b>Traditional costumes</b>	Traditional costumes are an external expression of local and social-cultural identity.	Vulnerable. Primarily older women wear their costumes when attending church. Because they are produced by hand, traditional costumes are relatively expensive

### 15.6.2 Activities for establishing, safeguarding, promoting, and/or revitalising such values and traditions

In the Southern black forest, cultural values have traditionally played a significant role. Because of the increased mixing of the population through immigration and emigration as well as consumption of digital media and the (deviating) traditions and values conveyed within, the importance of values and traditions is at risk of disappearing.

However, many groups and associations are aware of this risk and are taking measures against this.

The Alemannic Institute in Freiburg is dedicated to the scientific investigation of Alemannic culture. The language, history, art, culture, and landscape are all considered.

The “Muettersproch-Gsellschaft” (Alemannic for Native Language Association), which is also located in Freiburg is chiefly concerned with the Alemannic dialect. Maintaining the dialect also entails maintaining the values and traditions that are anchored in the Alemannic people.

Tourism is also conducive to the revitalisation of old values and traditions. “Homeland” as an authentic label is playing an increasing role in the selection of destinations. Many villages in the biosphere reserve are therefore making efforts to revitalise their old customs in order to give themselves a stronger identity and give guests from near and far the feeling that their holiday destination is something special and radiates a native hominess in which there are rituals and customs that bring a soothing order throughout the year.

In this context, the Alemannic carnival is becoming increasingly popular. Other traditional festivals are also being rediscovered.

The old card game CEGO, which is native to the region of the biosphere reserve, is also growing in popularity.

By awarding architectural prizes to homeland-conscious yet modern constructions, building culture is promoted as a guiding element for the native landscape. Architects are trained to use wood and integrate native structural elements into their designs. Several approaches have already been taken in the region. However, these must be expanded upon in the biosphere reserve. This not only concerns the Schwarzwaldhöfe but also the barns. The Southern black forest Nature Park proposes founding a Black Forest Institute, which would be dedicated to these typical constructions.



### **15.6.3 Integration of cultural values in the development process**

A central task for the management of the biosphere reserve is to bring people together so that they can discoverer common values and traditions and also stay connected.

Without a doubt, the strong regional cohesion as well as reflection on community action (best manifested in the former Allmend pastures) play an important role in the sustainable development of the region.

The values and traditions of the region provide a common identity and form the cement for an intra-regional network built on an ecological and socio-economic basis that endeavours to work out common solutions.

This developmental process does stop – it keeps the region alive and thus provides a basis for acting in a unique and exemplary manner.

### **15.6.4 Evaluation options**

It is difficult to express traditions and values in terms of numbers and indicators.

However, the number of clubs, volunteer groups, and traditional events reveals how lively the region is and in which direction it is developing.

The number of people who speak Alemannic is also an important indicator of how “original” the region still is and how it defines itself through this common dialect.

## 16 LOGISTICS FUNCTION

### 16.1 Research and monitoring

#### 16.1.1 The contributions of science and research to the goals and management of the biosphere reserve

The proximity to the research areas of Freiburg, Basel, Stuttgart, and Constance and even as far as Tübingen and Stuttgart enables the comprehensive research of scientific, cultural, and economic aspects. The biosphere reserve also enables collaboration in the border area of Switzerland, France, and Germany and thereby stresses the importance of international cooperation.

In 2015, in collaboration with the Upper Rhine Metropolitan Region, a European Campus for the Universities on the Upper Rhine was founded. An essential building block is a sustainability cluster that is intended to deal with the socio-political future of the region.

The research and investigation within the biosphere reserve have always been permeated by local ties. The amount of voluntary research activity within the biosphere reserve should therefore be highlighted. For many years, many regional and natural history societies have researched the foundations and relationships within the region. This has created a wealth of knowledge about the culture, development, and worthiness of protection of the region.

The research project "Landscape in climate change – adaptation strategies for the Southern black forest" that was carried out under the "KLIMOPASS" research programme of the Ministry of the Environment of Baden-Württemberg is currently about to expire. This investigated various models for climate-adapted management with a focus on agriculture.

In autumn of 2015, the new interdisciplinary research project ConFoBi (Conservation of Forest Biodiversity in Multiple-Use Landscapes of Central Europe) was started. This is supported by the German Research Foundation. On 135 experimental areas throughout the Black Forest (including the biosphere reserve), researchers from the University of Freiburg will investigate how effectively deadwood and "habitat trees", which provide animals, plants and micro-organisms with special habitats, contribute to the preservation of biological diversity in the forests of Central Europe.

In addition, there are numerous permanent research programmes that have either been institutionalised or initiated with the region based on years of personal ties. These are listed in Section 16.1.2 because they have already been implemented.

Using the example of other large protection areas such as the Black Forest National Park or the UNESCO Schwäbische Alb Biosphere Reserve, it can be shown that scientific interest and the intensification of scientific work often only result through the formal designation as a protected area.

Here arises a big chance for the Biosphere Reserve Black Forest: Because the area is of particular interest with respect to international research, it will be considerably easier to acquire third-party funding.

It is therefore also the goal of the management of the biosphere reserve to continue to spark scientific interest in the region and establish a network of research associations that will gradually increase the knowledge of ecological and socio-economic interrelationships.

In addition to ecosystemic baseline surveys (species inventory, ecosystems), the human-environment relationships in a forest landscape rich in grassland should be investigated. The interactions of humans and their environment as well as their interrelationships and interdependencies can be optimally worked out in a biosphere reserve that is so strongly permeated by human activity.

The effects of climate change on ecosystemic interrelationships including options and strategies for adaptation also play an important role.

Another important research focus is the demographic change in the rural area, which will lead to significant changes in the use structure of the biosphere reserve.

On this basis, an indicator system that enables the successful monitoring of the development of the biosphere reserve and provides optimisation approaches for the sustainable co-existence of humans and nature can be derived. Working out the model character of the area should be a superordinate goal of research and monitoring.

In accordance with the decisions of the LANA (working group on nature conservation) from 25 September 2015 and 11 March 2016, the biosphere reserve will introduce integrative monitoring and work closely together with the federal coordination office.

### 16.1.2 Summary of previous measures for research and monitoring with respect to the management of the biosphere reserve

Table 29: Overview of the previous, ongoing, and planned research and monitoring projects with respect to the setting of the Biosphere Reserve Black Forest

Large and long-term projects	Duration	Funding by	Participant
<b>Biodiversity in the Black Forest</b>	2015–2017	German Research Foundation	<ul style="list-style-type: none"> <li>University of Freiburg</li> </ul>
<b>Nature Conservation Project Feldberg - Belchen - Oberes Wiesental</b>	2002–2012	Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety	<ul style="list-style-type: none"> <li>Group for Ecological Advice</li> <li>Institute for Ecosystem Research</li> <li>Verein für Forstliche Standortskunde und Fortpflanzenzüchtung e.V. [Association of Forest Site Science and Forest Tree Breeding]</li> </ul>
<b>Forest conversion for future-oriented forestry. Results from the Southern black forest</b>	1999–2004	Federal Ministry of Education and Research (priority area: future-oriented forestry)	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> <li>University of Freiburg</li> </ul>
<b>Monitoring of forest reserves</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> </ul>
<b>Anthropological studies</b>	ongoing	University of Freiburg, Faculty of Biology	<ul style="list-style-type: none"> <li>Anthracology working group (led by Dr Thomas Ludemann)</li> </ul>
<b>National Forest Inventory</b>	ongoing	Bundesministerium für Ernährung und Landwirtschaft [Federal Ministry of Food and Agriculture]	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> </ul>
<b>Management plans for the Natura 2000 areas</b>	since 2005	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Regional Authority of Freiburg</li> <li>Free offices</li> </ul>
<b>Species protection programme</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Baden-Württemberg State Institute for Environment, Measurements and Nature Conservation</li> </ul>
<b>Forestry test network</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> </ul>
<b>Experimental area network for forest growth</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> </ul>

<b>Site mapping</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Regional Authority of Freiburg</li> <li>Forest Research Institute of Freiburg</li> <li>Verein für Forstliche Standortskunde und Fortpflanzenzüchtung e.V. [Association of Forest Site Science and Forest Tree Breeding]</li> </ul>
<b>Forest biotope mapping</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Forest Research Institute of Freiburg</li> </ul>
<b>Environmental monitoring</b>	ongoing	Baden-Württemberg Ministry of Rural Affairs and Consumer Protection	<ul style="list-style-type: none"> <li>Baden-Württemberg State Institute for Environment, Measurements and Nature Conservation</li> </ul>
<b>Numerous dissertations as well as diploma and Master's theses</b>	ongoing	Universities and Research Institutes	<ul style="list-style-type: none"> <li>University of Freiburg</li> <li>University of Basel</li> <li>University of Karlsruhe</li> <li>University of Marburg</li> <li>University of Hohenheim</li> <li>University of Constance</li> <li>University of Applied Forest Sciences Rottenburg</li> <li>University of Strasbourg</li> <li>Additional research institutes</li> </ul>
<b>Mining history</b>	completed	Various public and private initiatives	
<b>Schauinsland Observatory</b> (observation of solar activity)	ongoing	Training site for astrophysics at the University of Freiburg	<ul style="list-style-type: none"> <li>Kiepenheuer Institute for Solar Physics</li> </ul>

The projects and programmes listed in Table 29 provide an overview of the larger research initiatives that were conducted in the past. There are also many permanent monitoring programmes that afford state-wide environmental monitoring and provide valuable development time series. These programmes will continue to be implemented.

### Environmental monitoring body

The atmospheric monitoring stations of the Federal Environment Agency and the Federal Office for Radiation Safety collect numerous air parameters in a continual monitoring programme. These include weather data, trace atmospheric gases, aerosols, and particulate matter as well as radioactive noble gases and nucleotides. It is the German monitoring site for compliance with the International Nuclear Test Ban Treaty.

Many results have been and are published in various scientific journals. These are listed below:

Table 30: Overview of scientific publication series that deal with topics within the Biosphere Reserve Black Forest

Series	Topics
<b>The Markgräfler region</b> Markgräfler Land e.V. Historical Society	<ul style="list-style-type: none"> <li>Local History</li> <li>Landscape History</li> </ul>
<b>Lörracher notebooks</b> Markus Möhring and Andreas Lauble (Dreiländermuseum Lörrach)	<ul style="list-style-type: none"> <li>Historical treatises</li> <li>Art</li> <li>Culture</li> </ul>
<b>Publication series of the Hebelbund</b> Hebelbund Lörrach e.V.	<ul style="list-style-type: none"> <li>Literature</li> <li>Literary history</li> </ul>
<b>The homeland of Baden</b> Badischer Landesverein	<ul style="list-style-type: none"> <li>Historical treatises</li> <li>Art</li> <li>Culture</li> <li>Nature conservation</li> <li>Historic preservation</li> </ul>
<b>Alemannisches Jahrbuch</b> Alemannic Institute of Freiburg	<ul style="list-style-type: none"> <li>Historical treatises</li> <li>Mining</li> <li>Vegetation</li> <li>Art</li> <li>Culture</li> </ul>
<b>Publications of the Alemannic Institute</b>	

<b>Alemannic Institute of Freiburg</b>	<ul style="list-style-type: none"> <li>• Cultural folklore</li> <li>• Architecture</li> <li>• Education history</li> <li>• Language history</li> </ul>
<b>A look into the land</b> Breisgau Historical Society	<ul style="list-style-type: none"> <li>• Historical treatises over Freiburg and the Breisgau</li> </ul>
<b>Culterra</b> Publication series of the professor for landscape management at the University of Freiburg	<ul style="list-style-type: none"> <li>• Nature conservation</li> <li>• Landscape maintenance</li> <li>• Geography</li> <li>• Climate change</li> <li>• Cultural landscapes</li> </ul>
<b>Freiburg geographical notebooks</b> Publication series of the Institute for Geography at the University of Freiburg	<ul style="list-style-type: none"> <li>• Geography</li> <li>• Palaeontology</li> <li>• Socio-economics</li> </ul>
<b>Publication for the history of the Upper Rhine</b> Commission for the Regional History of Baden-Württemberg	<ul style="list-style-type: none"> <li>• Historical treatises on the Baden region</li> </ul>
<b>Publications of the Baar</b> Association for the History and Natural History of the Baar	<ul style="list-style-type: none"> <li>• Nature conservation</li> <li>• Regional studies</li> <li>• Geography</li> <li>• Historical treatises</li> <li>• Art</li> <li>• Culture</li> </ul>
<b>Reports of the Natural History Society</b> University of Freiburg	<ul style="list-style-type: none"> <li>• Mineralogy</li> <li>• Geology,</li> <li>• Physical geography</li> <li>• Cultural geography</li> <li>• Meteorology</li> <li>• Hydrology</li> <li>• Biology</li> <li>• Prehistory and early history</li> <li>• Archaeology</li> </ul>

### 16.1.3 Research infrastructure within the biosphere reserve

The actors of research within the regional setting of the biosphere can be divided into three groups.

1. Regional associations, groups (cf Table 30)
  - a. Patrimonial
  - b. Scientific
  - c. Biological
  - d. Historical
  - e. History of tourism
  - f. Building and architectural history
2. Research institutes
  - a. University of Freiburg
    - i. Landscape management
    - ii. Geography
    - iii. Biology (vegetation history)
    - iv. Environmental sciences
    - v. Meteorology
  - b. University of Strasbourg
  - c. Freiburg-Basel-Strasbourg Research Network (Germany, Switzerland, France)
  - d. University of Basel
  - e. Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg Freiburg [Forest Research Institute of Baden-Württemberg Freiburg]
  - f. Alemannic Institute of Freiburg
  - g. The Baden-Württemberg Cooperative State University Villingen-Schwenninge

- h. University of Constance technical and natural scientific courses of study: Biological sciences, life sciences, chemistry, informatics, physics. Supplementary transfer via the Center for Applied Photonics (CAP) as well as the ten organisations of the Steinbeis Transfer Centres.
  - i. University of Applied Forest Sciences Rottenburg
  - j. Ecological Institute of Freiburg
- 3. Authorities
  - a. Office of the Biosphere Reserve
    - i. Coordination of research by the conservation officers
  - b. Landesamt für Geologie, Rohstoffe und Bergbau am RP Freiburg [State Office for Geology, Raw Materials and Mining at the Regional Authority of Freiburg]
    - i. Ongoing investigations
    - ii. Mining history (also important for forging identity).
  - c. Baden-Württemberg State Institute for Environment, Measurements and Nature Conservation

The proximity to many research institutes is an important condition for intensive research in the area of the biosphere reserve. The ongoing research project on the biodiversity in the Black Forest, which is being carried out through the University of Freiburg, was launched because the university can readily supervise the extensive and numerous research activities. As mentioned above, many association and state authorities are also active in the region.

The biosphere reserve is also located in the border triangle of Switzerland-France-Germany. The proximity to the internationally renowned University of Basel (Switzerland), Strasbourg (France), and Freiburg (Germany) enable a transnational cooperation, especially with respect to socio-economic and territorial research issues.

As a result of UNESCO designation, the importance of the biosphere reserve will be considerably increased. The designation as a UNESCO biosphere reserve will serve to promote research because science is largely financed through grants. The more important and prominent a region is, the easier it is to acquire funding.

Funding sources include state, federal, and EU subsidies as well as funding from foundations (e.g. the German Federal Environmental Foundation).

It is also intended to implement the integrative monitoring of large protection areas, which was recently adopted by the LANA, in the biosphere reserve.

The office of the biosphere reserve is viewed as an intermediary between science and practice. It can establish contacts and merge interests. Many fundamental questions arise from the daily work of the office. These can be scientifically explained and/or investigated. Accordingly, the office also acts as a driving force and initiator for research under the direction of conservation officers.

## 16.2 Education for sustainable development and awareness of the public

### 16.2.1 Existing and planned measures

With education for sustainable development, the population will be made increasingly aware of the consequences of their actions. Through various educational programmes, the population can learn to understand the ecological, economical, and socio-cultural connections of the sustainability idea and apply them to everyday life.

In the Biosphere Reserve Black Forest, there are already numerous facilities for education for sustainable development<sup>6</sup>. The educational programmes promote the understanding of the connections between nature and humans. The strong connection to the region with its characteristic cultural landscape, its traditions, and its products both strengthens the cultural identity of the native population and the appreciation of the natural and cultural landscape for tourists. The educational programmes range from guided hikes, lectures, seminars, and classroom programmes to museums and educational trails that convey the all issues of sustainability to the various audiences.

In order to inform citizens of the concept of biosphere reserves – and specifically about the implementation of the biosphere reserve in Black Forest, a considerable amount of PR work was done in advance (cf Section 17.3). Information events and press releases in various forms of media informed the citizens of the benefits of a biosphere reserve. Workshops contributed to the participation of the citizens in the development of the biosphere reserve in the sense of the sustainability concept.

In Table 31, the most important, already existing educational facilities/providers for sustainable development are listed.

Table 31: Existing educational institutes and providers in the Biosphere Reserve Black Forest

Facility	Education	Target groups	Instructors
Southern black forest Nature Protection Centre (Haus der Natur)	<ul style="list-style-type: none"> <li>Permanent exhibit on the Southern black forest</li> <li>Various special exhibit</li> <li>Lectures (e.g. Humans and nature on the Feldberg)</li> <li>Cultural evening events</li> <li>Seminars, conferences, workshops</li> <li>Guided hikes e.g. "In the forest reserve with the ranger", "Searching for tracks with the ranger" (with snowshoes), "Medicinal plant hike", "Animals under the magnifying glass", and "Junior ranger badge" (hike for children with subsequent "exam" to become a junior ranger)</li> <li>Trails (e.g. Feldberg garden with informational signs, nature trail for children)</li> </ul>	Families, adults, youths, and children	Employees of the Nature Protection Centre, summer rangers (students), nature guides, volunteers
Southern black forest Natural Park	<ul style="list-style-type: none"> <li>Guided hikes e.g. "Traces of mining on the Dachsberg", "Traces of the Ice Age in the Mennschwandertal"</li> <li>Training as nature park tour guides in cooperation with the Black forest highlands and Markgräflerland vocational schools</li> </ul>	Adults, youths, and children	Nature park tour guides

<sup>6</sup> Most of the information was taken from the Master's Thesis of Ulsamer (2013), which discusses the issue of "Education for sustainable development – potentials in the planned SüdBiosphere Reserve Black Forest".



	<ul style="list-style-type: none"> <li>Nature park schools in Schöna and Kleinen Wiesental: Sustainability, nature, culture, and homeland are integrated in the form of interdisciplinary modules. High practical relevance and connection to roots through cooperation with local partners such as farmers, craftsmen, or clubs.</li> </ul>	Elementary students aged six through ten.	Instructors of the participating schools and employees of local businesses
Black Forest Association	<ul style="list-style-type: none"> <li>Excursions</li> <li>Information evenings on current topics related to nature conservation</li> <li>Training as nature warden</li> <li>Alternating youth programme</li> </ul>	Adults, youths, and children	Members of the association and professionals
Wildwege e.V.	<ul style="list-style-type: none"> <li>Lectures, events, information signs, excursions on the topic of animals and humans in the cultural landscape</li> <li>Wild species workshop</li> <li>Adventure days</li> </ul>	Adults, youths, and children	Members of the associations, especially biologists, forestry scientists, and humanities scientists
"WaldHaus" Freiburg	<ul style="list-style-type: none"> <li>Alternating exhibits on the topic of forest and sustainability</li> <li>School class programme</li> <li>Green wood workshop</li> <li>Seminars, lectures, and guided hikes</li> </ul>	Adults, youths, and children	Employees of the WaldHaus
Eco-mobile	<ul style="list-style-type: none"> <li>"Mobile classroom" for the exploration of nature</li> <li>Can be booked by schools and associations free of charge</li> <li>Training events for educators</li> </ul>	Youths and children	"Eco-motorists" Biologists/geographers from the regional authority

There are also numerous hiking paths on which natural and cultural history are conveyed using display boards. Because hiking is one of the main activities of tourists to the region, many people are reached through the various educational trails. The subject matter has been adapted for target groups of various ages. Table 32 includes a selection of educational trails in the Biosphere Reserve Black Forest

Table 32: Selection of educational trails in the Biosphere Reserve Black Forest

Trails	Education	Target groups
Alemannic path in Zell im Wiesental	Discovery trail Culture and history of poets of the Wiese 20 information signs	Adults and youths
Belchen adventure path "Earthworm path" on Hochtann (between Wieden and Belchen)	Discovery trail "Earthworm path" about the giant earthworm of Baden (with water playground)	Families
Mining educational trail in Todtnau	Nature trail History and effects of mining Cable car ride to the Hasenhorn Description of ore mining	Adults, families
Mining trail in Wieden	Educational trail, visitor's mine Silver and lead mining in the Wiedener Tal (focus on the working conditions of the miners) Teaching trial with brochures on the Besucherbergwerk visitor's mine	Adults, families
Erzkasten Circular Route In Oberried-Hofsgund	Cultural history trail Information on the landscape, geology, mining, settlement, and agriculture as well as nature and biotope protection	Adults, families, and youths
Glacier path in Wieden	Nature path	Adults and youths

	Geological history, nature. Hike through former glacial area (identification of glacier traces)	
Shepherds' path in Fröhnd-Hof	Cultural educational trail Culture, history, animal husbandry, nature. The landscape of the Oberen Wiesental and the "Allmend pastures" can be seen. The story of Otto, the last village shephard of the Wiesental is told	Adults and families
Martin Heidegger circular route in Todtnauberg	Historical trail/panoramic route Culture and history Plaques with information on Martin Heidegger, 20th century philosopher, and view of his cabin	Adults
Herzogenhorn natural educational trail in Bernau	Nature trail Flora, fauna, and geology of the Herzogenhorn	Adults and youths
Path to the Palaeozoic in Wieden	Geology path Nature and geology of the region around Wieden 11 stations about the special features of the landscape (guidebook available)	Adults
Cattle educational trail in Gersbach	Educational trail along the pasture Land use, agriculture, animals (year-round observation of bison) Signposts about pastoralism and the animals. Other features: Pasture beeches and view of the Alps	Adults and youths
Primeval forest trail in Schönaue	Forest reserve trail Untouched primeval forest in the Flüh forest reserve (it can be seen how nature reclaims the land). History of deforestation in the middle ages, forest and land use, and the return to an undisturbed forest	Adults
Forest and sensory trail in Todtnauberg	Nature adventure trail The fictional character of a mountain troll takes visitors on an discovery tour Insect hotel, playground with hut, mycology and sensing station	Adults, children
Educational trail for forest history in St Blasien	Historical trail Forest, nature use, 17 stations with signposts on the topics of: Forest, economic forest, natural forest management, forest and water, deforestation, forest death and countermeasures, charcoal, glass works, resin usage, and mining in the Kohlwald	Adults
Pasture educational trail in Oberried	Nature trail History, land use, animals, forest, nature, culture along the Erlenbach pasture	Adults, families
Pasture beech trail in Schönaue	Nature trail Trees, nature, pasture beeches (with brochures)	Adults
Wiedener church path in Wieden	Church path Culture, history Living in a Black Forest valley before the existence of roads Brochures available for better understanding	Adults
Magic trail in Todtnau	Fair tale trail Fairy tales and forest Experience the adventures of the gnome and search for the spellstone	Families, children

Museums are also attractive facilities for education for sustainable development. The elderly or people with limited mobility, who cannot take advantage of the educational trails and guided hikes can be made

aware of the topic of sustainability in the region through museums. A selection of the museums in the biosphere reserve is presented in Section 10.2.3.

A special feature in the region is the wide range of “holidays on the farm”. Many farmers offer families a glimpse into the everyday life of a farmer and create a connection between agriculture and landscape design. This also represents an additional source of income for mostly part-time farmers.

In summary, it can be said that there is a wide range of educational facilities in the biosphere reserve. In particular, the topics of natural conservation, history, and local history are conveyed. Education for sustainable development also entails the promotion of active participation by the population. It is ultimately the population of the biosphere reserve that must advance and implement the sustainable development of the region. Only citizens who have internalised the principle of sustainability and developed a strong cultural identity can advance the region through environmentally-friendly and socially-responsible actions. The importance of each citizen in the development of the region should also play a role in education for sustainable development.

## 16.2.2 What current (or future) facilities and financial resources are available for these measures?

The existing educational facilities should be expanded. Important here is the integration of topics relevant to the biosphere reserve. The content and goals of the Biosphere Reserve Black Forest can be conveyed in the context of exhibits, educational trails, and guided tours. Processes of sustainable economic activity and co-existence should be initiated in order to encourage participation in the biosphere reserve. A selection of conceivable educational activities is listed in Table 33.

Table 33: Conceivable educational activities in the Biosphere Reserve Black Forest

	Content/goals	Target group
Educational trail	Themed trail in Schönaau. It begins in the transition area, extends through the buffer zone into the core area of the Flüh Forest Reserve or Todtnauberg in the transition area and into the Feldberg Nature Reserve until the Napf Forest Reserve. The zone concept of the biosphere reserve can be explained on display boards and linked with the landscape impressions on site.	Adults, youths, and families
Guided hike on the topic of “Hinterwäld cattle – what do cows have to do with species diversity?”	The social and economical components of joint husbandry will be conveyed along with the ecological components of the unique species communities of these extensive Allment pastures. During the subsequent tour of a typical Black Forest highlands farmhouse, the topic of breeding the Hinterwälder cattle can be expanded. Participants can also sample and purchase products from the farm.	Adults, youths, families, and school classes
Maintenance with volunteers or school classes	Employees of the office of the biosphere reserve and commissioned landscapers can provide an introduction to the goals and practices of landscape maintenance.	Adults, and school classes
Information events, training, targeted networking of the businesses, and financial incentives for sustainable management	Companies should be encouraged to purchase regional products in order to enhance the regional creation of value. In particular the farmers, whose work makes a significant contribution to achieving the goals of the Biosphere Reserve Black Forest, should be made aware of their responsibility for preserving the cultural landscape. By establishing an umbrella brand that certifies the sustainable companies, the products can be better marketed. This results in financial incentives for the company.	Local businesses and companies
Public relations, citizen participation	The population is regularly informed of new developments of the biosphere reserve and explicitly encouraged to participate in the organisation of these. The ideas and suggestions of the citizens are addressed in regular workshops	Adults and youths

Exchange of experiences of the businesses	Successful, sustainably managed farms should themselves function as multipliers and inform the industry of the benefits of sustainability. Synergies can thus be used to efficiently advance sustainable development.	Local businesses and companies
Agricultural working exhibits	In agricultural working exhibits, the local population and tourists can experience the traditional cultivation methods and their importance for the preservation of the cultural landscape.	Adults, families, and school classes
Biosphere reserve open house	During the annual biosphere reserve open house, both the local population and tourists can learn about the activities and developments of the biosphere reserve through lectures, excursions/hikes, information stands, and children's programmes.	Adults, youths, and families
Education for sustainable development in the classroom	Based on the concept of nature park schools, the contents of the biosphere reserve should also be integrated into teaching, thereby reinforcing the understanding of sustainable development in school children. Through various means of processing, the topics can be integrated into all types of schools at all levels.	School classes

## 16.3 Contribution to the World Network of Biosphere Reserves

### 16.3.1 Networking of the Biosphere Reserve Black Forest

As part of an international network of biosphere reserves with the goal of advancing sustainable development in an exemplary manner, the Biosphere Reserve Black Forest is aware of its responsibility. On one hand, the region is located in a rural area with representative challenges and should serve as an example for other rural areas when dealing with these challenges.

On the other hand, as an industrial nation, Germany is positioned so well (both organisationally and financially) that this German biosphere reserve can serve as a developmental model for other countries.

On this basis, according to the recommendations of the national MAB committee, the biosphere reserve will participate in the following areas:

- Participation in or support of expert missions*, either in foreign biosphere reserves or international missions in German biosphere reserves
- Permanent twinning partnerships with individual or several foreign biosphere reserves (or other areas that are managed similarly to biosphere reserves)
- Participation in regional and thematic *networks* of biosphere reserves
- Integration into the national communication concept under the umbrella brand "National Natural Landscapes"

A series of competency areas that is suitable for cooperation with other regions is conceivable. The biosphere reserve sees itself as a driving force – both as a learning organisation and a partner:

- Innovative management in regionally anchored businesses
- Political participation processes at the municipal and regional level
- Management of sustainable energy systems
- Cooperation between agriculture and marketing chains
- Optimisation of value added chains
- Maintenance of culture and customs
- Management of sustainable forms of tourism
- Structure, organisation, and management of the biosphere reserve
- Marketing cooperations of sustainably produced goods
- Acquisition of third-party funds

**On a) *Participation in or support of expert missions*, either in foreign biosphere reserves or international missions in German biosphere reserves**

The delegation of experts from the region to other areas with the goal of playing an advisory role there is the most non-committal means of cooperation. Both national and international delegations of experts are conceivable. They can spread the knowledge of the region and support the establishment of sustainable development concepts. They can represent both the Biosphere Reserve Black Forest and the German-wide biosphere reserve system.

Based on the recommendations of the national MAB committee, these delegations should be coordinated with national development programmes, and establishing contacts with the local population in the target country should always be highlighted in order to ensure a sustainable effect.

This temporary collaboration could thus lead to permanent cooperations.

**b) Permanent *twinning* partnerships with one or more foreign biosphere reserves (or other protected areas)**

Depending on the level of development of the target area, permanent cooperations such as sponsorships or partnerships are conceivable. The transitions and levels of cooperation are fluent and varied.

There are already some connections between municipalities (or voluntary organisations from municipalities) of the biosphere reserve and other regions. These are exemplified in Table 34.

Table 34: Selection of cooperations between municipalities of the Biosphere Reserve Black Forest and other regions. Also mentioned are biosphere reserves with which enhanced cooperation would be conceivable.

Communities	Country of cooperation	Nature of cooperation	Biosphere reserve (founding date) in country of cooperation
<b>Albbruck</b>	<ul style="list-style-type: none"> <li>Belarus</li> <li>Brazil</li> <li>Tanzania</li> </ul>	<ul style="list-style-type: none"> <li>Future for Ritschow; holiday offers for children from affected regions of Chernobyl</li> <li>IG Eine Welt e.V.: Promotion of self-help projects</li> </ul>	<b>Brazil:</b> <ul style="list-style-type: none"> <li>Mata Atlântica (including greenbelt São Paulo),</li> <li>Cerrado, 1994</li> <li>Pantanal, 2000</li> <li>Caatinga, 2001</li> <li>Central Amazon, 2001</li> <li>Espinhaço Mountains</li> </ul> <b>Tanzania:</b> <ul style="list-style-type: none"> <li>Lake Manyara, 1981</li> <li>Serengeti Ngorongoro</li> <li>Eastern Usambara, 2000</li> </ul>
<b>Freiburg</b>	<ul style="list-style-type: none"> <li>Nicaragua</li> </ul>	<ul style="list-style-type: none"> <li>City Partnership Freiburg-Wiwili</li> </ul>	<ul style="list-style-type: none"> <li>Bosawas, 1997 (Wiwili is adjacent to this biosphere reserve)</li> <li>Río San Juan, 2003</li> <li>Ometepe Island, 2010</li> </ul>
<b>Hinterzarten</b>	<ul style="list-style-type: none"> <li>Worldwide</li> <li>Niger</li> </ul>	<ul style="list-style-type: none"> <li>September 2014: Pasch initiative "Schools: partners of the future"</li> <li>Student aid project Hinterzarten-Niger of the Birklehof Boarding School</li> </ul>	
<b>Oberried</b>	<ul style="list-style-type: none"> <li>Mollendo</li> <li>Peru</li> <li>Crisis countries in the East</li> </ul>	<ul style="list-style-type: none"> <li>One World Ring in Oberried: Partnership with "Inmaculada Concepcion"</li> <li>Aid circle for refugees</li> </ul>	<ul style="list-style-type: none"> <li>Huascarán, 1977</li> <li>Manu, 1977</li> <li>Noroeste, 1977</li> <li>Oxapampa-Ashaninka-Yanesha, 2010</li> </ul>
<b>Schopfheim</b>	<ul style="list-style-type: none"> <li>Cameroon</li> </ul>	<ul style="list-style-type: none"> <li>DIKOME-Cameroon: cultivation of organic coffee from Cameroon/coffee roastery and marketing in Schopfheim</li> </ul>	<ul style="list-style-type: none"> <li>Waza, 1979</li> <li>Benoué, 1981</li> <li>Dja, 1981</li> </ul>
<b>St Blasien</b>	<ul style="list-style-type: none"> <li>China</li> <li>Banja Luka</li> </ul>	<ul style="list-style-type: none"> <li>China project of the council for senior students</li> </ul>	

		<ul style="list-style-type: none"> <li>Marketing of handicrafts from Bosnia in the boutique of Silvia Meier-Strittmatter and Alexandra Horsch-Beyerle</li> </ul>	
<b>Wehr</b>	<ul style="list-style-type: none"> <li>India</li> <li>Crisis countries of the East</li> </ul>	<ul style="list-style-type: none"> <li>NGO: CDS Anand, which is committed to marginalised sections of the population in India</li> <li>Network integration and Café International:</li> <li>Voluntary engagement for refugees</li> </ul>	<ul style="list-style-type: none"> <li>Nilgiri, 2000</li> <li>Gulf of Mannar, 2001</li> <li>Sunderbans, 2001</li> <li>Nanda Devi, 2004</li> <li>Nokrek, 2009</li> <li>Pachmarhi, 2009</li> <li>Similipal, 2009</li> <li>Achanakmar-Amarkantak, 2012</li> <li>Great Nicobar, 2013</li> </ul>
<b>Zell im Wiesental</b>	<ul style="list-style-type: none"> <li>Worldwide project support</li> </ul>	<ul style="list-style-type: none"> <li>Cabanja World Shop in Zell: Peace and Development Society</li> </ul>	

The cooperations are primarily of a cultural and economic nature. They promote exchange and mutual understanding and can be incorporated into the central network activities of the biosphere reserve.

A more extensive and also new cooperation in the form of **sponsorships** of areas with similar spatial conditions (e.g. Carpathian Biosphere Reserve in Ukraine or Montseny in Spain) is also conceivable. A permanent exchange of the comprehensive sustainability management under similar conditions is conceivable and reasonable.

**Partnerships** with other biosphere reserves that are located in entirely different parts of the world but nevertheless committed to sustainability management are possible. Merchandise cooperations that mutually promote typical regional products and develop for mutual profit can be established. Production chains (e.g. the purchase of sustainably produced cotton and the regional processing by the (remaining) textile industry) are a conceivable cooperation model.

Cooperations in developing countries, emerging countries, and industrialised countries are all conceivable. The existing cooperations between some communities and international partners (Table 34) form the basis for a network that will develop alongside the biosphere reserve.

**(c) The biosphere reserve network must be managed and maintained. The Biosphere Reserve Black Forest can contribute to this.**

Within its means, the office of the Biosphere Reserve Black Forest will become actively involved in the network management.

It is thus conceivable to organise local meetings and events for both the national and international network. Freiburg is a well established convention city, although other communities also have sufficient capacities for larger events. The Biosphere Reserve Black Forest will become more well-known, which will also benefit the region itself.

Further collaboration by the office will develop through the network activities.

**(d) Umbrella brand “National Natural Landscapes (NNL)”**

The biosphere reserve presents its communication concept under the umbrella brand “National Natural Landscapes”. The national importance of large protected areas can thus be conveyed at the regional level.

### **16.3.2 Advantages of international cooperation for the biosphere reserve**

The exchange and cooperation with other cultures and countries is always mutually beneficial. Teaching and learning go hand in hand. Many positive effects arise as a result of mutual respect and open-mindedness:

- Tourist and economic cooperation

If the networks is permanently maintained, cooperation can lead to many economic advantages. From the exchange of expertise (technology and transfer of knowledge) to cooperations with goods from sustainable production to business orders, win-win situations based on long-term cooperations with other biosphere reserves are highly conceivable.

Because the Biosphere Reserve Black Forest is already an active and attractive tourist destination, an intensification of international and up-scale tourism is imaginable.

- Exchange of experience for management

Not only can the biosphere reserve transfer experiences about its own sustainability management but it can also learn from other examples. The reflection and assessment by a third party are important for optimising internal work.

- Exchange of methods for monitoring and ecosystem services

The evaluation using indicators is a fundamental task that is still in its infancy. Although initial approaches have been developed by the working groups of the UNESCO MAB, the indicators must still be refined and optimised. In this respect, an exchange of experiences can be helpful.

Generating value from ecosystem services, thereby making them relevant and worthy of protection, is another important task for making sustainable actions understandable. International exchange is also important in this regard.



- Research cooperations.

The exchange of experience and knowledge can optimally lead to research cooperations: Scientists will operate in other regions and can contribute their expertise in the research and development of sustainable concepts. At the same time, the Biosphere Reserve Black Forest could be integrated into thematically-relevant MAB research groups concerned with the sustainable management of mountain regions or climate change in mountain regions.

- Increased appreciation of one's own region and getting to know other regions

Linking one's own regions with other regions enables the reflection of one's own values and norms as well as the diversity of the Black Forest landscape. Only through comparison with others can problems, challenges, and desires be re-ordered and relativised. The direct comparison with other, less developed regions can lead to many revelations.

- International understanding

The appreciation and understanding of other cultures and values increases the willingness to stand up for one another and strengthen world peace. In light of increasing globalisation, this is an increasingly important task from which all people can benefit.

## **16.4 Internal and external communication and medial channels.**

### **16.4.1 Website of the biosphere reserve**

[www.biosphaerengebiet-schwarzwald.de](http://www.biosphaerengebiet-schwarzwald.de)

### **16.4.2 Electronic media**

An electronic newsletter was designed to inform the public of the designation process. This will be further developed as a regular source of information, and the mailing list will be expanded.

Print media also plays an important role in disseminating information from and about the biosphere reserve. This includes leaflets, brochures, and (over the longer term) book publications.

Articles dealing with the Biosphere Reserve Black Forest are regularly published in scientific journals, popular magazines, and daily/weekly newspapers.

### **16.4.3 Social networks**

The biosphere reserve will also use all electronic communication platforms.

### **16.4.4 Umbrella brand “National Natural Landscapes (NNL)”**

The Biosphere Reserve Black Forest will present its communication under the umbrella brand “National Natural Landscapes (NNL)”.

## 17 CONTROL ISSUES, BIOSPHERE RESERVE MANAGEMENT, AND-COORDINATION

### 17.1 Management and coordination structure

#### 17.1.1 Legal status of the biosphere reserve

The Biosphere Reserve Black Forest is a legally enacted protection area in accordance with §25 of the BNatSchG in connection with §23 Subsection 2 of the NatSchG. The enactment was signed on 4 January 2016 and promulgated in the law gazette of the Federal State of Baden-Württemberg. It entered into force on 1 February 2016.

The biosphere reserve is subject to strict federal and state-wide requirements. The goals mentioned in the enactment are binding.

The regional setting or the goals of the biosphere reserve may only be changed with the involvement of the region and its population.

#### 17.1.2 Legal status of the core and buffer zones

All core areas and buffer zones are legally prescribed areas in accordance with the Biosphere Reserve Enactment. In addition (in accordance with the table in Section 19.2, Annex), the core areas are largely forest reserves in accordance with §32 of the LWaldG, nature protection areas in accordance with §23 of the BNatSchG, SCI- and SPA areas in accordance with §31 of the BNatSchG, and legally protected biotopes in accordance with §30 of the BNatSchG and §30a of the LWaldG. The areas are thus subject to multiple formal protection statuses. The areas are described in sections 19.5 and 19.8 (Annex).

#### 17.1.3 Authorities responsible for the zones of the biosphere reserve

The authorities responsible for the zones of the biosphere reserve are subject to the general administrative bodies of the communities, districts, and cities. These are described in more detail in Section 17.1.4.

The office of the biosphere reserve itself is responsible for the management of sustainable development. It is also responsible for moderating and coordinating the concerns of the biosphere reserve. It should be regarded as a central contact point of a network.

The office is affiliated with the coordinating body of the Regional Authority of Freiburg; it has no administrative, policing or regulatory powers. However, it shall provide technical support and grant funding for measures. Through the converging function of the regional authority and the direct connection to the board of directors, it is ensured that the concerns of the biosphere reserve will be considered in the context of decision making processes.

#### 17.1.4 Description of the responsibilities of the authorities

All three zones are described in the Biosphere Reserve Enactment of 4 January 2016 and specified in the map as part of the enactment. The conservation management is responsible for the jurisdiction of the zones insofar as this is of a conservational nature. With restrictions in the buffer zone and no exceptions in the transition area, responsibilities for regional planning and communal planning authority are basically not affected.

	Core area	Buffer zone	Transition area
<b>Nature conservation administration at the regional authority</b>	Full responsibility in consultation with forest administration	Monitoring of the specifications in accordance with §6 (2) of the Biosphere Reserve Black Forest Enactment	Monitoring of legal requirements in accordance with LWaldG (Landesanstalt für Landwirtschaft und Gartenbau; State Institute for Agriculture

			and Horticulture) and BNatSchG (Bundesnaturschutzgesetz; Federal Nature Conservation Act)
<b>Forestry administration at the Regional Authority</b>	Responsibility for the forest reserves (§32 LWaldG) in coordination with the nature conservation administration	Monitoring of legal requirements in accordance with LWaldG (Landeswaldgesetz; State Forest Law)	Monitoring of legal requirements in accordance with LWaldG (Landeswaldgesetz; State Forest Law)
<b>Agricultural administration (regional authority and lower administrative authorities)</b>		Monitoring of legal requirements in accordance with LWaldG (Landesanstalt für Landwirtschaft und Gartenbau; State Institute for Agriculture and Horticulture)	Monitoring of legal requirements in accordance with LWaldG (Landesanstalt für Landwirtschaft und Gartenbau; State Institute for Agriculture and Horticulture)
<b>Communities (Districts and municipalities)</b>		Responsibility for the cultivation and maintenance (Allmends) Partial control via the landscape conservation organisations	Completely responsible for further communal development (planning authority of the municipalities) Infrastructure planning
<b>Regional associations</b>	Consideration in regional planning	Consideration in regional planning	Consideration in regional planning

Highest responsible authority: Ministry of the Environment, Climate Protection and the Energy Sector

Responsibility for supervision: Regional Authority of Freiburg

### 17.1.5 Ownership or lease agreements within the three zones

Table 35: Ownership agreements in the three zones of the Biosphere Reserve Black Forest

	Core area	Buffer zone	Transition area
<b>Private property share in%</b>	0	20	40
<b>Communal property share in%</b>	35	50	45
<b>State property share in%</b>	65	30	15

When zoning the biosphere reserve, care was taken to ensure that private owners were burdened as little as possible. The core areas were therefore only placed in publicly owned areas.

Approximately 80% of the area of the buffer zone is publicly owned. In the buffer zone, the areas of open land are largely leased to farmers, who also manage these.

Approximately 60% of the area of the developmental zones, which also includes residential areas, is publicly owned. The remaining 40% is privately owned.

The forest ownership distribution (the proportion of forested areas in the biosphere reserve is approx. 70%) is depicted on Map XII in the Annex.

### 17.1.6 Management forms of the Biosphere Reserve Black Forest

The office, which is located in Schönau, is responsible for the administration/management of the biosphere reserve. The managing director is the head of the office. The office is subordinate to the Regional Authority of Freiburg.

The managing director was selected via a public announcement followed by selection according to criteria stipulated by the state (Ministry for the Environment and Regional Authority) in cooperation with communal representatives.

Women will be given preference if equally qualified.

#### **17.1.7 Participation of bodies in management**

For the scientific and contentual consultation of the biosphere reserve, two bodies were established: The steering committee and the council (Figure 46). In addition to representatives from the communities, representatives from the five pillars (for more detail, see Section 17.1.9) are included. The council has a purely consultative role. The steering committee also has a deciding role.

The administration of the biosphere reserve itself is understood as a centre of competence for the sustainable development of the region. It includes a group of technical experts that advise the region. The administration acts as a consultant and facilitator for regional development and must coordinate and integrate with the other regional planning bodies.

The biosphere reserve therefore serves as a catalyst to bring expertise into the region and thereby promote a technical and effective development. This gives rise to additional ad hoc and possibly permanent bodies that can contribute to the biosphere reserve in an advisory role.

#### **17.1.8 Coordination structure for the Biosphere Reserve Black Forest**

A special coordination structure was established for the biosphere reserve. This consists of a steering committee and a council.

The steering committee determines the overall guidelines of the biosphere reserve. The council advises both the steering committee and the office with respect to substantially and regionally relevant issues.

The structure was stipulated in the structure of the cooperation agreement between the state and communities as supporters of the biosphere reserve.

#### **17.1.9 Adaptation of management/coordination to local conditions**

The biosphere reserve was brought to life in a complex consultation process, which involved all stakeholders in the region (cf Figure 46 and Section 17.3).

The secondary effect of this process is the development of increased awareness of the participation and responsibility for the region and the establishment of bodies in the form of municipal councils in connection with representatives of the authorities.

These structures were retained and used in the further regional implementation of the biosphere reserve. The interests of the region were considered both politically and professionally and also introduced in the form of various investment opportunities.

In the context of an agreement signed by the Minister-President of the Federal State of Baden-Württemberg, the Minister for Rural Affairs and Consumer Protection, and representatives of the districts, cities, and municipalities on 19 February 2016, the cooperation opportunities between all participants were formally constituted.

The agreement sets out five matters for which the participation forms are possible:

1. Essential personnel decisions, particularly changes to the establishment plan, participation in the selection of personnel in functional points;
2. Amendment of the basis for calculating the financial contribution of the local authorities;

3. The annual work programme of the office of the Biosphere Reserve Black Forest;
4. The use of project funds;
5. Creation and modification of the framework.

Two levels of participation have already been formally established.

- Biosphere steering committee
- Biosphere council

The council is made up of 46 members. Twenty-nine of these members represent the municipalities. They are thereby able to voice their own concerns as well as convey the tasks of the biosphere reserve for a sustainable development of the region. The council advises both the office as well as the steering committee on matters 3–5.

The steering committee is composed of 18 voting members. The representatives of the local government, the regional authority, and one representative each from the Ministry of the Environment and the Ministry of Rural Affairs and Consumer Protection of Baden-Württemberg can also vote in personnel-related and financial matters. The five representatives of the “Five pillars” can vote on the content and priorities of work, the use of resources, and the conceptual framework.

The “Five pillars” act independently and are not subordinate to official institutions.

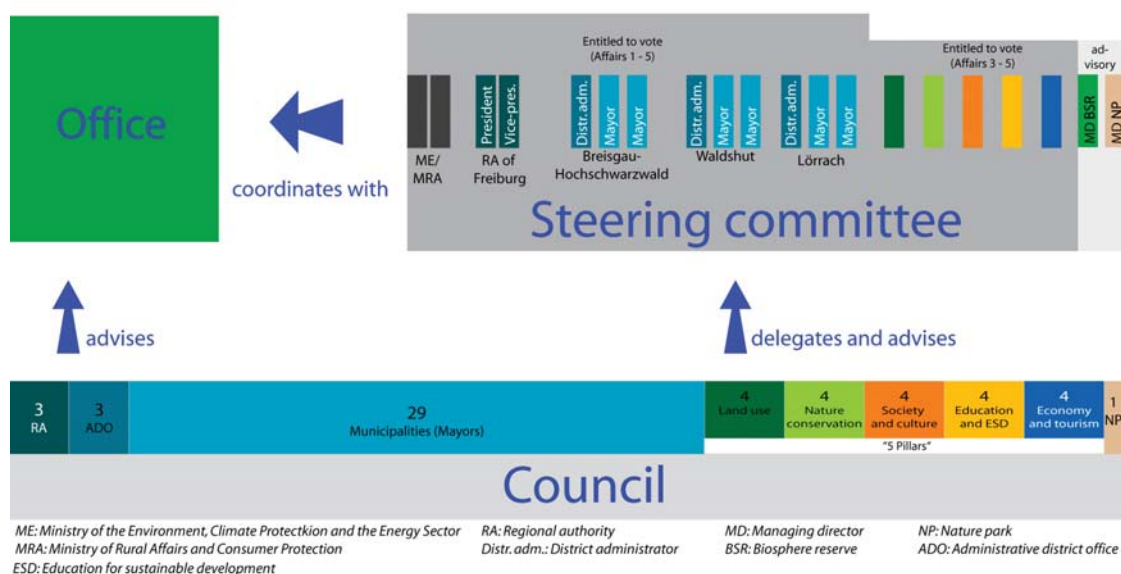


Figure 46: Organigram for the opportunities to participate in the Biosphere Reserve Black Forest

### 17.1.10 Is there a process for evaluating and monitoring the effectiveness of management?

The management of the biosphere reserve acts independently. However, the members of the office are part of the public administration and are thus subordinate to the technical supervision of the ministry.

The office cannot make basic and crucial decisions on its own. Such decisions are made together with the steering committee, which is entitled to vote. This is defined in the cooperation agreement, which is binding for the office and its corporations.

As part of this co-determination, the steering committee controls the office with the advice of the council of the biosphere reserve.

## **17.2 Conflicts within the biosphere reserve**

### **17.2.1 Major conflicts with respect to the access to or use of natural resources**

As is the case in the entire Federal Republic of Germany, the use of natural resources is clearly regulated. Apart from the common property “fresh air”, all other resources (i.e. agricultural and forest production areas, the water, and game species) are regulated by laws and treaties. For this purpose, no special regulations through the Biosphere Reserve Black Forest are required.

The former Allmend pastures (which are one of the unique features of the area), the use of which is based on a consensus of a local and recognized body (this was often the council of elders of a village) are now almost completely municipally owned and are generally leased. The largest area of conflict is not so much the hindered access to these pastures but rather that the use has become uneconomical. The areas are therefore subject to succession and thereby losing their value for nature and the landscape. The biodiversity is thereby affected (both directly and indirectly) as well as the attractiveness of the landscape for local residents and tourists.

The task of the biosphere reserve is therefore to enable and even expand the cultivation of the former Allmend areas through the use of modern cooperation models, the acquisition of funds, and the regional marketing of pastoral products. An important core concern of the biosphere reserve is thereby addressed.

### **17.2.2 Conflicts between the administrative bodies involved in the administration of the area**

There are no real conflicts in the true sense between the administrative bodies. There are, however, areas of conflict that make it necessary to vote. The allocation of funds and their management must be coordinated (e.g. to prevent redundancy). Communal development opportunities must always be duly acknowledged.

The office of the biosphere reserve is not strictly authoritative but rather acts as a mediating point between the various regional and sovereign concerns.

It works together with the following administrative units at all three levels (ministries, regional authority, lower administrative authorities):

- Nature park management
- Landscape conservation organisations
- Pasture cooperatives
- EU administration
- Agricultural administration
- Forest administration
- Nature conservation administration
- Communal administration
- Regional associations

### **17.2.3 Means for resolving these conflicts**

Given the abundance of planning levels, which extend up to the EU level, the merger to a biosphere reserve offers the chance to bring these levels together and optimally harmonise and utilise funding opportunities.

The biosphere reserve administration is seen as a network office that moderates the various demands and solutions of the area.

The moderation and acquisition activities should create strategies that serve as a model for both the biosphere reserve as well as the entire Black Forest.

Finally, the biosphere reserve is well suited as a clearly defined research field from which a research association can develop.

## **17.3 Representation, participation, and consultation of local communities**

### **17.3.1 Involvement of the local population**

As explained in Section 13.5, during the founding of the biosphere reserve, there was an extensive participation and consultation process, which lasted five over five years.

This led to the creation of structures that were largely incorporated into the management procedures. The future participation procedure reflects the organisational structure of the biosphere reserve (Figure 46). The basis for the extensive participation of citizens was the broad-based advisory council, which consisted of elected representatives and the “five pillars”.

The creation of a conceptual framework will also make an important contribution to a wide public participation. In order for this concept to be able to use the potential of the entire region, it is necessary to extend the participation beyond the biosphere reserve council. It is therefore recommended to offer topic related workshops in which all people within the biosphere reserve can participate.

### **17.3.2 Representation of the local population**

The representation of the region is regulated by the distribution key as part of the cooperation agreement from 19 February 2016. The 29 representatives of all communities guarantee a representative advocacy from all political municipalities of the region and thus the local residents.

The “five pillars”, society and culture, land use, nature, education and education for sustainable development, and economy and tourism guarantee the substantive representation of different use priorities and areas of interest of the region.

These groups meet at least once per year (but usually much more often) to advise on the further development of the biosphere reserve.

- Office
  - Managing director
  - Staff member
- Steering committee
  - District president
  - District vice president
  - Ministry of the Environment/Ministry of Rural Affairs and Consumer Protection: one representative each
  - District administrators
    - Lörrach
    - Waldshut
    - Breisgau-Black forest highlands
  - One representative for each of the five pillars
  - Managing Directors of Southern black forest Natural Park
  - Managing Director of the biosphere reserve
- Council (number of representatives with voting rights)



- RP: (3)
- 29 authorities: (each 1)
- Pillars of the region (at least two from associations, clubs, or other organisations)
  - Land use: (4)
  - Nature conservation: (4)
  - Society and culture (4)
  - Education for sustainable development: (4)
  - Economy including tourism (4)
- Southern black forest Natural Park: (1)
- Managing Directors of Southern black forest Natural Park
- Managing Director of Biosphere Reserve Black Forest
- Working groups of the region
  - Southern black forest Natural Park
  - LEADER action area of the Southern black forest
  - LEADER action area of the biosphere reserve

### 17.3.3 Consideration of young people

The support of young people as well as seniors and individuals with disabilities is an important goal in the biosphere reserve.

“Young people” also refers to young families, which are the foundation of a positive demographic development. A key concern of the biosphere reserve is therefore to create an attractive living area for these groups so that they will stay in the region and possibly even create an influx of other young families.

It is therefore essential to create a child-friendly environment that creates conditions for optimal child development and relieves parents.

The biosphere reserve also sees itself as a catalyst for the development of school forms (from inclusive schools to A level) that include comprehensive education on regional subjects. The distances should be kept as short as possible so that the learning and recreational environments are kept as close together as possible.

With respect to recreational activities, the goal is to continue to encourage voluntary commitment to for the region. This enables attractive and meaningful recreational activities and promotes a sense of solidarity with the region. The biosphere reserve would like to assume an important function as a source of ideas and a networking centre.

In the regions, culture plays an important role in forging an identity. Combining tradition with the modern world results in an interesting conglomerate of new ideas and cultural designs. An example is the newly discovered and meanwhile very popular re-interpretation of homeland with many interesting designs of everyday objects (e.g. clocks, bags, shelves, and writing instruments).

In addition, the task of the biosphere reserve is to create cultural programmes for youth and bring young culture into the Black Forest. This can only be accomplished through cooperation with renowned institutions such as banks or large business, although the office of the biosphere reserve can provide some support.

In the context of education for sustainable development, children and youths are important disseminators of sustainability. The idea of sustainability from a cultural, economic, and ecological perspective can spread from the schools into families further into the region.

If the youth are excited about the region and wish to stay, this will create optimal conditions for the favourable development of the biosphere reserve.

### 17.3.4 Representation in the form of the “five pillars”

The representation of the most important interest groups is manifested in the “five pillars” from the areas “nature conservation, land use, culture, education for sustainable development, and economy and tourism”. All people can participate in these five pillars regardless of whether or not they belong to an organisation. The members of each “pillar” democratically determine their representatives for the council and steering committee.

It is also possible for all people in the biosphere reserve to articulate their interests and contribute to the decision-making bodies that have been set up for the development of the biosphere reserve.

### 17.3.5 Procedure for the representation of the local population

Indigenous or local communities as they exist in other regions of the world are not found in the Biosphere Reserve Black Forest.

The process for the involvement of local interests is described in the cooperation agreement between the Federal State of Baden-Württemberg and the 29 communal representatives of the participating local authorities from 19 February 2016. Local interests are represented by the delegation of the municipal representatives of all 29 municipalities to the council and steering committee.

The local authorities shall participate in the fundamental issues of the office of the Biosphere Reserve Black Forest.

These include:

1. Essential personnel decisions, particularly changes to the establishment plan, participation in the selection of personnel in functional points
2. Amendment of the basis for calculating the financial contribution of the local authorities
3. The annual work programme of the office of the Biosphere Reserve Black Forest
4. The use of project funds;
5. Creation and modification of the framework

This ensures that key decisions affecting the organisational and substantive development of the biosphere reserve are made with the region – and not against it.

### 17.3.6 Consultation process of the local population

The consultation of the interests of the region is a systematic component of both the biosphere reserve enactment and the cooperation agreement, which regulate the principles of biosphere reserve administration and management.

The consultation principle was established during the designation of the biosphere reserve. In over 250 meetings and events, regional actors were consulted and various interest groups were able to contribute their suggestions and concerns.

The guiding principle “From the region, with the region” expresses that all actions and decisions of a general nature should be addressed only through involvement and participation. This corresponds to the belief that the essence of the biosphere reserve can not be achieved by excluding people but rather only through active involvement and the greatest possible consensus.

The participation and consultation of interest groups from the region is therefore an ongoing process. New challenges constantly arise depending on the project and issue. This requires the differentiated compositions of the groups.

### 17.3.7 Forms of consultation

The main work in the relatively young biosphere reserve was reaching consensus on an implementable regional setting. For this purpose, the following consultation mechanisms were used:

Mechanism	Stakeholders involved	Consequence
<b>Consultation</b>	<ul style="list-style-type: none"> <li>• Farmers</li> <li>• Forest managers</li> <li>• Municipal and local councils</li> <li>• Mayors</li> <li>• Tourism organisations</li> <li>• Environmental associations</li> <li>• Chamber of Industry and Trades</li> <li>• Mayors of the region</li> <li>• Officials</li> </ul>	<ul style="list-style-type: none"> <li>• Information</li> <li>• Preparation for a binding regional setting</li> <li>• Advertisement for the biosphere idea</li> </ul>
<b>Workshops</b>	<ul style="list-style-type: none"> <li>• Farmers</li> <li>• Forest managers</li> <li>• Municipal and local councils</li> <li>• Mayors</li> <li>• Tourism organisations</li> <li>• Environmental associations</li> <li>• Chamber of Industry and Trades</li> <li>• Mayors of the region</li> <li>• Officials</li> </ul>	<ul style="list-style-type: none"> <li>• Finding ideas for sensible objectives of the biosphere reserve</li> <li>• Structuring of the structure and process organisation</li> <li>• Identification process for the biosphere reserve</li> </ul>
<b>Information events</b>	<ul style="list-style-type: none"> <li>• Mayors of the region</li> <li>• Citizen representation</li> <li>• Associations</li> </ul>	<ul style="list-style-type: none"> <li>• Information</li> <li>• Advertisement for the biosphere idea</li> </ul>
<b>Consultation hours</b>	<ul style="list-style-type: none"> <li>• Especially farmers and landowners</li> </ul>	<ul style="list-style-type: none"> <li>• Individual consultation</li> <li>• Regional setting: Affiliation of corresponding areas to the individual zones</li> </ul>
<b>Working meetings</b>	<ul style="list-style-type: none"> <li>• Project-related working group</li> </ul>	<ul style="list-style-type: none"> <li>• Substantive preparation of the objectives of the biosphere reserve</li> <li>• Handling conflicts during the execution phase</li> <li>• Communication</li> </ul>
<b>Excursions</b>	<ul style="list-style-type: none"> <li>• Mayors of the region</li> <li>• Selected representatives of the region</li> <li>• Officials</li> <li>• National MAB committee</li> </ul>	<ul style="list-style-type: none"> <li>• Information</li> <li>• Adjustments to the planned regional setting</li> </ul>
<b>Press and public relations</b>	<ul style="list-style-type: none"> <li>• Regional and national newspapers</li> <li>• Radio</li> <li>• Television</li> </ul>	<ul style="list-style-type: none"> <li>• Information</li> <li>• Multiplication</li> </ul>

This process was costly and time-consuming. In retrospect, this participation process was important and meaningful. This type of participation and consultation will continue throughout the continued development of the biosphere reserve and supported through additional moderated events.

### 17.3.8 Equal participation of women

In the context of equal participation and gender equality, women will be involved in all processes. There is no formal quota for women.

The president of the Regional Authority of Freiburg is a woman as are the district administrators of the rural districts of Lörrach and Breisgau-Black forest highlands.

Many women have also been involved in associations and organisations on a voluntary basis. These associations and organisations are represented in the form of the five pillars.

In all public job advertisements, efforts are made to increase the ratio of women. In the case of equivalent qualifications, preference is usually given to women.

## **17.4 Management/cooperation plan/concept**

### **17.4.1 Planning the conceptual framework**

The conceptual framework is currently in preparation. As part of a long-term consultation process the initial work for the conceptual framework took place in the form of workshops and consultation hours for citizens. This is thoroughly explained in Section 13.5.

In essential areas, the biosphere reserve can rely on proven management concepts. Of particular note are the "Feldberg – Belchen – Oberes Wiesental" Nature Conservation Project (2005–2012) and the "Oberer Hotzenwald" LIFE Project (2005–2011), which were especially developed to achieve goals related to nature conservation. In both projects, the goal was to preserve and further develop the rich structural landscape. Because of structural change in rural areas, it is absolutely necessary to continue with these processes in a sustainable manner. However, without a socially and economically sustainable development, this is inconceivable.

The conceptual framework touches on all guidelines and goals specified in the biosphere reserve enactment from 4 January 2016. These objective are stated and explained in Section 13.1. The goals have already been divided into various areas of action and describe the direction in which the biosphere reserve should develop.

### **17.4.2 Actors in the creation of the conceptual framework**

A wide range of actors was involved in creating the management and cooperation plan. The cooperation agreement of 19 February 2016 names some of these. The actors are divided into the following groups:

- Representatives of the state authorities (ministry, regional authority)
- Selected representatives of the local authorities
- Representatives of the five interest groups (pillars)
  - Land use
  - Nature conservation
  - Education and education for sustainable development
  - Economy and tourism
  - Culture and social affairs
- Office of the Biosphere Reserve Black Forest
- Office of the Southern black forest Natural Park
- Experts for landscape and spatial planning

Both the local authorities and the various interest groups of the region were taken into account. Only through the direct participation of the region can the goals of the biosphere region be developed and the maximum potential for sustainable development be utilised.

Participation can take many forms.

- Editorial contributions
- Participation in workshops (future workshops=
- Technical discussions and excursions
- Consultations
- Citizen consultation

### **17.4.3 Participation of the region in the framework design**

The conceptual framework was completed within three years and formally decided by the steering committee. The concept thus receives democratic legitimacy from the region. The composition of the steering committee is discussed in detail in Sections 0 and 17.3.

### **17.4.4 Period of validity of the conceptual framework**

The conceptual framework will be completed within three years. Changes to the conceptual framework are possible at any time and also provided through participation of the steering committee.

The evaluation of the biosphere reserve by the German MAB committee and the international council committee for biosphere reserves will provide an opportunity to reinforce success as well as to re-address open issues and integrated them conceptually. As stipulated by UNESCO, this will be done in a 10-year rhythm (at the very least).

In accordance with the cooperation agreement, the financing and thus the basis for project management and implementation will be examined every five years and adjusted if necessary.

### **17.4.5 Content of the conceptual framework**

The essential framework for the management plan was set with the adoption of the Biosphere Reserve Enactment in which the objectives for the biosphere reserve have been specified. These are thoroughly explained in Section 13.

Upon designation of the biosphere reserve by UNESCO, a detailed conceptual framework will be worked out. Extensive preliminary work has already been done on the conceptual framework. Between 2011 and 2016, more than 200 meetings and events were held with the participation of all interest groups from the region. Numerous ideas and suggestions were addressed. An important milestone was a future workshop that was conducted on 17 October 2014. More than 140 interested parties and participants from the proposed biosphere reserve took part.

During the participation, various ideas with respect to measures were discussed.

These ideas are listed individually in the last part of this Annex.

### **17.4.6 Conceptual framework and objectives of the Biosphere Reserve Black Forest**

The core ideas of the detailed conceptual framework are derived from the goals of the biosphere reserve. The success is measured in the degree of achievement of the goals listed in Section 13.1. The measures intended for achieving the goal are varied.

In the conceptual framework, all objectives listed in the Enactment and in Section 13.3 have been addressed and associated with measures.

The measures are operationalised in accordance with the guiding principle of participation with the involvement of the region.

Networking is a central function of the office of the biosphere reserve. Among other things, this entails permanently bringing various interest groups together, creating new alliances, and forging a common regional identity, which can lead to sustainable regional development. This networking function permeates the conceptual framework and will be essential to the success of the biosphere reserve.

#### 17.4.7 Liability of the conceptual framework

The conceptual framework specifies the binding guidelines for the development of the biosphere reserve. It is the result of a negotiation process involving all important interest groups of the region. It thereby always represents a compromise. However, this should be the norm in social discourse.

The conceptual framework can be modified at the behest of the region and through participation of the steering committee. During the consultation process on the formation of a biosphere reserve setting, this aspect was imminent because the region was only prepared to participate in the biosphere reserve under these conditions.

The basic principle of the conceptual framework is the promotion and support of sustainable development in the region. The concept takes into account the existing protective goals of the biosphere reserve, which in turn correspond to the protective goals of the legally protected Natura 2000 area, the forest reserves, and the nature reserve area.

#### 17.4.8 Actors in the implementation of the conceptual framework

The office of the biosphere reserve is responsible for the implementation and the management of the plan. In the job advertisement for the managing director of the biosphere reserve, the following requirements were listed:

- Creation and implementation of a conceptual framework for the biosphere reserve;
- Development and promotion of sustainable usage patterns;
- Planning and measures for a future oriented, social, and environmentally sound regional development;
- Measures for the conservation and development of nature and landscape;
- Development of sustainable concepts for tourism;
- Measures for information and public relations as well as the promotion of environmental awareness;
- Measures for education for sustainable development;
- Security, protection and development of nature and landscape;
- Strengthening of the cooperation between nature conservation, forestry, and agriculture;
- Collaboration with the Southern black forest Nature Park.

In addition to the management, an administrative assistant, and an assistant, the office of the biosphere reserve should be engaged with following disciplines.

- Conservation including monitoring
- Land use with focus on agriculture
- Economy/tourism/regional development/marketing
- Education/culture/society/social

For a "start team", a managing director position and four positions from the aforementioned areas were advertised. The managing director position was filled in the middle of June 2016. Another four positions will be filled. The staff of the office will then successively be expanded to ten positions. The conditions for the technical qualifications of the staffing are described in Section 13.7.

Up to ten positions (three of which are advanced) that can offered as the biosphere reserve is established have been considered in the budget.

#### 17.4.9 Resistors and catalysts in the implementation of the conceptual framework

Through the strong connection to the landscape and the region, there is a great willingness to participate in the biosphere reserve process. Among other things, this is expressed in the high proportion of nature-oriented farmers.

Other businesses such as Zahoransky are engaged as regionally based actors and promote structures that support local ties and landscape maintenance.

The Southern black forest Nature Park, the “Feldberg-Belchen-Oberes Wiesental” Nature Conservation Project, and the “Oberer Hotzenwald” LIFE Project have already afforded important preliminary work, which can now be intensified by the biosphere reserve.

A major area of conflict is the question of whether communities can continue to develop unhindered. However, this has not led to a major conflict because the region has understood that the landscape is the greatest capital. Only through the preservation of the landscape and its attractiveness can permanent and sustainable growth be ensured.

#### **17.4.10 Embedding the biosphere reserve in other sectoral plans**

When forming the regional setting of the biosphere reserve, international, national, and communal plans and strategies were taken fully into account.

In the conservation strategy of Baden-Württemberg, in addition to the national park, the biosphere reserve is emphasised as an instrument of large-scale nature conservation and sustainable development.

All nature reserve and 70% of the Natura 2000 areas located in the biosphere reserve were integrated into the core and buffer zones. Because the core areas consist of up to 100% forested area, there should be no conflicting goals with species that are dependent on keeping the landscape open.

The goals of the nature reserve and the Natura 2000 area are congruent with the goals of the core and buffer zones defined the biosphere reserve enactment. The preservation and development of rough meadows worthy of protection are part of the conceptual framework of the biosphere reserve.

Conflicting objectives with the state development plan and the regional plans were checked. No conflicting objectives were determined.

On the other hand, there is some concern that the development goals of the communities implied in the area use plan will be affected. As a result, planned construction areas of the communities are located exclusively in the transition areas of the biosphere reserve in which communal development is allowed.

A compilation of the technical plans can be found in the Annex. Thematic maps include Maps X (protection area), XI (representation of areas relevant to wildlife ecology), and XIII (area use plans).



### 17.4.11 Main source of funding and estimated annual budget

Table 36: Main sources of funding of the Biosphere Reserve Black Forest (€ annually); **bold**: formal commitment; *italics*: planned

Site	Office (5 staff, 1 administration building)				Project funds			
	2016	2017	2018	Subsequent years	2016	2017	2018	Subsequent years
<b>Federal State of Baden-Württemberg</b>	<b>460,000</b>	460,000	460,000	322,000	<b>260,000</b>	200,000	200,000	140,000
<b>Communities of Baden-Württemberg*</b>					<b>120,000</b>	120,000	120,000	
<b>Communities</b>				138,000				60,000
<b>Total</b>	<b>460,000</b>	460,000	460,000	460,000	<b>380,000</b>	320,000	320,000	200,000

\*The Federal State of Baden-Württemberg has pledged an additional €60,000 in project funding for 2016–2018 if the communities (districts and municipalities) co-finance another €60,000.

The most important funding sources come from public funds. In the cooperation agreement, it is stipulated that the Federal State of Baden-Württemberg and the communities shall divide the financing at the rate of 70: 30. The communities – in this case, the Rural Districts of Landkreise Breisgau-Black forest highlands, Lörrach, and Waldshut, the Municipal District of Freiburg, and the 28 individual communities – will contribute 30% of the permanent core funding.

In the first three years, the costs will be completely covered by the state.

Up to ten positions (three of which are advanced) that can offered as the biosphere reserve is established have been considered in the budget.

## 17.5 Conclusion

In an almost perfect manner, the biosphere reserve combines the three functions of a biosphere reserve. Only on the basis of a stable economic and social development (development function) can it be ensured that the diverse and valuable cultural landscape is preserved and can continue to provide habitats for many endangered plant and animal species (protective function). The cooperation and interaction between humans and nature is an important research field for investigating the indicators of sustainable development. The results of these can be directly included in the process of education for sustainable development (logistic function).

Because of the consensus-oriented and therefore very complex foundation process, the acceptance of the local population and the participating municipalities for the biosphere reserve is quite high. This positive attitude can be addressed by the administration of the biosphere reserve and transferred into a control scheme.

Through the promotion of a culturally-based pasture management compliant with natural conservation as well as the near-nature forest management, important and diverse communities will be preserved and maintained.

## 18 SPECIAL AREA DESIGNATIONS

Within the Biosphere Reserve Black Forest, there are no other areas of special importance (e.g. UNESCO World Heritage Sites, Ramsar sites, or UNESCO Global Geo-parks).

However, a considerable part of the biosphere reserve includes Natura 2000 areas, nature reserves, forest reserves, protected woodlands, landscape conservation areas, and legally protected biotopes. They will be listed below.

In particular, the forest reserves will be subjected to permanent scientific monitoring.

An important core area of the Biosphere Reserve Black Forest is located in the "Feldberg-Belchen-Oberes Wiesental" Natural Conservation Project (which ended in 2012) as well as the "Oberer Hotzenwald" LIFE Project. Both projects afforded important preliminary work and foundations, which should be included in the conceptual framework of the biosphere reserve and continued.

Name	Number	Area [ha]
<b>Sites of Community Importance/SCI</b>		<b>19,042</b>
Alb zum Hochrhein	8314341	788.5
Belchen	8113341	2456.2
Bernauer Hochtal and Taubenmoos	8214342	1698.6
Blasiwald and Unterkrummen	8214341	358.8
Präg glacial cirques and pastures in Oberen Wiesental	8213311	4778.2
Black forest highlands around the Feldberg	8113342	4118.2
Black forest highlands around Hinterzarten	8114341	547.8
Kandelwald, Roßkopf, and Zartener Becken	8013342	106.7
Oberer Hotzenwald	8214343	1412.1
Röttler Forest	8312341	546.4
Schauinsland	8013341	651.0
Valleys of Schwarza, Mettma, Schlücht, Steina	8315341	637.6
Pastures near Gersbach and on the Wehra	8313341	942.2
<b>Special Protection Areas</b>		<b>25,943</b>
Southern black forest	8114441	25942.9
<b>Nature reserves</b>		<b>9,792</b>
Faulbach forest reserve	3,091	21.6
Wehratal forest reserve	3,122	127.7
Belchen	3,042	1239.6
Bruggmatt	3,078	2.1
Ennersbacher Moor	3,176	20.0
Feldberg	3,001	3287.1
Friedrich-August-Grube	3,270	6.3
Präg Glacial Cirques	3,201	2866.8
Horbacher Moor	3,012	11.7
Kirchspielwald-Ibacher Moos	3,262	283.0

Kohlhütte-Lampenschweine	3,221	150.7
Langenbach-Trubelsbach	3,207	36.0
Nonnenmattweiher	3,161	70.8
Rüttewies-Scheibenrain	3,244	64.3
Schauinsland	3,264	746.3
Snowdrop site in communal district of Buch, District of Waldshut	3,046	1.8
Taubenmoos	3,276	204.7
Utzenfluh	3,034	272.5
Wiedener Weidberge	3,279	379.0
<b>Bannwald [Forest Reserve]</b>		<b>1,475</b>
Ebener Wald	new in 2015	41.2
Erleboden	new in 2015	7.9
Faulbach	100008	76.8
Finstergund	new in 2015	6.8
Flüh	100007	49.7
Geschwender Halde	new in 2015	50.2
Hirschfelsen	100041	21.2
Hohmüttlen	new in 2015	68.2
Napf	100009	175.1
Napf Expansion	new in 2015	20.5
Salendobel	new in 2015	37
Scheibenfelsen	100056	81.3
Scheibenfelsen Expansion	new in 2015	43.6
Schwarzahalden	100005	281.5
Schwarzahalden Expansion	100138	151.1
Seewald	new in 2015	82.2
Staltenrain	new in 2015	1.4
Stutzfels	100065	18
Stutzfelsen Expansion	new in 2015	10.3
Tannenboden	new in 2015	8.3
Wehratal	100006	128.3
Wehratal Expansion	new in 2015	110.1
Windbergschlucht	100060	3.9
<b>Protected landscape areas</b>		<b>20,667</b>
Albtal (Underflow of Hauensteiner Alb)	3,37,001	277.4
Bernau im Schwarzwald	3,37,022	3202.2
Breitnau-Hinterzarten	3,15,026	0.4
Dachsberg	3,37,012	4755.0
Feldberg	3,15,022	31.0
Feldberg	3,36,020	124.4
Feldberg-Schluchsee	3,15,036	2821.7
Häusern	3,37,018	766.7
Heubronner Eck	3,36,013	0.3

Heubronner Eck	3,15,009	0.3
Black forest highlands - areas of Feldberg, Friedenweiler, and Schluchsee	3,15,019	0.3
Horben	3,15,002	843.7
Markgräfler Hügelland and adjacent western Southern black forest	3,15,035	3.6
Nonnenmattweiher	3,36,010	2.8
Schauinsland (District of Breisgau-Black forest highlands)	3,15,032	1659.1
Schauinsland (Urban District of Freiburg)	3,11,008	1741.0
Schwarzwaldtäler (Schluchttal)	3,37,007	712.3
St Blasien	3,37,023	3578.2
Wehratal	3,37,009	60.3
Wehratal	3,36,011	66.3
Wiedener Eck and Lückle	3,36,019	10.9
Wiedener Eck and Trubelsmattkopf	3,36,009	9.2
<b>Schonwälder (protected woodlands)</b>		<b>949</b>
Albtal-Bergwald	200309	38.3
Burgfelsen	200252	7.3
Eschenmoos	200018	36.8
Kirchspielwald - Ibacher Moos	200398	70.0
Mutterslehener Moos	200183	6.1
Nonnenmattweiherhalde	200155	17.5
Ob dem Hirschsprung	200198	31.5
Rollspitz	200412	22.7
Schauinsland	200363	285.4
St Wilhelm ice holes	200020	2.7
Wittmoos	200357	9.5
Zastler ice holes	200019	4.8
Zastler Loch	200358	43.0
Zastler Tal	200356	373.4

## 19 ANNEX (supporting documents)

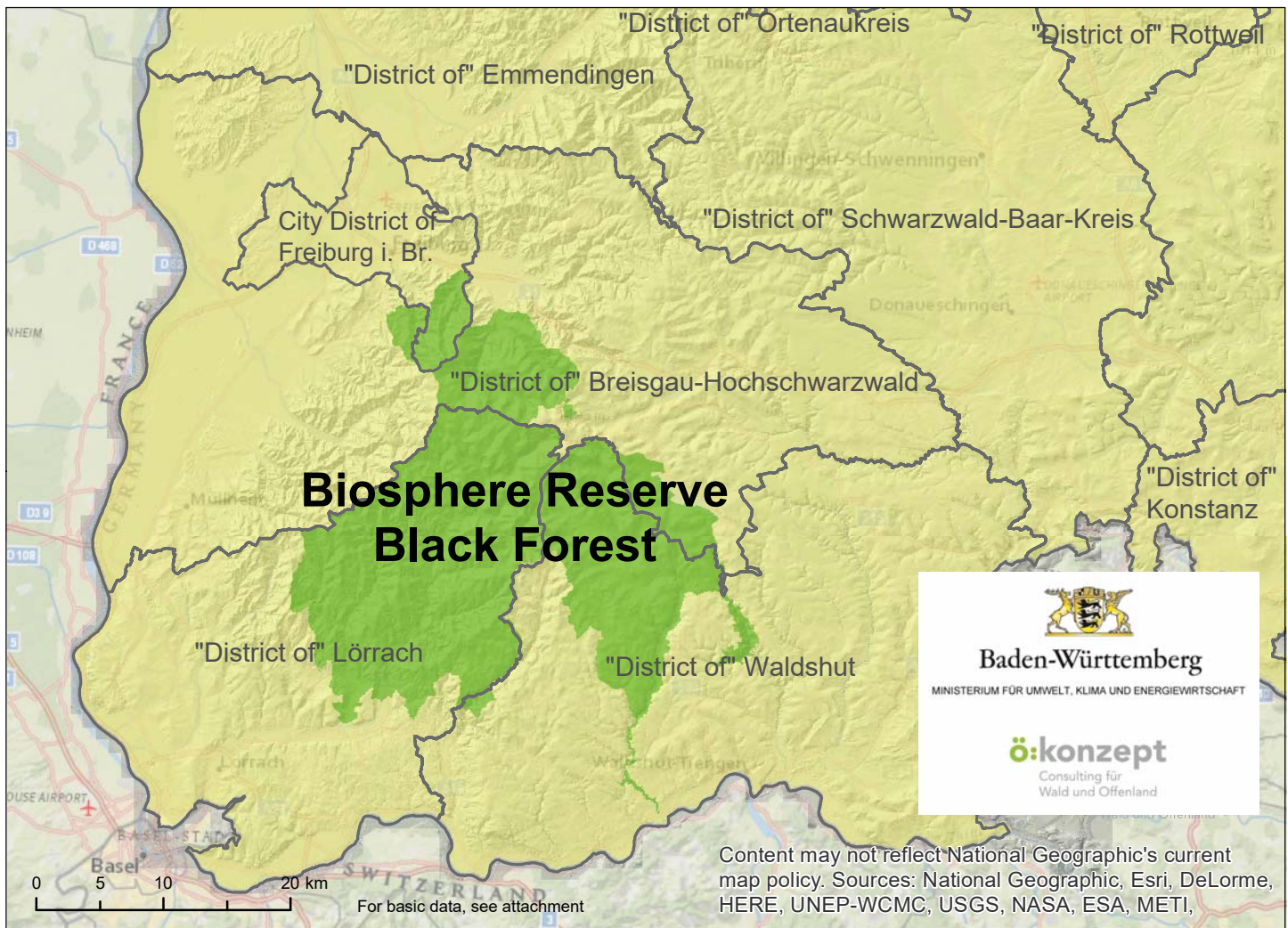
### 19.1 Maps (Location, Zonation, Vegetation and further thematic maps)

No.	Map titles DIN	Contents	Data source
Ia	A4 <b>Location in Germany</b>	Administrative borders, digital terrain model  Map	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©ESRI: Base map
Ib	A4 <b>Location and zoning WGS</b>		
II	A1 <b>Zoning and area function in the exterior area</b>	Administrative boundaries, DTM100, DEM, ALKIS  Protection areas	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Daten from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
III	A4 <b>Catchments</b>	Administrative borders, localities	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19
IV	A4 <b>Spatial types</b>	Data of spatial types, administrative boundaries  Map	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©ESRI: Base map
V	A4 <b>Municipalities</b>	Administrative borders	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19
VI	A4 <b>Vertical zoning</b>	Administrative boundaries, DEM, localities, mountains  Data on the potential natural vegetation	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Daten from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
VII	A3 <b>Climate</b>	DGE, localities, mountains  Climate atlas	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Daten from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
VIII	A4 <b>Geology</b>	DEM  Vector data of geology 1:300.000	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Landesamt für Geologie, Rohstoffe und Bergbau (LGRB) im Regierungspräsidium Freiburg [State Office Geology, Raw Materials and Mining at the Regional Authority of Freiburg]
IX	A3 <b>Land use</b>	ALKIS, digital terrain model, localities	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19

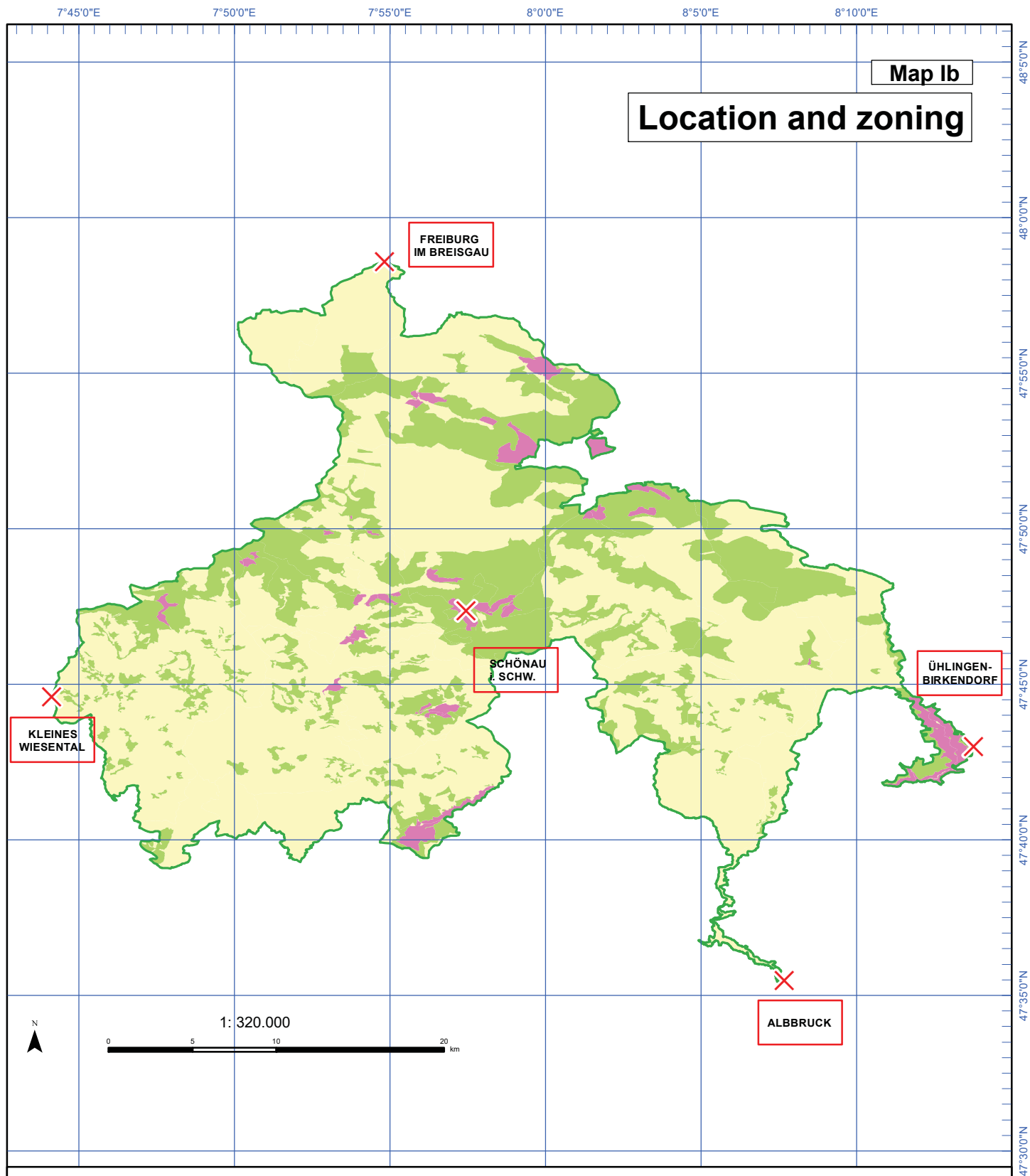
<b>X</b>	<b>A3</b>	<b>Protected areas</b>	DEM, localities Protected areas	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Daten from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
<b>XI</b>	<b>A4</b>	<b>Wildlife ecology</b>	DEM, localities, mountains Data on wildlife ecology	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg (FVA; Forest Research Institute of Baden-Württemberg)
<b>XII</b>	<b>A4</b>	<b>Forest ownership</b>	DEM, localities Data from FOGIS	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Forst BW
<b>XIII</b>	<b>A4</b>	<b>Area%:</b>	Administrative boundaries, localities  Data from area use plan	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Regional Authority of Freiburg
<b>XIV</b>	<b>A4</b>	<b>Map interface, core area</b>	DEM, ALKIS localities Protection areas	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Data from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
<b>XVa-t</b>	<b>A5</b>	<b>Detailed core areas</b>	DTK50sw, ALKIS  Protected areas	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19 ©Daten from the Räumlichen Informations- und Planungssystem (RIPS; Spatial Information and Planning System) of Landesanstalt für Umwelt, Messungen und Naturschutz Baden-Württemberg (LUBW; the State Institute for Environment, Measurements and Nature Conservation Baden-Württemberg)
	<b>A4</b>	<b>Area map</b>	Administrative borders, digital terrain model, localities	© Landesamt für Geoinformation und Landentwicklung Baden-Württemberg [State Office for Geoinformation and Land Development Baden-Württemberg], <a href="http://www.lgl-bw.de">www.lgl-bw.de</a> , File no.: 2851.9-1/19



# BIOSPHERE RESERVE BLACK FOREST







### Coordinates of the biosphere reserve (Projection in accordance with WGS 84)

Location	x Values	y Values
Northernmost point	47°58'35"	7°54'49"
Westernmost point	47°44'36"	7°44'07"
Southernmost point	47°35'28"	8°07'41"
Easternmost	47°42'59"	8°13'46"
Centre	47°47'21"	7°57'27"

Note:  
All other maps included with this application are as follows:

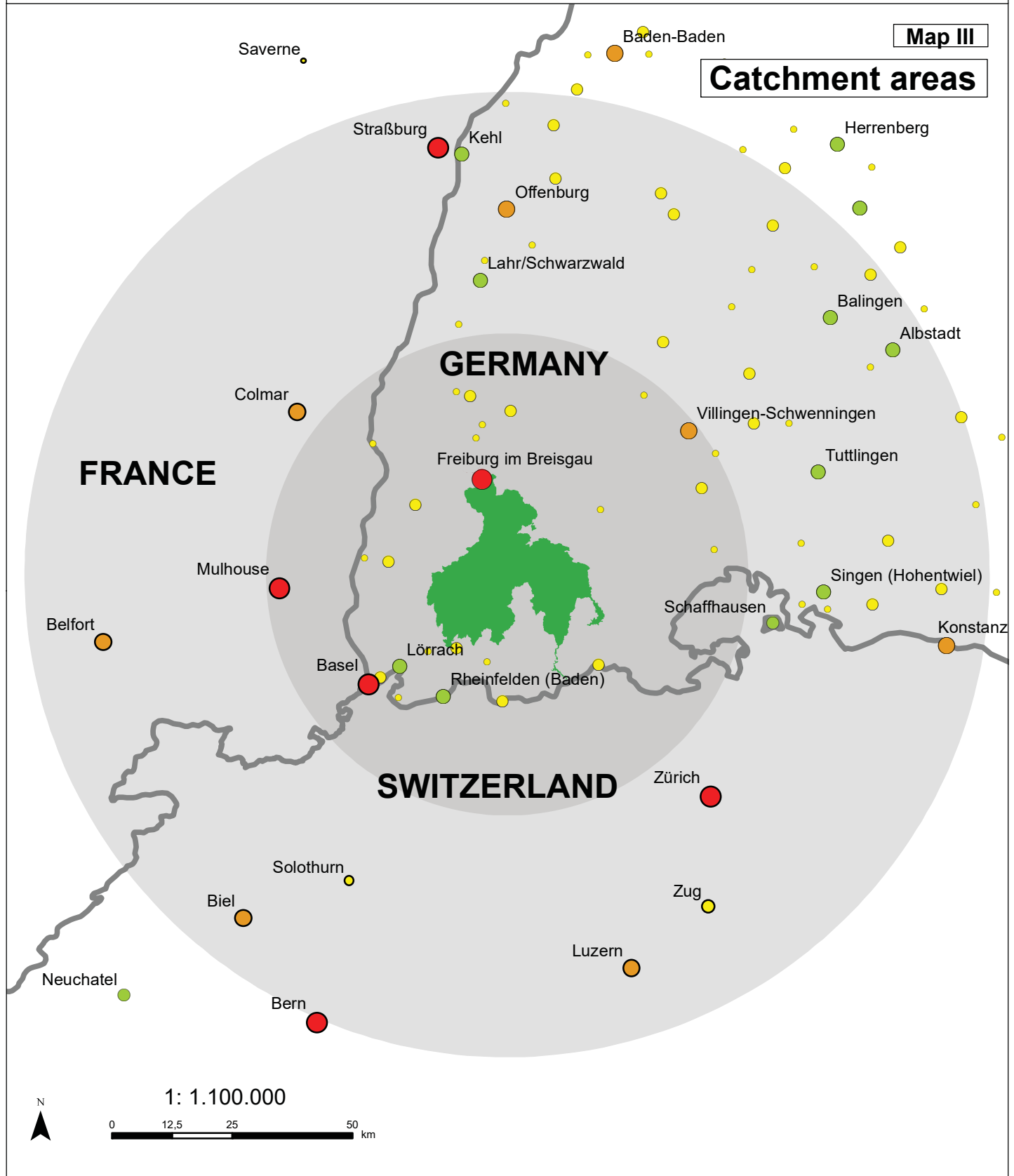
DHDN\_3\_Degree\_Gauss\_Zone\_3  
WKID: 31467 Authority: EPSG  
Projection: Transverse\_Mercator



**ö:konzept**  
Consulting für  
Wald und Offenland



# BIOSPHERE RESERVE BLACK FOREST



Cities with more than 10,000 Inhabitants

- 10,000 - 15,000
- 15,000 - 30,000
- 30,000 - 50,000
- 50,000 - 100,000
- 100,000 - 600,000

Catchment areas

Buffer around centre

- 50 km periphery
- 50-100 km periphery



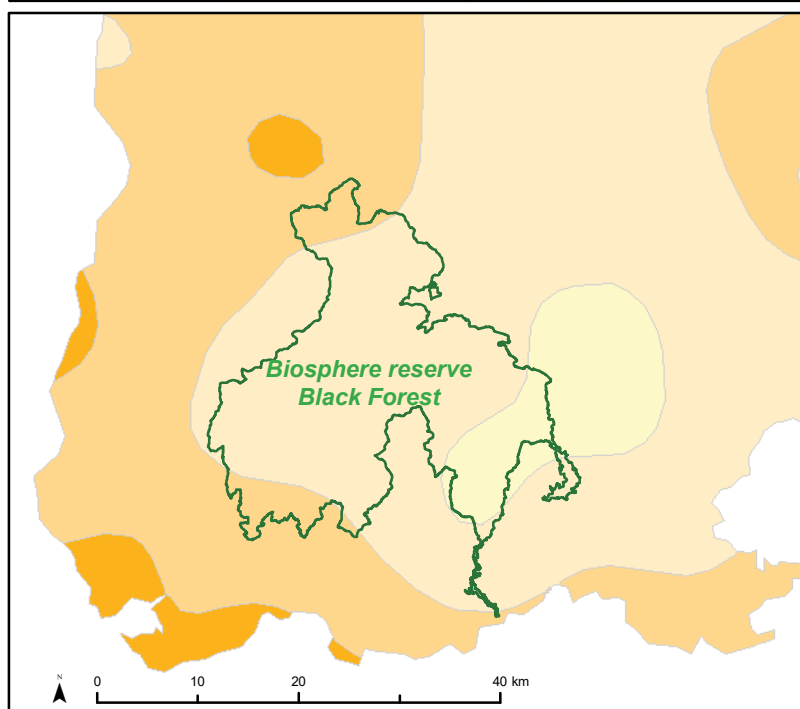
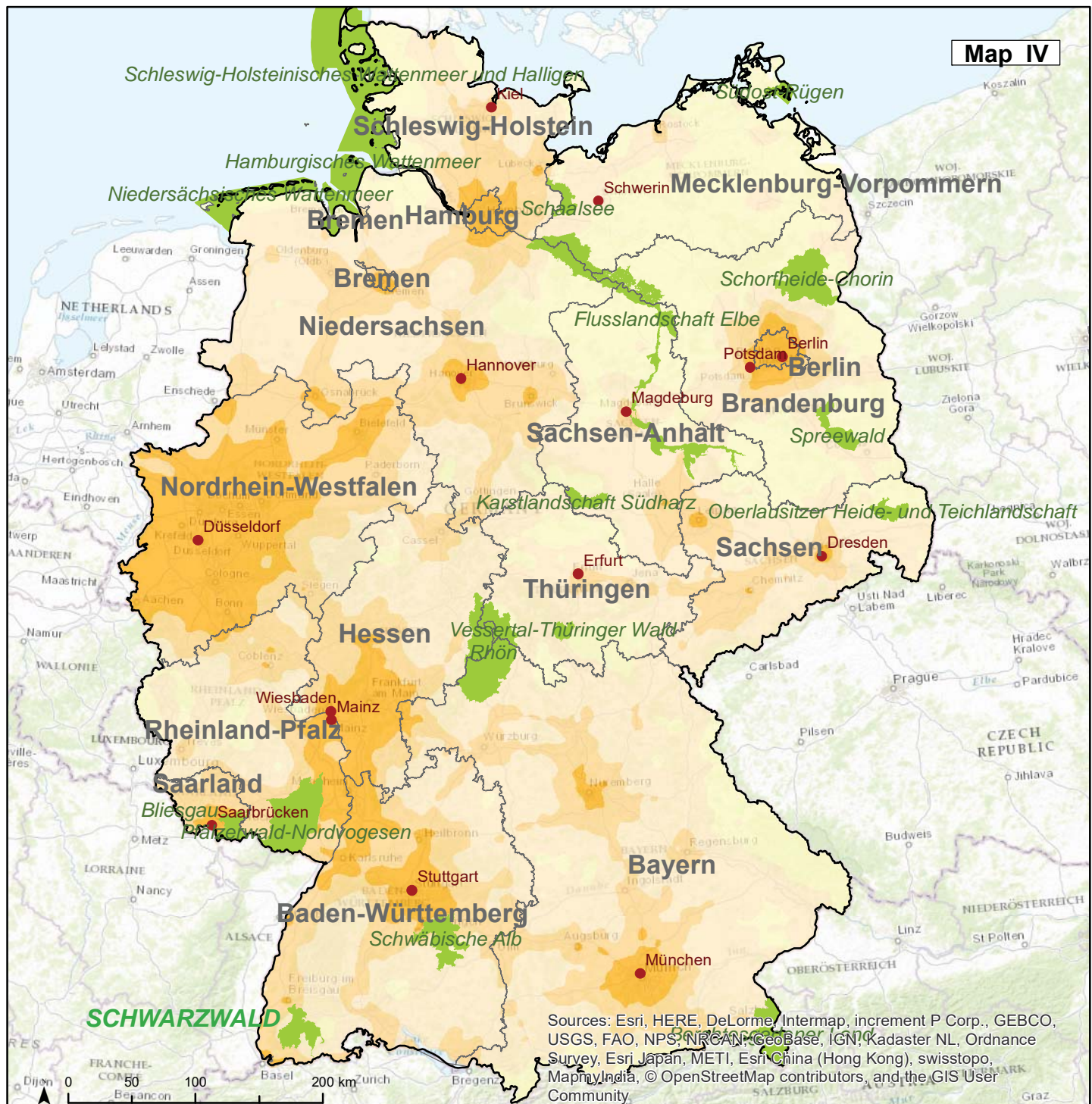
**Baden-Württemberg**

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## Biosphere reserves and space types

### Germany

- Federal states
- Federal state capitals
- Federal capital
- Biosphere reserves

### Space types

- very rural
- rural
- urban
- very urban



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# BIOSPHERE RESERVE BLACK FOREST

Map V

**Municipalities**



## Districts

- Breisgau-Hochschwarzwald
- Lörrach
- City District of Freiburg i. Br.
- Waldshut

## Municipalities



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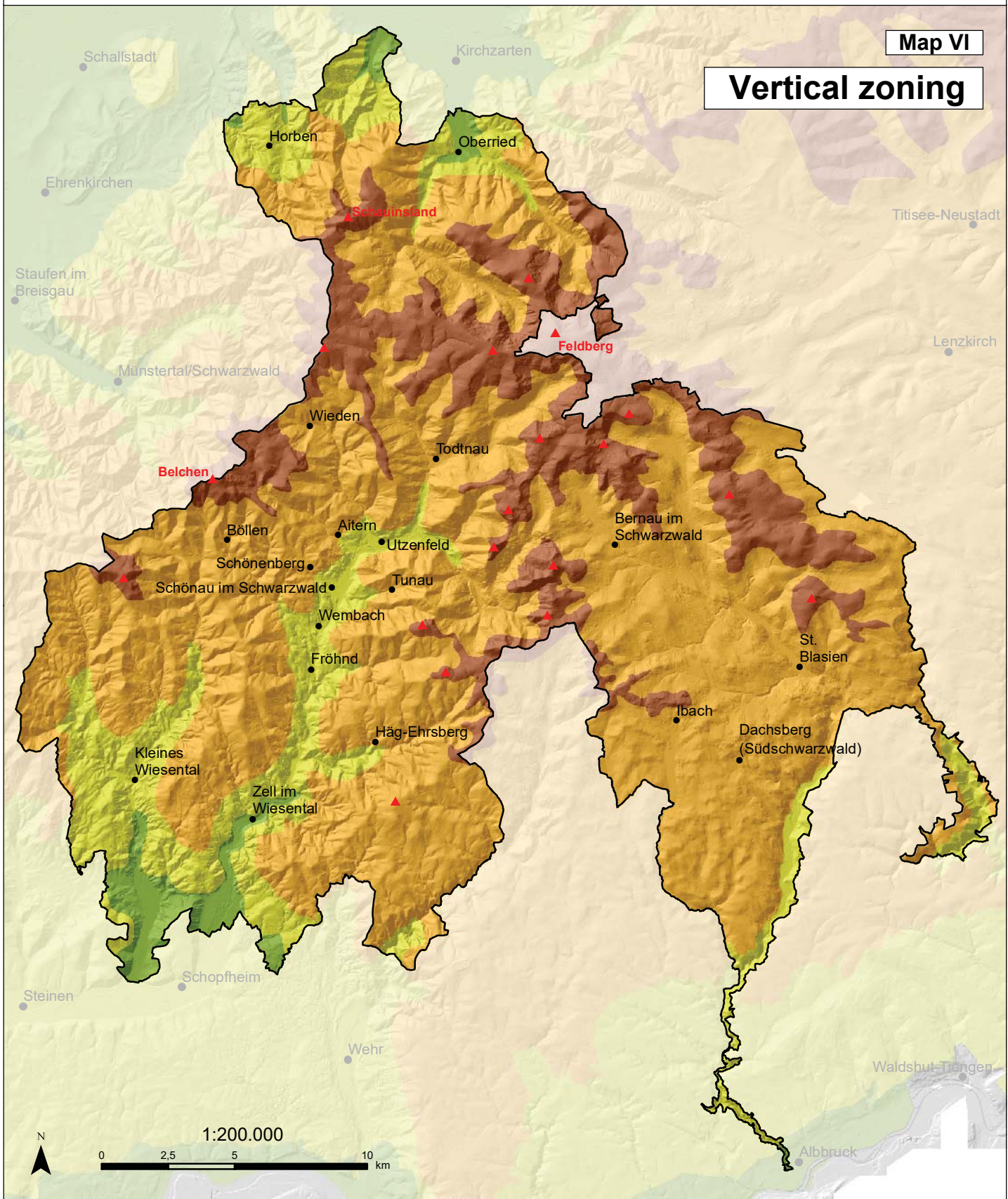
For basic data, see attachment



# BIOSPHERE RESERVE BLACK FOREST

Map VI

## Vertical zoning



### Elevations

- high montane
- montane
- sub-montane
- colline

▲ Elevation  
>1,100 m



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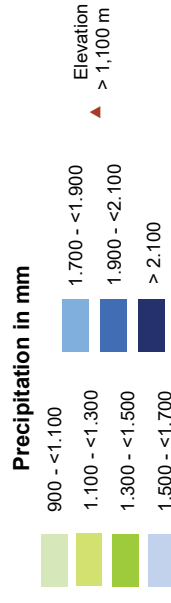
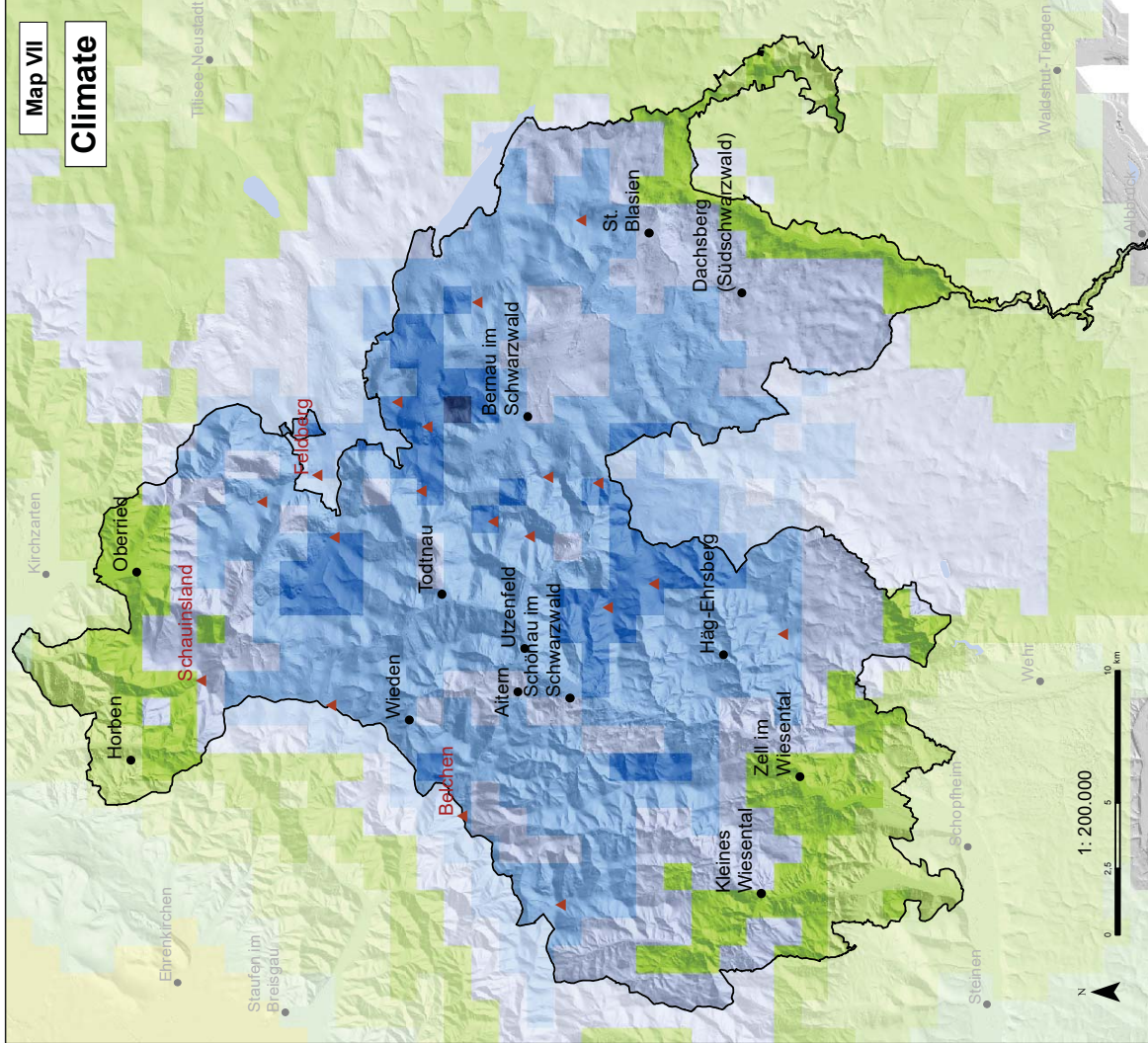
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## BIOSPHERE RESERVE BLACK FOREST



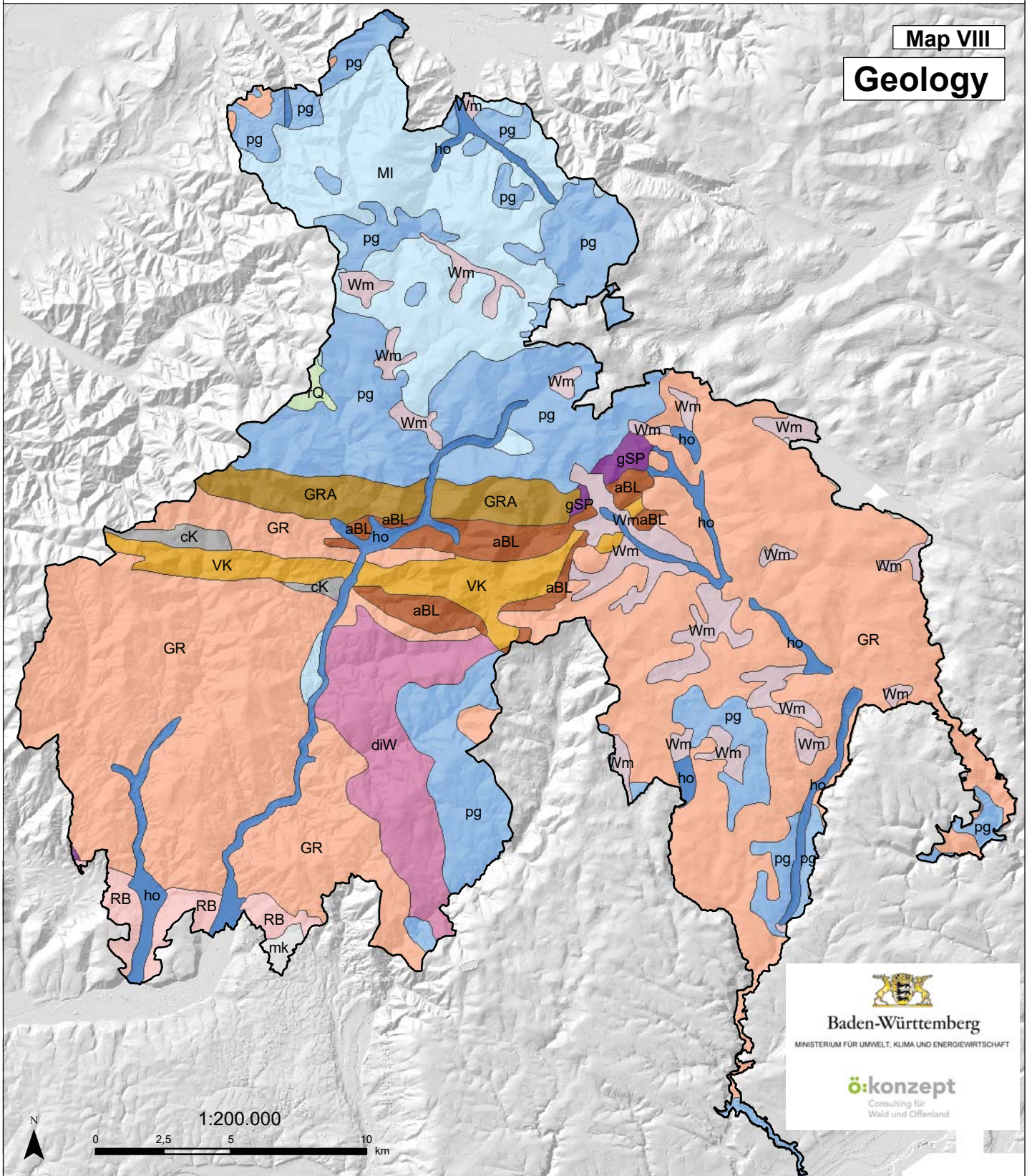
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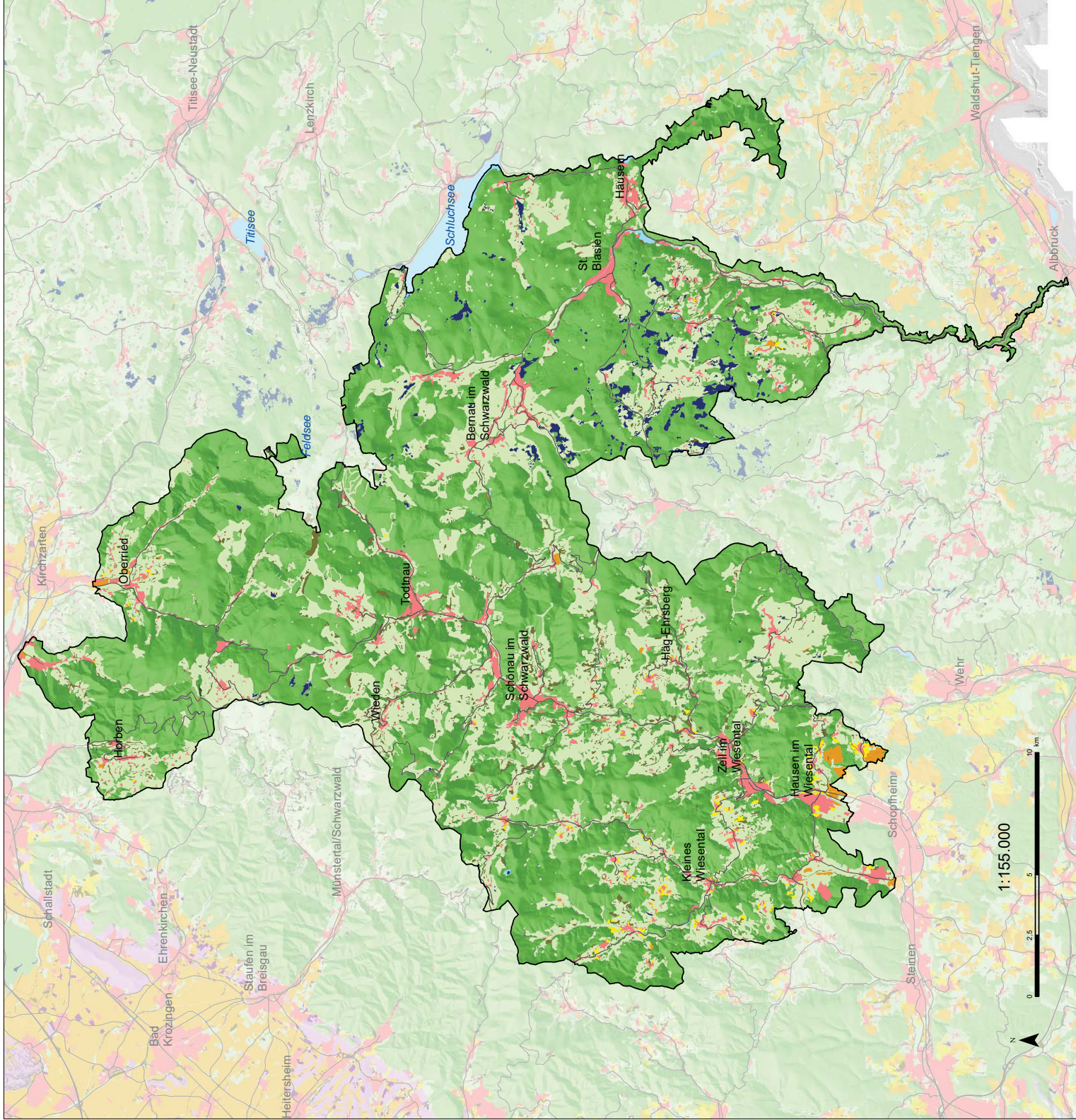
Map VIII

## Geology



- |  |  |  |
|--|--|--|
| Granite GR                             | Limestone mk                           | Rotliegend, red sandstone RB                             |
| Moraines of the last glacial period Wm | Paragneiss pg                          | Spießhorn metamorphic rock gSP                           |
| Holocene valley infill ho              | Paragneiss diW (Wiese-Wehra formation) | Slate and sandstone aBL                                  |
| Conglomerate cK                        | Edge granite GRA                       | Volcanic rock (tuffs, igneous breccias) and greywacke VK |
| Migmatite MI                           | Rotliegend quartz porphyry rQ          |  |





# BIOSPHERE RESERVE BLACK FOREST

Map IX

## Vegetation and land use

- Use forms in the biosphere reserve
- Settlement
  - Forest
  - Wood lot/grove
  - Grassland
  - Body of water
  - Moor
  - Meadow with scattered fruit trees
  - Arable land
- Other forms of use outside of the biosphere reserve
- Vineyard
  - Orchard
- Transport route

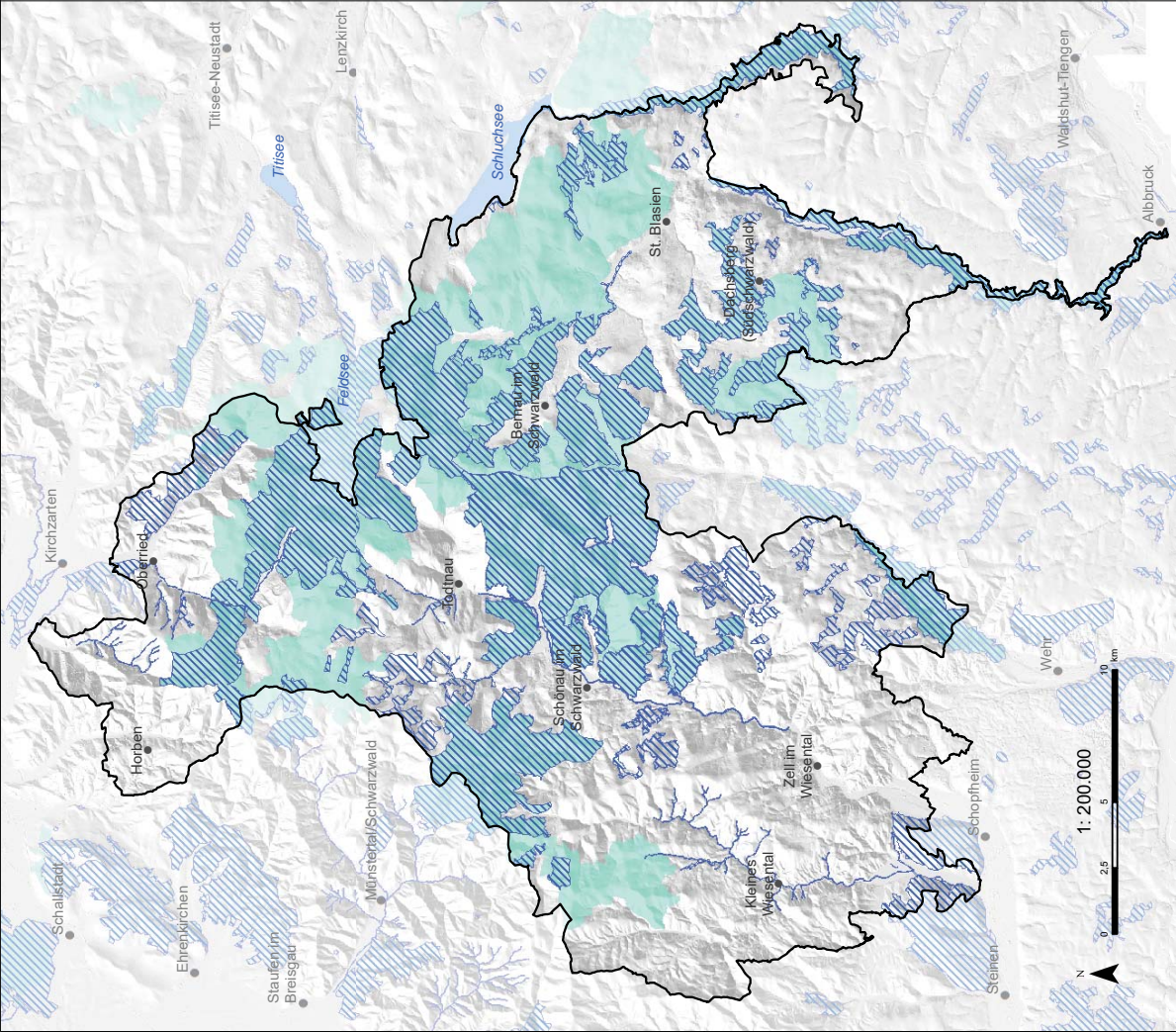


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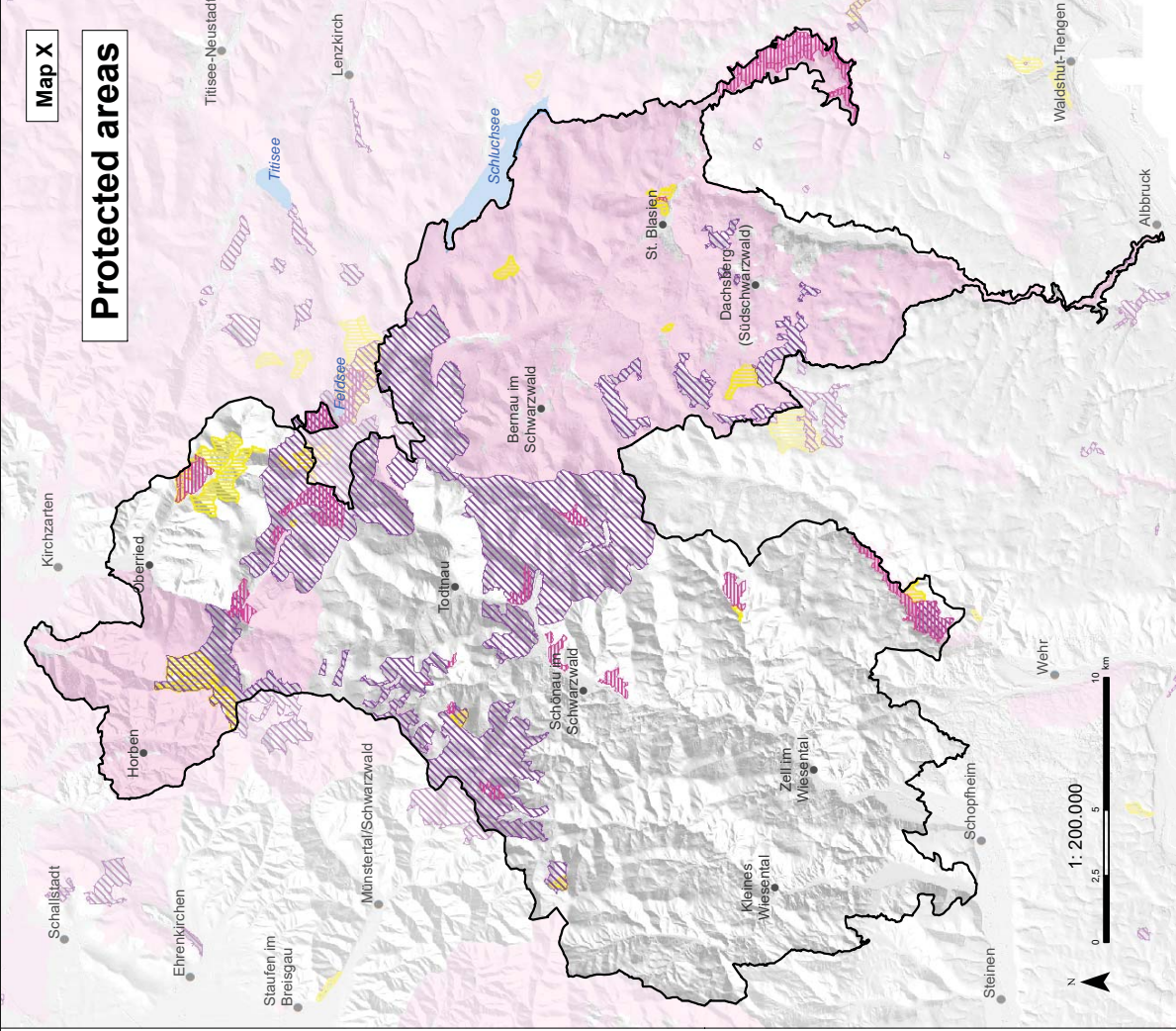


BIOSPHERE RESERVE BLACK FOREST



Natura 2000 - protected areas

- FFH area
- SPA area



Other protected areas

- Nature reserve
- Forest reserve
- Landscape protection area
- Protected woodland

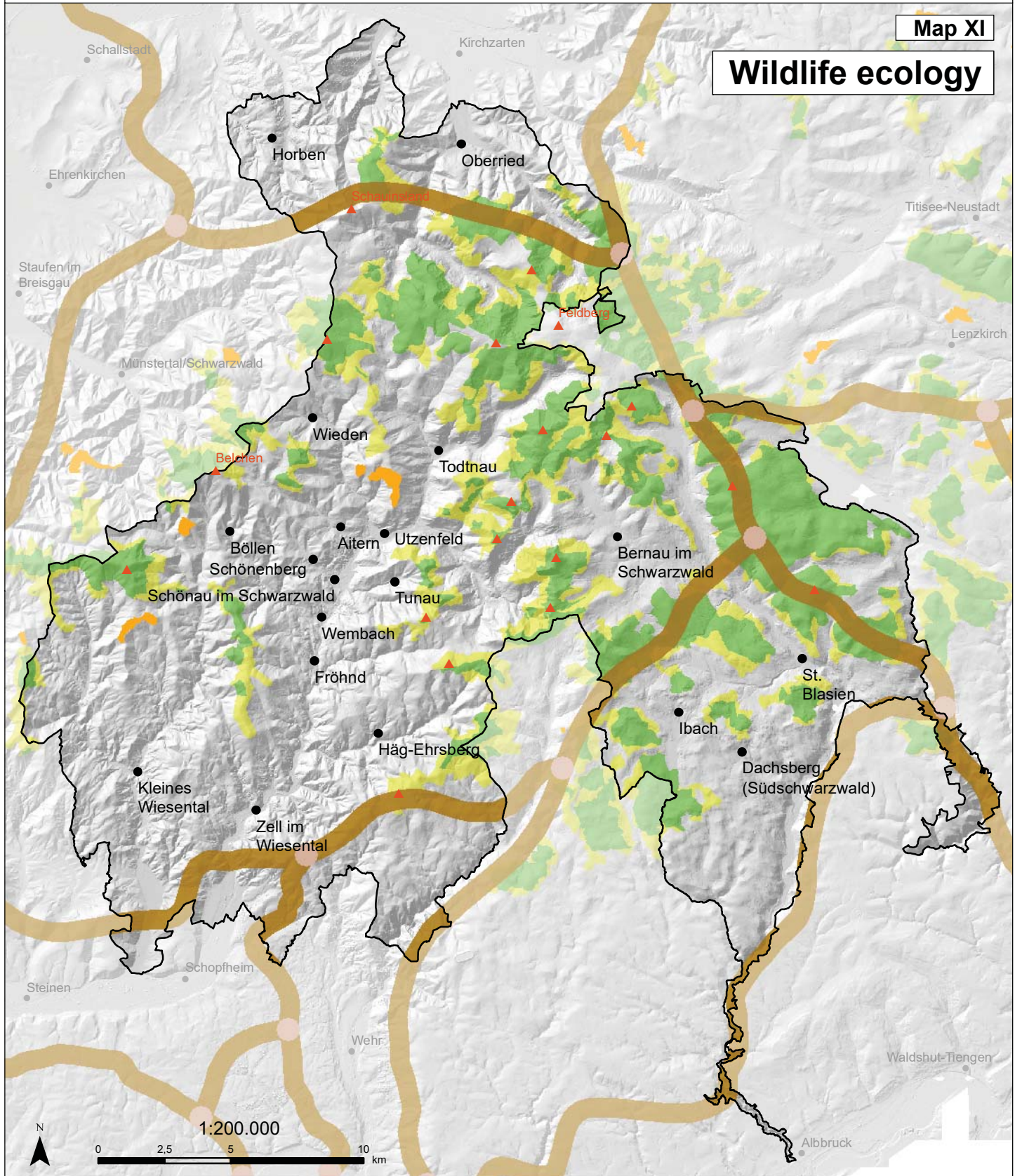
Map X  
Protected areas



# BIOSPHERE RESERVE BLACK FOREST

Map XI

## Wildlife ecology



### Grouse

- PRIO 1 or 2
- PRIO 3
- Stepping stone

### Wild trail

- Nodes
- Axes
- Elevation  
> 1,100 m

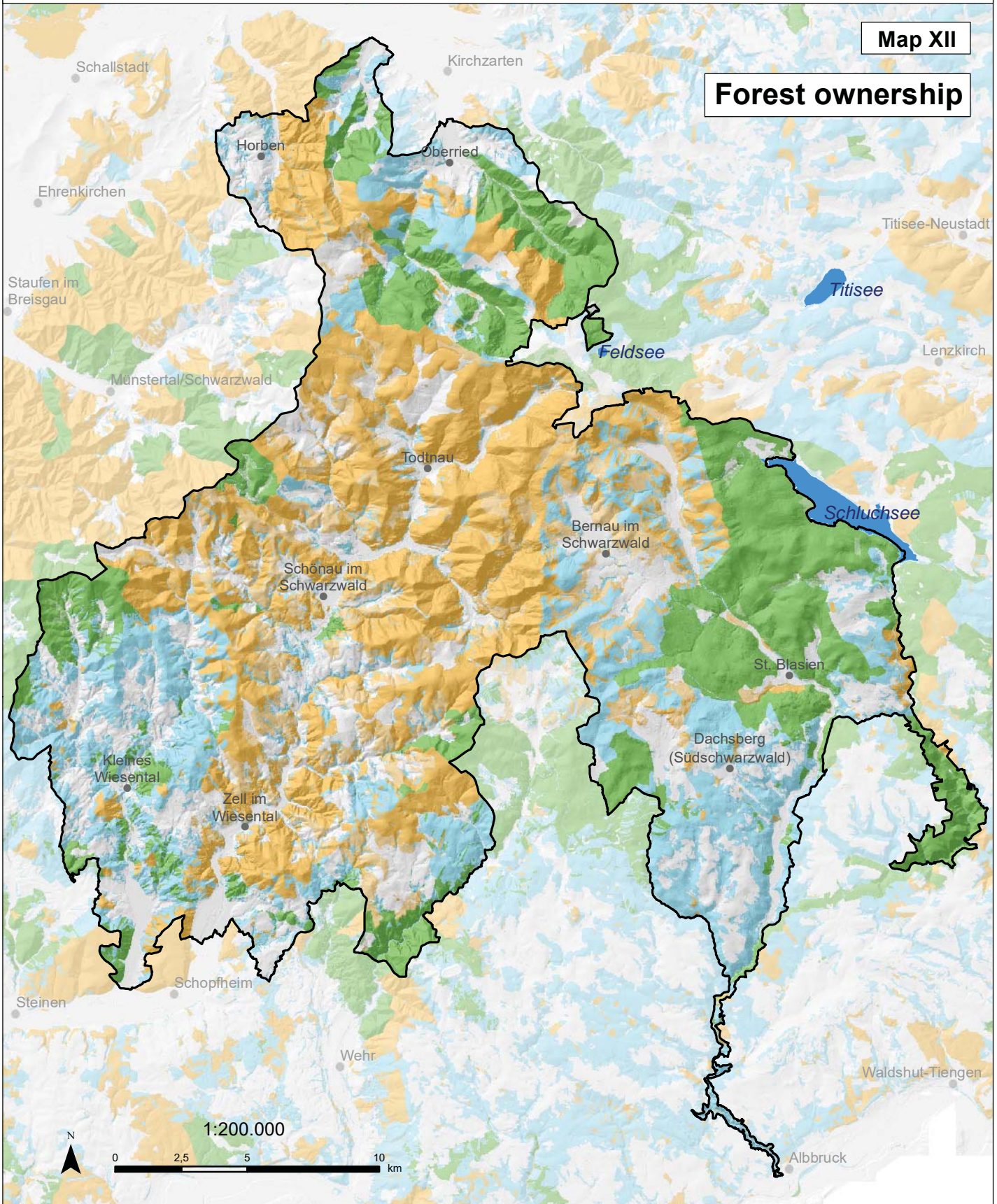
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# BIOSPHERE RESERVE BLACK FOREST

Map XII

## Forest ownership



- State forest
- Corporate forest
- Private forest

- Body of water



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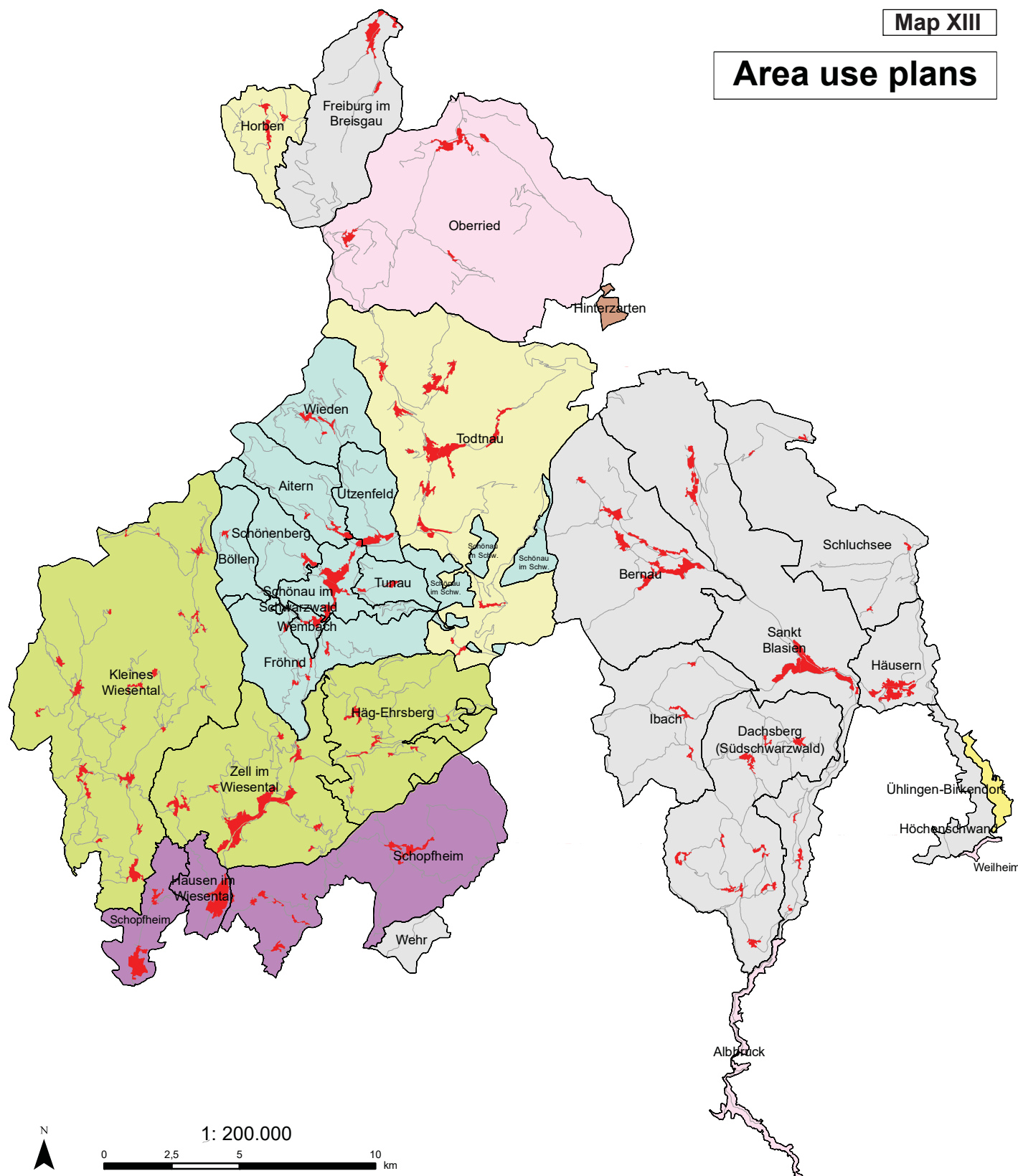
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# BIOSPHERE RESERVE BLACK FOREST

Map XIII

## Area use plans



1: 200.000

0 2,5 5 10 km

### Municipalities with area use plans (In force)

	Municipalities		2012		2002		1985
	Locality		2009		1997		1983
	Transport route		2006		1995		



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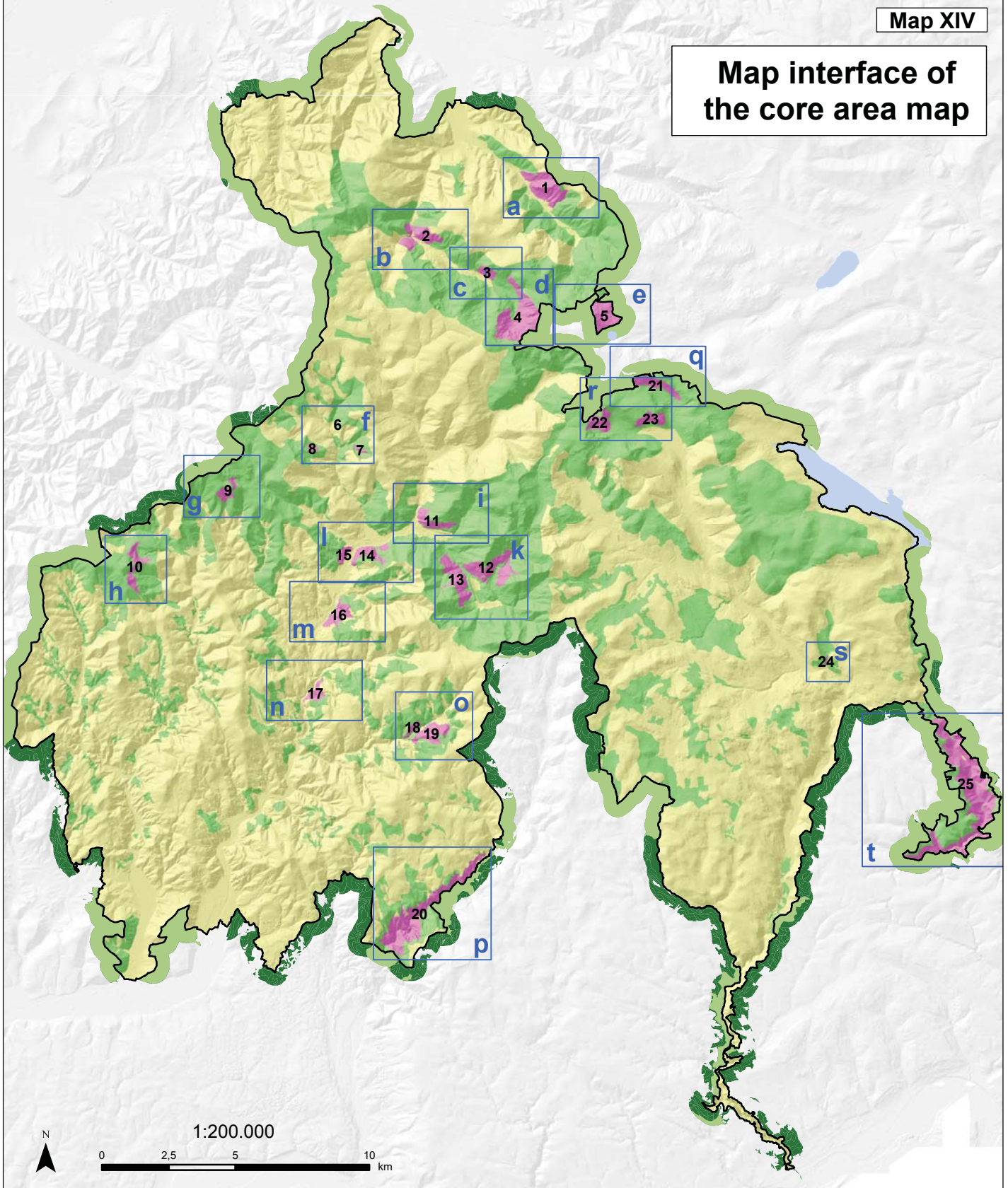
For basic data, see attachment



# BIOSPHERE RESERVE BLACK FOREST

Map XIV

Map interface of  
the core area map



## Zoning

- Core area
- Buffer zone
- Transition area

## Detailed map

- Map interface of the core area map

## Areas adjacent to the biosphere reserve (500 m)

- Protected areas adjacent to biosphere reserve (with a buffering function)
- Forested area

For basic data, see attachment



## 19.2 Detailed description of the core areas

On the following pages, core areas will be presented in tabular, cartographic, and written form. The location and numbering of the core areas can be found on Map XIV on the previous page.

Each area will first be described from a nature conservation perspective. Nearly all core areas have a near-nature assortment of tree species compared with the potential natural vegetation (cf following table). Over half of the core area has been out of use for over 45 years and is in a relatively advanced phase of process protection.

It is presented how an undisturbed development is guaranteed. Most core areas are completely surrounded by buffer zones. In individual cases, core areas suitable for nature conservation are on the outer edge of the biosphere reserve, private owners were not prepared to have their areas included in the buffer zone, or were adjacent to small sections of infrastructure related to transition areas. Below, it is described how an undisturbed development is conceivable from a technical perspective. It was checked whether only activities consistent with the protection goals were carried out in the areas adjacent to the core area in the sense of Section 4, Subsection 5b of the *Statutory Framework of the World Network of Biosphere Reserves* (a buffer zone or zones clearly identified and surrounding **or** contiguous to the core area or areas, where only activities with the conservation objectives can take place).

A buffer function, which is equivalent to the buffer zone, can be considered as given if at least one of the following criteria is fulfilled:

- The adjacent areas have at least one of the regally protected protection statuses listed below:
  - Natura 2000 protected according to
    - Directive 92/43/EEC of the council from 21 May 1992 on the preservation of natural habitats and of wild fauna and flora.
    - Directive 2009/147/EEC of the European Parliament and the council from 30 November 2009 on the preservation of natural bird species
  - Nature reserve in accordance with §23 of the BNatSchG
  - Protected woodlands in accordance with §32 of the LWaldG
  - Conservation area in accordance with §26 of the BNatSchG
- The adjacent areas represent forest areas. In Germany, forest management represents an extensive land use; in Baden-Württemberg, it is carried out in a near-natural manner. It has an internationally recognised standard and is officially monitored.

**Table: Individual description of the core areas**

*Abbreviations:* BW: forest reserve, KZF: core area, k.A.: not specified

Tree species abbreviations: Ah/BAh: maple/sycamore (*Acer pseudoplatanus*) beech (*Fagus sylvatica*); Dgl: Douglas (*Pseudotsuga manziessii*); Ei: sessile oak (*Quercus petraea*); Er: black alder (*Alnus glutinosa*) Es: ash (*Fraxinus excelsior*); Fi: spruce (*Picea abies*); sLB: other hardwood (e.g.: linden, birch, Norway maple, aspen); sNB: other coniferous wood (e.g. Scotch pine, larch); Str: soft pine (Weymouth pine, *Pinus strobus*); Ta: fir (*Abies alba*); Vb: rowan berry (*Sorbus aucuparia*)

*Data sources:* The current tree species proportions were taken from the current forest management data, which were provided by the Regional Authority of Freiburg (Department 8, Forest Service). In general, the data are less than 10 years old. The local forests were taken directly from the current forest site mapping. Forest Research Institute of Baden-Württemberg in Freiburg is responsible for the data management.

No.	Name of the core area	Municipality	Owner	ha	Current Tree species fraction	natural forests (local forest)	%
1	Scheibelfelsen forest reserve with expansion	Oberried	Federal State of Baden-Württemberg	124.9	Fi: 5%	beech-fir-sycamore forest	26
					Ta: 27%	unstocked areas	23
					Dgl: 3%	beech-fir-sessile oak forest	20
					Bu: 44%	beech-fir forest	16
					Wi: 7%	no classification available	7
					Ah: 4%	beech-sessile oak forest	7
2	Faulbach Forest Reserve	Oberried	Federal State of Baden-Württemberg	76.8	Es: 6%		
					sLB: 4%		
					Fi: 15%	beech-fir-sycamore forest	48
					Ta: 35%	unstocked areas	13
					sNB: 1%	beech-fir-sessile oak forest	15
					Bu: 46%	beech-fir forest	24
3	Hirschfelsen Forest Reserve	Oberried	Federal State of Baden-Württemberg	21.2	Ah: 2%		
					Es: 1%	beech-fir-sycamore forest	68
4	Napf forest reserve with expansion	Oberried	Federal State of Baden-Württemberg	195.7	not specified	unstocked areas	32
					Fi: 48%	beech-fir-sycamore forest	25
					Ta: 13%	beech-fir forest	29
					Bu: 32%	spruce-fir-beech forest	42
					Ah: 7%	beech-sycamore-fir forest	5
5	Seewald Forest Reserve	Hinterzarten	Federal State of Baden-Württemberg	82.2	Fi: 80%	fir-spruce-beech forest	72
					Bu: 8%	spruce-fir forest	11
					Vb: 5%	spruce forest	9

No.	Name of the core area	Municipality	Owner	ha	Current Tree species fraction	natural forests (local forest)	%
<b>6</b>	Staltenrain Forest Reserve	Wieden	Municipality of Wieden	1.4	BAh: 7%	sycamore-fir forest	8
					Fi: 20%	no local forest evaluation	
					Bu: 60%		
					Es: 10%		
<b>7</b>	Finsterggrund Forest Reserve	Wieden	Municipality of Wieden	6.8	slb: 10%	beech-fir forest	100
					Fi: 26%		
					Ta: 6%		
					Dgl: 2%		
<b>8</b>	Tannenboden Forest Reserve	Wieden	Municipality of Wieden	8.3	Bu: 65%	beech-fir forest	100
					Fi: 60%		
<b>9</b>	Stutzfelsen forest reserve with expansion, Belchen-Süde core area	Böllen, Kleines Wiesental, Schönenberg	Municipalities of Böllen, Schönenberg, and Kleines Wiesental	31.4	Bu: 40%	beech-fir-sycamore forest	27
					Fi: 33%		
					Ta: 1%		
					Bu: 60%		
					Ah: 3%		
<b>10</b>	Weiherwald core area	Kleines Wiesental	Municipality of Kleines Wiesental	52.7	slb: 3%	beech-fir-sycamore forest	16
					Fi: 25%		
					Ta: 30%		
					Dgl: 1%		
					Bu: 43%		
<b>11</b>	Geschwender Halde forest reserve	Todtnau	City of Todtnau	50.2	Ah: 1%	spruce-fir-beech forest	12
					Fi: 28%		
					Dgl: 6%		
					Bu: 47%		
					Ah: 10%		
<b>12</b>	Salendobel forest reserve, Sengalenhalden core area	Schönau, Todtnau	City of Schönau, City of Todtnau	113.0	Es: 9%	beech-sessile oak forest	31
					Fi: 21%		
					Ta: 4%		
					Dgl: 7%		
					sNb: 1%		
					Bu: 55%		
					Ah: 8%		
					Es: 1%		
					Er: 2%	beech-sessile oak forest	8
					slb: 1%		

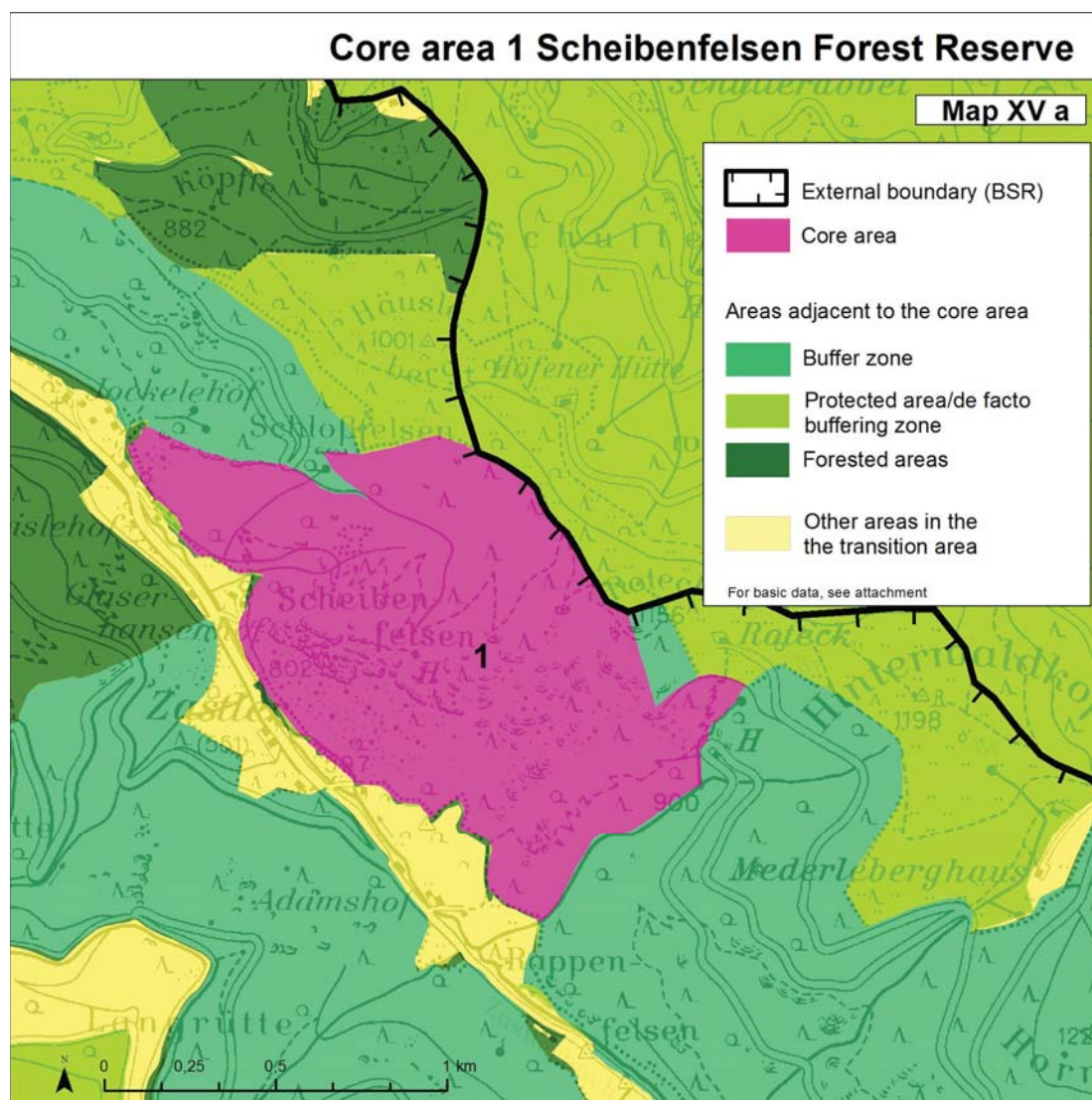
No.	Name of the core area	Municipality	Owner	ha	Current Tree species fraction	natural forests (local forest)	%
<b>13</b>	Nollenwald core area	Schönau, Todtnau	City of Schönau, City of Todtnau	92.8	Fi: 27%	beech-fir-sycamore forest	32
					Ta: 12%	beech-fir-sessile oak forest	17
					Bu: 44%	beech-fir forest	51
					Ah: 8%		
					Es: 5%		
<b>14</b>	Ebener Wald forest reserve, Erlebo- den forest reserve	Schönau, Tunau, Utzenfeld	City of Schönau, Municipalities of Utzen- feld und Tunau	49.1	Er: 1%		
					Str: 1%		
					sLb: 2%		
					Fi: 10%	beech-fir-sycamore forest	51
					Ta: 6%	beech-fir forest	37
					Dgl: 2%		
					Bu: 49%	beech-sessile oak forest	12
					Wi: 3%		
					BAh: 8%		
					Es: 4%		
<b>15</b>	Schönenbuchen core area	Schönau im Schwarzwald	City of Schönau	19.1	Er: 9%		
					sLb: 10%		
					Fi: 5%	beech-fir-sycamore forest	28
					Ta: 15%	beech-sessile oak forest	72
					Bu: 35%		
					Wi: 25%		
					Ah: 5%		
					Es: 5%		
					sLb: 10%		
					Fi: 24%	beech-fir-sycamore forest	39
<b>16</b>	Flüh Forest Reserve	Schönau im Schwarzwald , Fröhnd	Federal State of Baden-Württemberg	49.7	Ta: 10%	beech-fir forest	12
					Dgl: 2%	beech-sessile oak forest	49
					Bu: 38%		
					Wi: 4%		
					Ah: 6%		
					Es: 8%		
					sLb: 8%		
<b>17</b>	Wühreloch core area	Zell i. W.	City of Zell i. W.	30.4	Fi: 22%	beech-fir-sycamore forest	52
					Ta: 2%	beech-fir forest	48
					Dgl: 1%		

No.	Name of the core area	Municipality	Owner	ha	Current Tree species fraction	natural forests (local forest)	%
<b>18</b>	Sägenwäldle core area	Häg-Ehrsberg	Municipality of Häg-Ehrsberg	12.5	Bu: 56%	beech-fir forest	100
					Wi: 2%		
					Ah: 7%		
					Es: 10%		
					Str: 1%		
<b>19</b>	Hohmüttlen Forest Reserve	Häg-Ehrsberg, Zell i. W.	Federal State of Baden-Württemberg	68.2	Fi: 22%	beech-fir-sycamore forest	29
					Ta: 14%	beech-fir forest	71
					Bu: 59%		
					Ah: 4%		
<b>20</b>	Wehratal forest reserve with expansion	Schopfheim, Wehr	Federal State of Baden-Württemberg	238.4	Fi: 6%	beech-fir-sycamore forest	27
					Ta: 15%	unstocked areas	5
					Bu: 44%	beech-fir-sessile oak forest	16
					Wi: 7%	beech-fir forest	21
					Ah: 11%		
<b>21</b>	Hochkopf core area	St Blasien	City of St Blasien	54.2	Es: 11%	beech-sessile oak forest	31
					sLb: 6%		
					Fi: 41%	beech-fir forest	10
					Ta: 5%	beech-fir-spruce forest	43
					Bu: 52%	fir-beech-sycamore forest	10
<b>22</b>	Herzogenhorn core area	St Blasien, Bernau	City of St Blasien, Municipality of Bernau	51.2	Ah: 2%	sycamore-fir forest	37
						beech-fir-spruce forest	12
					Fi: 63%	fir-spruce-beech forest	19
					Ta: 1%	sycamore-fir forest	48
					Bu: 33%	fir-beech-sycamore forest	21
<b>23</b>	Ruckenwald core area	St Blasien	City of St Blasien	38.4	Vb: 1%	beech-fir forest	22
					Fi: 27%	beech-fir-spruce forest	26
					Ta: 22%	sycamore-fir forest	26
					Bu: 42%		

No.	Name of the core area	Municipality	Owner	ha	Current Tree species fraction	natural forests (local forest)	%
<b>24</b>	Windberg Schlucht forest reserve	St Blasien	Federal State of Baden-Württemberg	3.9	Ah: 7% slb: 2%	fir-beech-sycamore forest beech-fir-sycamore forest	26 100
<b>25</b>	Schwarzhalden forest reserve with expansion	Ühlingen-Birken- dorf Höchen- schwand, Weilheim	Federal State of Baden-Württemberg, Municipality of Ühlingen-Birkendorf	432.4	Fi: 24% Ta: 41% Bu: 21% Wi: 6% Ah: 5% Es: 1% slb: 2%	beech-fir-sycamore forest unstocked areas beech-fir forest beech-sessile oak forest black alder-ash forest	33 13 37 14 3
<b>Sum</b>				<b>1,904.85</b>			



### Core area 1: Scheibenfelsen Forest Reserve



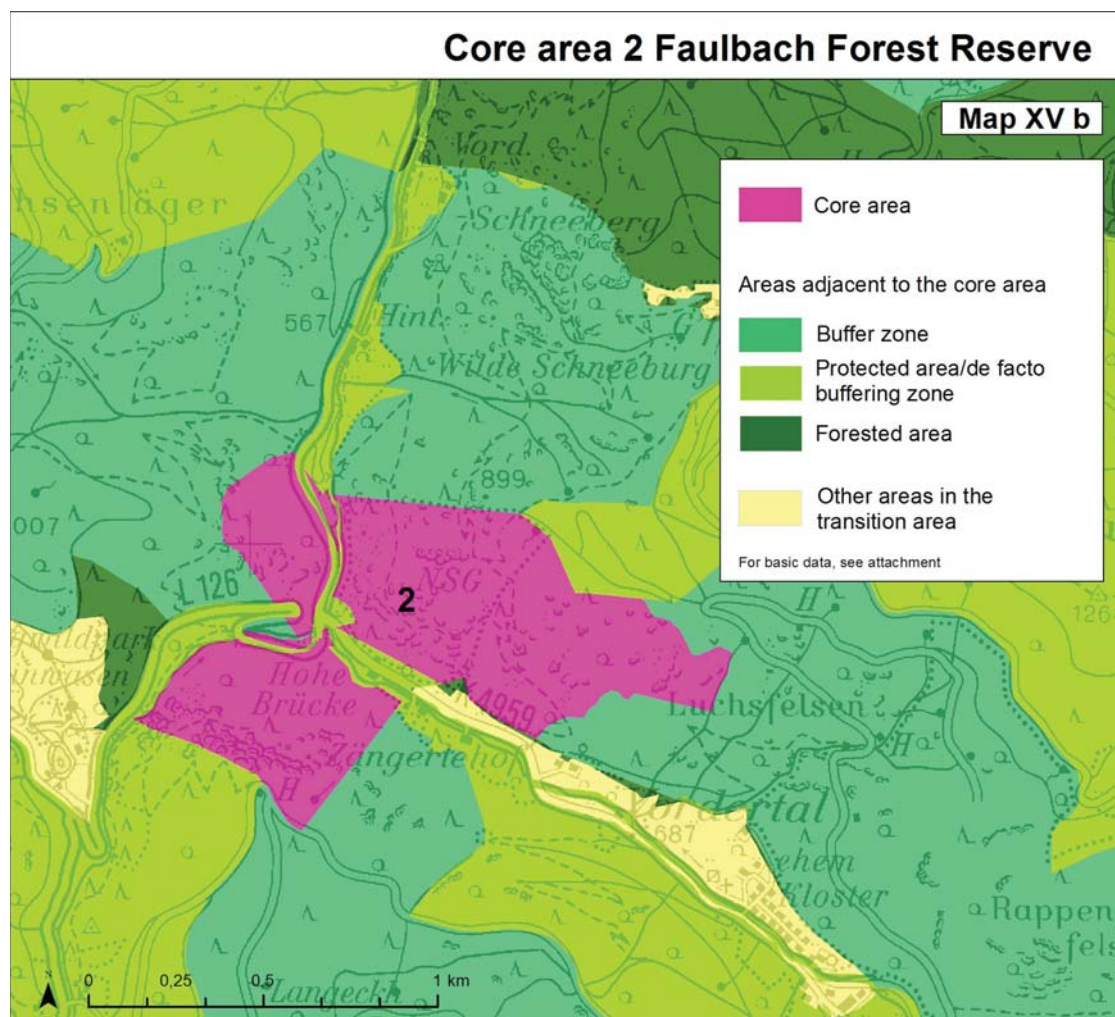
#### Description of nature conservation

The Scheibenfelsen forest reserve was established in 1991. As part of the core area designation, it was expanded from 81 ha to 125 ha. The compact core area is on the south side of Zastler Valley, which features some alpine characteristics. The steep slopes of the valley feature large area of rock of which the Scheibenfelsen are the most imposing. These rocky areas are partially covered by short and crippled trees. The remaining forest and shrubbery free sections and the barren slopes overlain with rocks represent nearly one quarter of the core area. The core area ranges from the valley floor (600 metres above sea level) to the ridges (approx. 1,150 metres above sea level). The height extension of the core area (555 m) is thus quite enormous. The forest cover is quite natural except for a few Douglas firs, which will be removed before designation (see Biosphere Forest Reserve Enactment from 4 December 2015). Beech and fir dominate the forest cover; appreciable numbers of sessile oak occur in the lower and rocky areas. Sycamore is admixed in the higher elevations of the beech-fir forests.

**Individual justification in reference to undisturbed development.**

In the North and to the East outside the biosphere reserve, the gaps in the buffer zone consist of areas that belong to legally secured protection categories (listed at the beginning of this section). Only in the western part is the core area surrounded by other areas of the transition area. Extensively used pastures are located there.

## Core area 2: Faulbach Forest Reserve



### Description of nature conservation

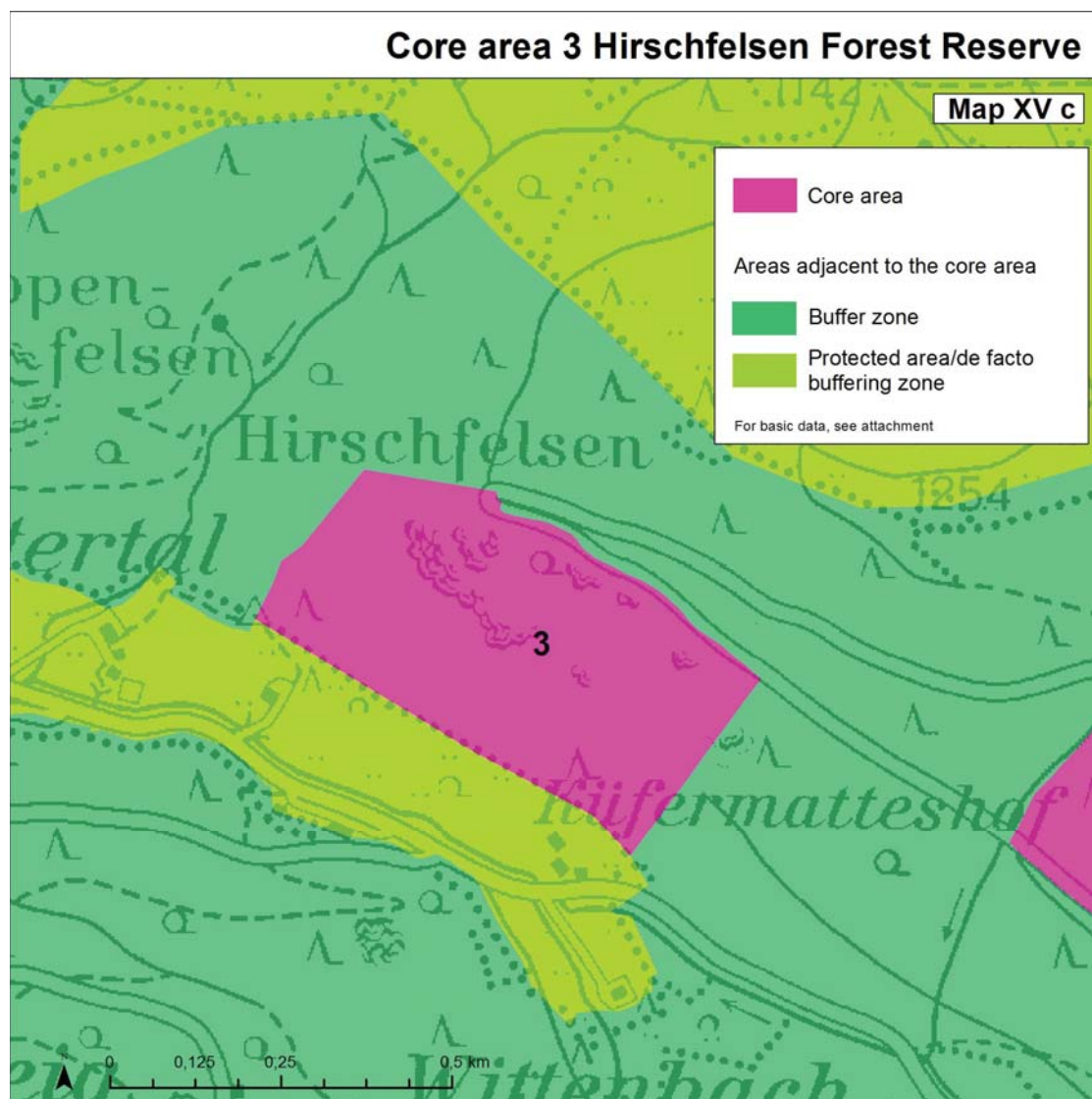
The Faulbach forest reserve was established in 1975. It can be found along the Wilhelmstal. This valley is the southern parallel to the Zastlertal (cf core area 1). Both valleys extend from the South-east to the North-west and originate at the Feldberg massif. The Wilhelmstal is also as steep and deep as the Zastler Tal (Figure 16). During the last ice ages, large glaciers flowed through both valleys. These glacial overprints can still be clearly recognised.

The Faulbach Forest Reserve is exposed in nearly all directions - only west facing slopes are missing. The steep slopes are crossed by block overlays, which are clearly visible from the valley road. The forest cover is very natural; up to 80% consists of beech and fir forests. The forest reserve is thus typical for the western Southern black forest. Because of the climatic and edaphic situation, beeches in particular extend upward. In this forest reserve, there are also impressive firs.

### Individual justification in reference to undisturbed development.

Map XV depicts how the Faulbach Forest Reserve is largely surrounded by buffer zone and buffer-like areas. The undisturbed development is thereby guaranteed.

### Core area 3: Hirschfelsen Forest Reserve



#### Description of nature conservation

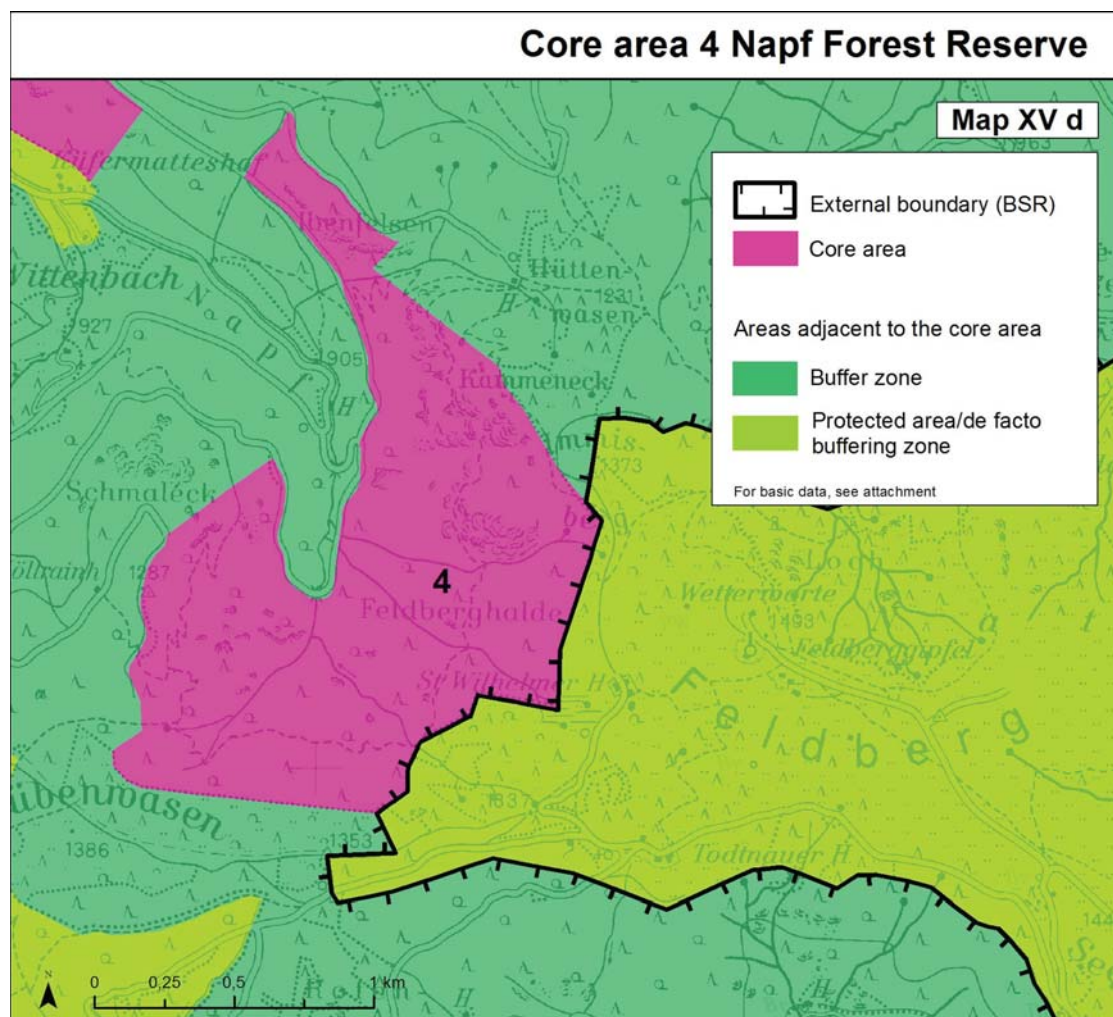
In 1975, the Hirschfelsen Forest Reserve was permanently removed from use. At only slightly more than 20 ha (which is far less than the recommended size of 50 ha), it is one of the smaller core areas in the biosphere reserve. However, the core area is still quite valuable from the perspective of nature conservation. On one hand, only natural processes have been taking place here for over 40 years. On the other hand, the Hirschfelsen Forest Reserve is the core area with the largest uncovered area (32%). The area thus represents the rocks areas of the biosphere reserve. In addition, the current composition of tree species is entirely natural. There are no foreign tree species

#### Individual justification in reference to undisturbed development.

The Hirschfelsen Forest Reserve Core Area is surrounded by buffer zones on three sides: in the South-west, it lies directly adjacent to the landscape protection area in the extensively used St Wilhelmer Tal. Negative influences can be excluded.



### Core area 4: Napf Forest Reserve



#### Description of nature conservation

One of the most impressive core areas of the biosphere reserve is the Napf Forest Reserve (designated in 1970), which is extensively investigated by the research institute. The forest reserve forms the end of the Wilhelmer Tal below the Feldberg. This extends as a large cirque formation. Steep and north-facing slopes dominate. The altitudinal range is quite large (from approx. 930 to 1,330 metres above sea level). With respect to natural forest communities, beech-fir and fir-spruce forests dominate. Ludemann et al. (2007) assume that in the highest areas of the forest reserve, spruce (*Picea abies*) is a part of the zonal vegetation. The spruce also occurs on special natural sites (ridges) in Bazzanio-Piceetum. In the Napf Forest Reserve, the high montane tall herb communities and sycamore-beech forests (*Aceri-Fagetum*) are well formed.

The strong forest development dynamics in Napf Forest Reserve are quite striking. Since the 1990s, the high spruce proportion (of anthropogenic origin) has been considerably reduced in several surges as a result of bark beetle infestation. This process continues, albeit over a smaller area. The resulting infestation sites, which feature upright silvery spruce deadwood, are quite impressive. These are gradually giving way. In May of 2015, the Napf Forest Reserve was grazed by a tornado. More storm areas have emerged; a large portion of the standing deadwood has fallen. The nature and sequence of natural succession is the subject of the research being conducted in the Napf Forest Reserve. The strong pioneering nature of the rowan can be seen. It remains to be determined whether the spruce will be able to re-establish themselves to the same extent.

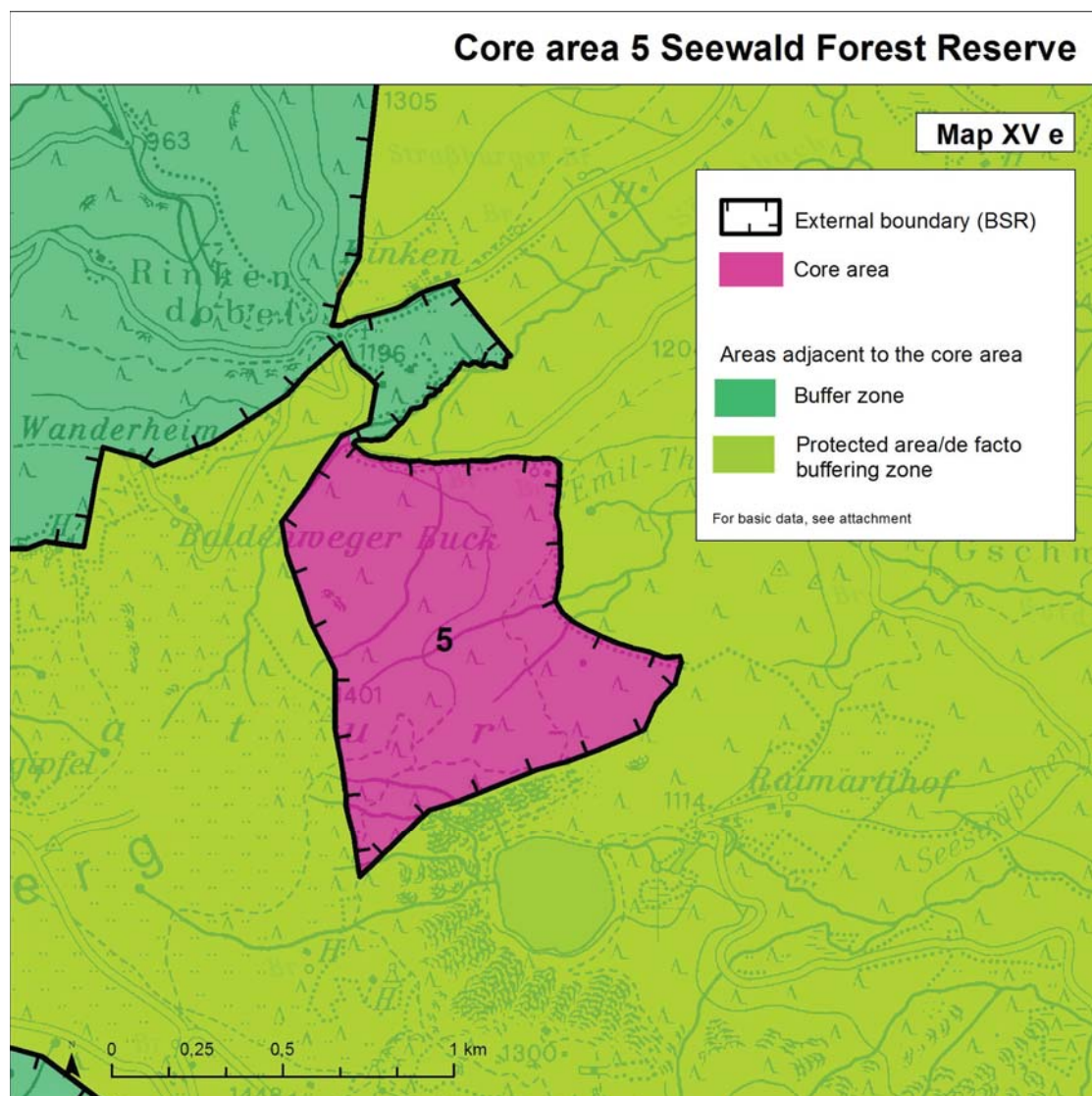
As part of the core area designation, the Napf Forest Reserve was expanded to 195 ha.

#### Individual justification in reference to undisturbed development.

Within the biosphere reserve, the Napf Forest Reserve Core Area is completely surrounded by buffer zone. It is directly adjacent to a protection area (Feldberg Nature Reserve), which fulfils the same function as a buffer zone within the biosphere reserve.



### Core area: 5 Seewald Forest Reserve



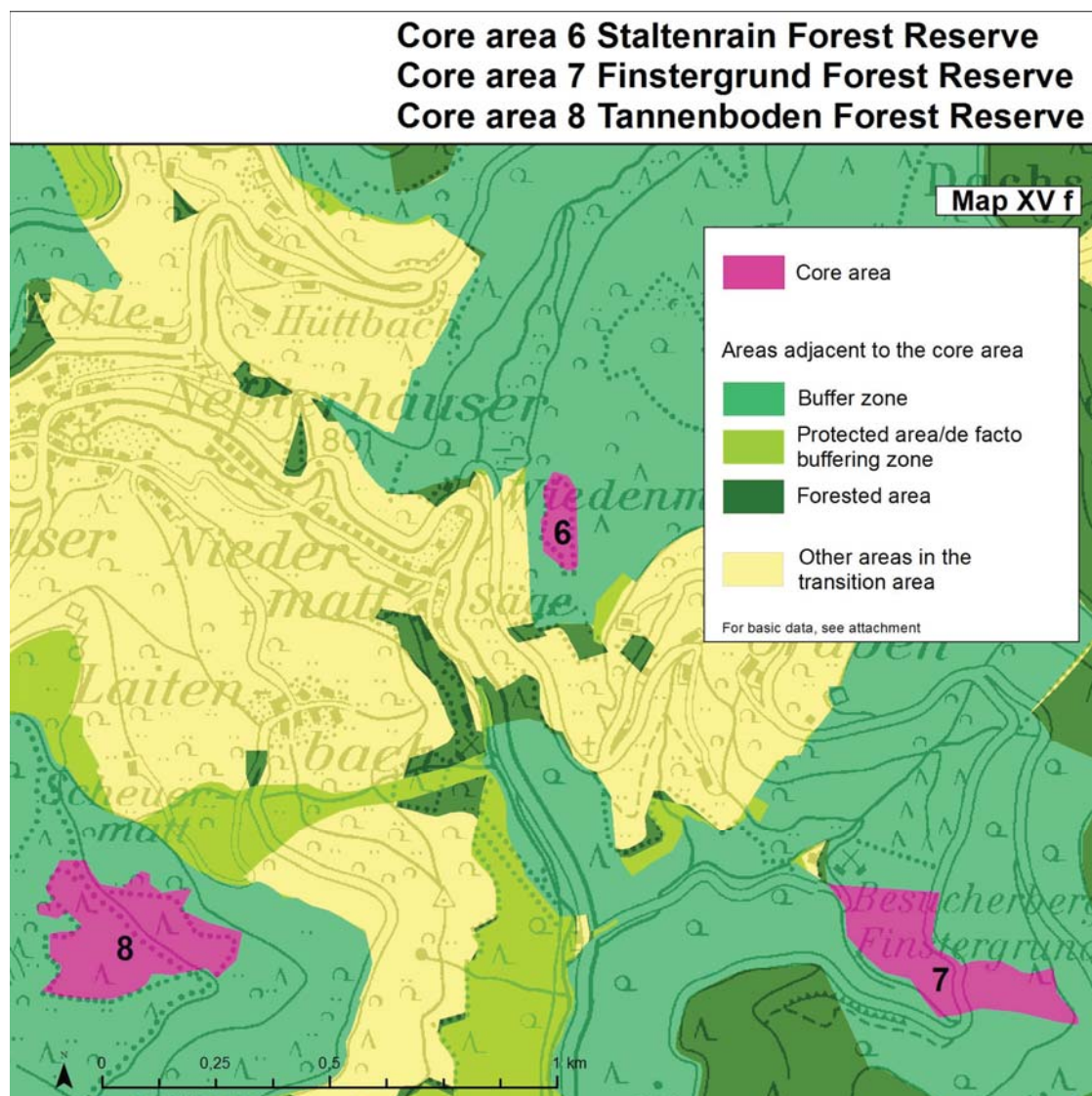
#### Description of nature conservation

The Seewald Forest Reserve Core Area was newly established. In the North, the area connects with the well-established Feldseewald Forest Reserve, which is located outside of the biosphere reserve. Even though the core area is somewhat isolated and is located at the edge of the biosphere reserve, it is considered part of a 200 ha forest reserve complex (as part of the overall network with the Feldseewald Forest Reserve). In comparison with the other core areas, it is relatively flat. It represents the forested plateaus of the biosphere region. It is also the highest lying core area (highest point is 1,380 metres above sea level). It is thereby an important component of the core area system of the biosphere reserve. Although it is expected that the spruce would naturally play an important role in forests at this altitude, a forest coverage of 80% seems to be somewhat excessive. However, on approx. 10% of the area, relatively natural spruce forests occur on special sites (moorland). The further spruce development under the undisturbed conditions of process protection is another issue that must be investigated in the context of research on the biosphere reserve.

**Individual justification in reference to undisturbed development.**

In the Seewald Forest Reserve Core Area, the situation is similar to that of the Napf Forest Reserve Core Area. The core area is almost completely surrounded by a protection area (Feldberg Nature Reserve). In other words, this core area is completely surrounded by a buffer zone-like area.

### Core Areas 6, 7, and 8: Staltenrain, Finstergrund, and Tannenboden



#### Description of nature conservation

All three areas fall below the individual area size of 50 ha. However, they were allocated as an ensemble for several reasons:

- Stepping stone function: These core areas represent stepping stones between Core Areas 9 and 10 in the West and the core area centre in the North-east.
- Special situation of core areas 6 and 8: All three areas are in the region of the Wiedener Weidberge nature reserve. This region is characterised by the close integration of extensive pastures and scattered forest areas. This area is characterised by pasture trees – individual large trees in pastures – with particularly impressive pasture beeches (Figure 3). Nowhere else in the biosphere reserve is the density of these impressive “tree personalities” so large. In light of the many pastures, the proportion of forested areas is not as high as in other parts of the biosphere reserve. Core areas 6 and 8 are both forests islands completely surrounded by pastures. They are thus typical for this part of the biosphere reserve. Because of the special situation, long-term monitoring should be undertaken to observe how the species diversity of these isolates forested areas develops.

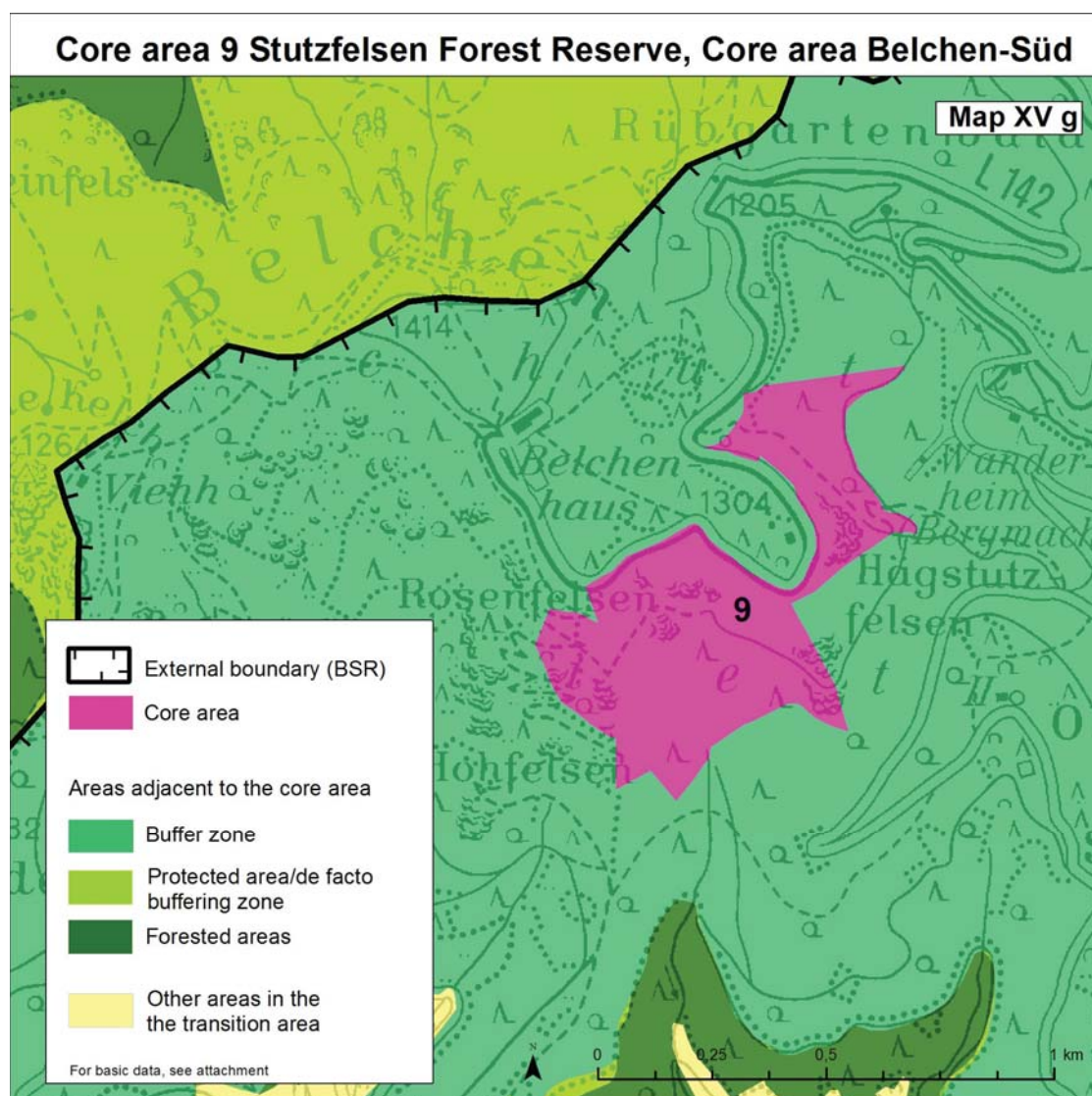
- c) Species diversity: The widespread crowns of large old pasture beeches harbour a plethora of small structures that provide habitats for the numerous species. The core areas are a coupling element to these pasture trees as well as a retreat for species dependent on old wood and deadwood.

**Individual justification in reference to undisturbed development.**

Core areas 6 through 8 are completely surrounded by buffer zones. An undisturbed development is guaranteed.



### Core area 9: Stutzfelsen Forest Reserve with expansion



#### Description of nature conservation

In 1993, the Stutzfelsen forest reserve was designated on an area of 18 ha. In the context of core area expansion (by adding old, highly-structured, and near-nature stands in the North-east), the area was expanded to 31 ha. The Stutzfelsen Forest Reserve is one of the first and few communal forest reserves in Baden-Württemberg. It is located on the southern slope of the Belchen, which is the fourth largest mountain of the Black Forest (1,414 metres above sea level). The Belchen is located much further west than the Feldberg – in the area of the first tectonic uplift east of the Rhine Valley. Here, the climate conditions deviate from the Feldberg area. This becomes apparent in the forests of the Stutzfelsen. The highlands are dominated by beech-fir forests. Although the core area reaches up to 1,300 metres above sea level, the spruce does not play a large role here.

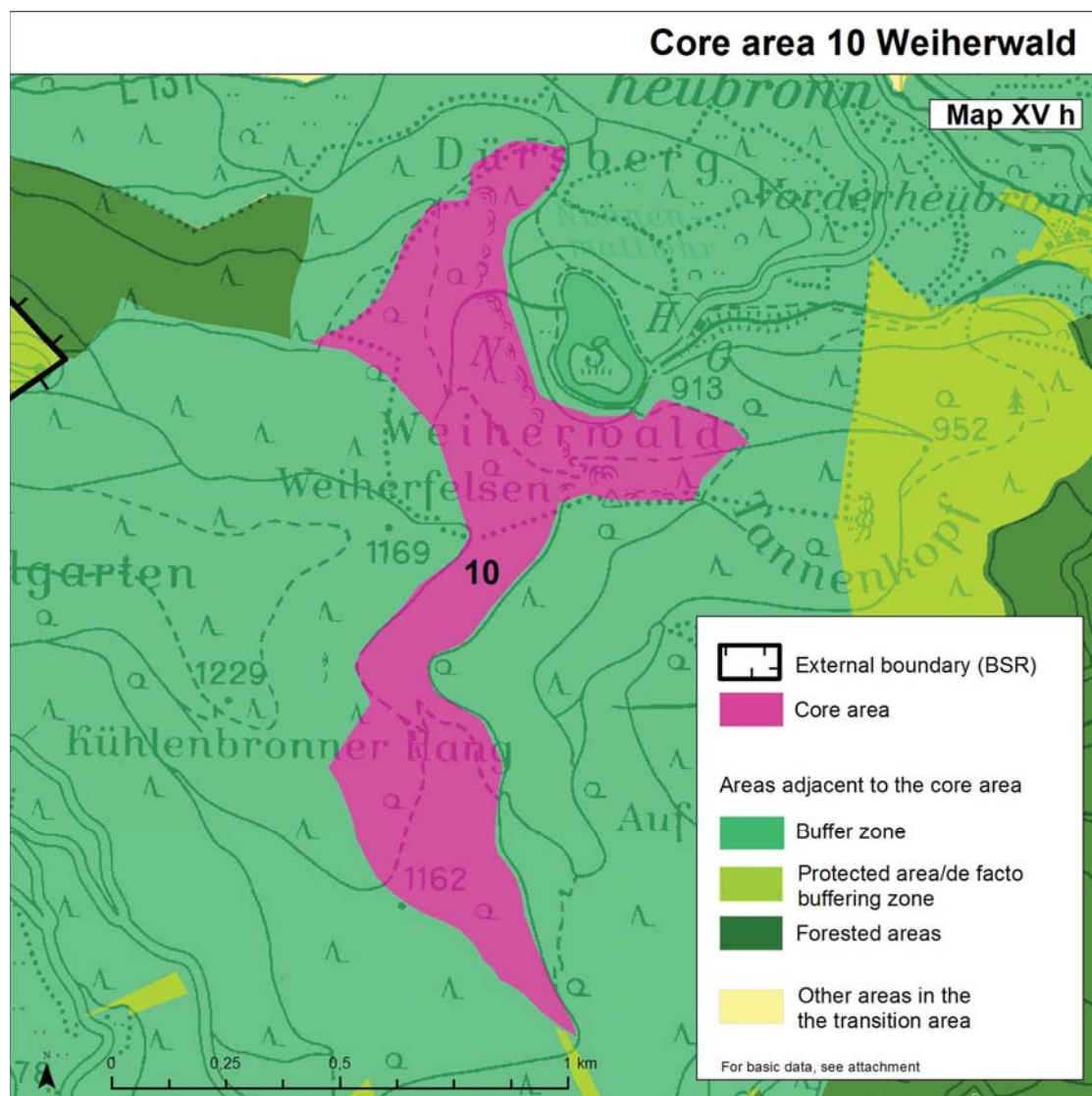
As part of the forest reserve expansion, the adjacent area in the North-west was also considered. The core area would then achieve a size of 50 ha. Map XV shows that this area, which is located on the south-west flank of the Belchen, is crossed by numerous rock outcrops. Even though many parts have been left to themselves and are no longer used, these areas used to be grazed and were much more open. Currently, only small areas are grazed; these would not be included in the core area. Upon consultation with agriculture, nature conservation and forest management, it was decided that the core area expansion should wait. However, if these areas, which are extremely difficult to manage, cannot be kept open, they should be incorporated into the core area expansion.

**Individual justification in reference to undisturbed development.**

The core area is completely surrounded by buffer zones. An undisturbed development is guaranteed.



### Core area 10, Weiherwald



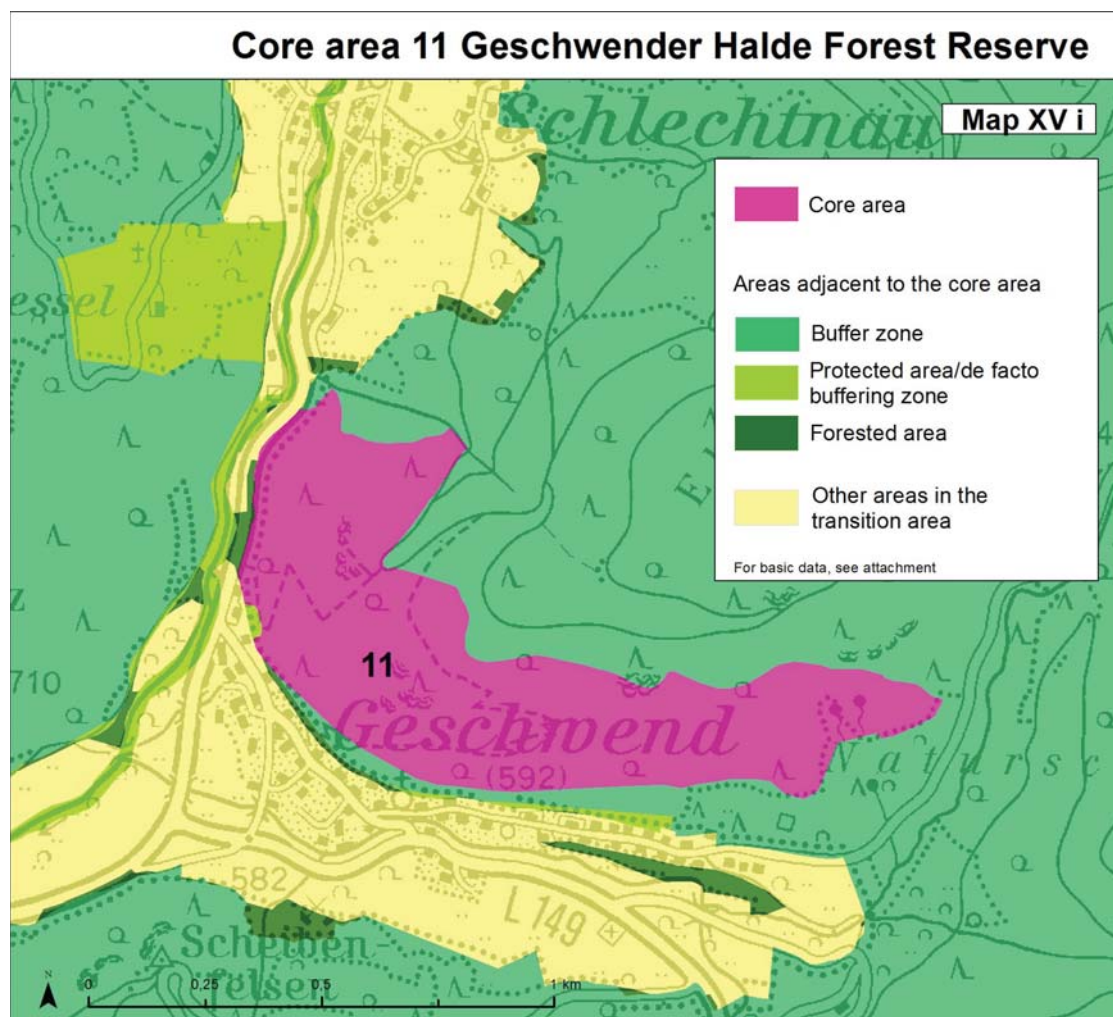
#### Description of nature conservation

The "Weiherwald" is located in the area of the Nonnenmattweiher Nature Reserve. The core of this region is the eastern-facing cirque formations. Because of the slopes, which are difficult to manage, the forests have always been extensively used. The high proportion of fir (30%) is indicative of the naturally high proportion of fir in the biosphere reserve. The naturalness of the core area is also expressed through the large and impressive individual firs. In the area, there are also forested areas with natural spruce populations.

#### Individual justification in reference to undisturbed development.

The core area is completely surrounded by buffer zones. An undisturbed development is guaranteed.

### Core area 11: Geschwender Halde Forest Reserve



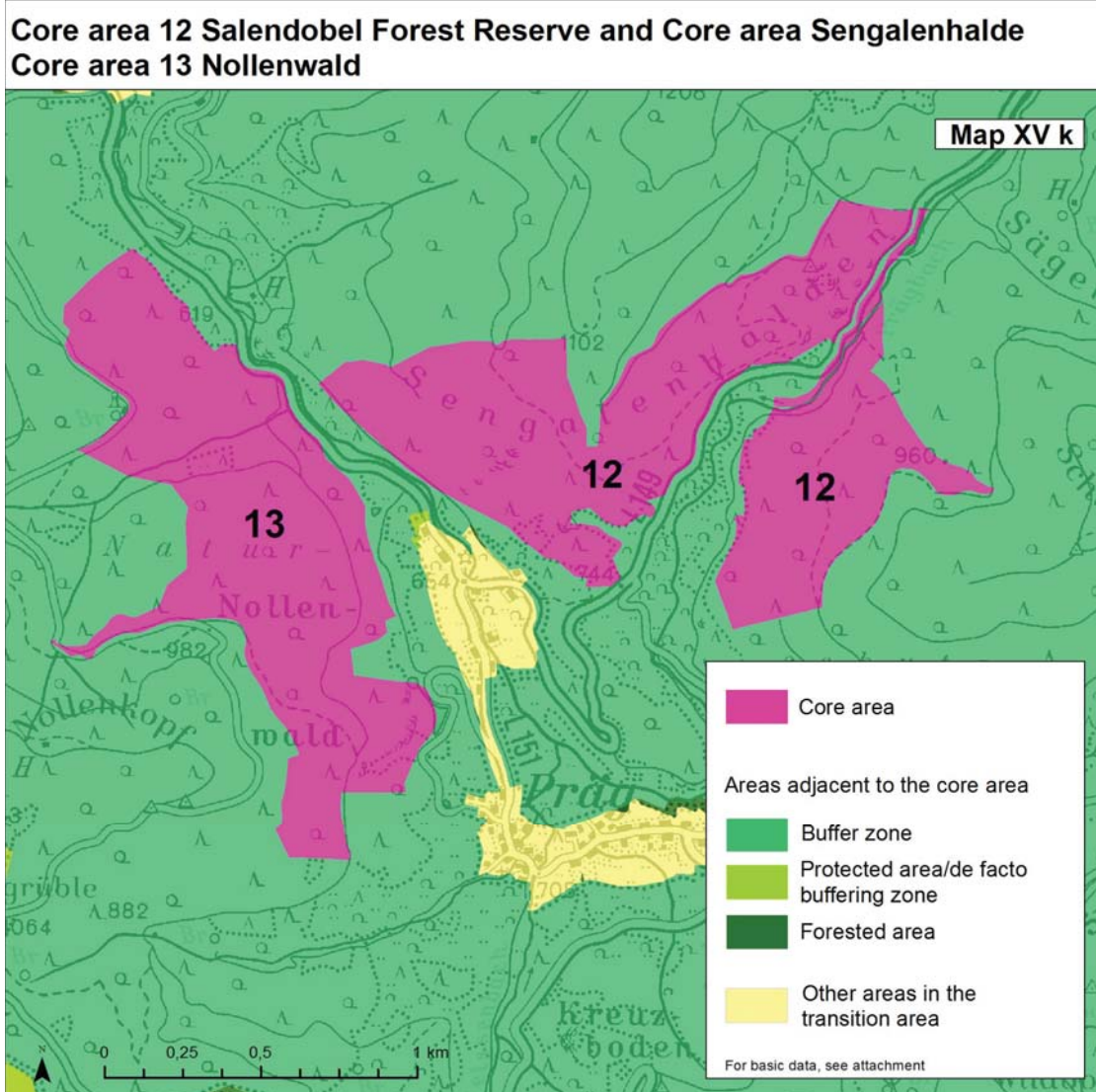
#### Description of nature conservation

The Geschwender Halde is located on the south-facing valley slope above the locality of Geschwend. During the last ice age, the powerful Präg glacier culminated in the main valley. The area represents the transition from the sub-montane to the high montane altitudinal belt. The southern exposure underlines the sub-montane character of the area as does the location in the widened area of the Wiesental. Of particular value is the high natural potential of the sessile oak. They would be involved in the structure in 80% of the sites. However, sessile oak currently does not play a role in the forest cover. Spruce and Douglas firs grow on approx. one third of the area. It is intended to remove part of this non-native forest cover within the next two years. The Biosphere-Forest Reserve Enactment from 4 December 2015 has envisaged this intervention in the core area until a maximum of three years after the enactment enters into force. Approximately 10% of the locations are unstocked rocky areas or are overlaid with blocks.

#### Individual justification in reference to undisturbed development.

With the exception of a small area in the North-west, the Geschwender Halde Forest Reserve Core area is completely surrounded by buffer zone. An undisturbed development is ensured after the non-native trees have been removed.

### Core Area 12: Salendobel Forest Reserve and Core Area Sengalenhalde; Core Area 13: Nollenwald



#### Description of nature conservation

Core areas 12 and 13 form a core area complex in the Präg glacial cirque. During the last ice age, several glaciers combined to form a single large one, which left behind distinct glacial forms, which are still present to this day.

In the basin, the communal district areas of the Municipalities of Todtnau and Schönau are completely interconnected. Core Areas 12 and 13 cross community boundaries, thereby allowing for the formation of larger complexes. The concept followed the goal of completely portraying the wide local spectrum of the Präg glacial cirque (both the shadowed and sunny slopes) within the core area. The following special features are to be emphasised:

- Sengalenhalde: This larger partial area of Core Area 12 is a highly-valuable southern-facing valley slope with unique coverage of deciduous trees including sessile oak, linden, and Norway maple. The word "Sengalen" is derived from the German word for "sing".
- Salendobel: This eastern partial area of Core Area 12 extends along the westward inclined, left side of the tributary valley (Präg-Bernau). Characteristic are old structurally-rich fir-beech forests that are closely connected with uncovered and rocky areas.

- Alder-ash forests: These can be found in both core areas, especially Area 13.

**Individual justification in reference to undisturbed development.**

Core areas 12 and 13 are completely surrounded by buffer zones. An undisturbed development is guaranteed.

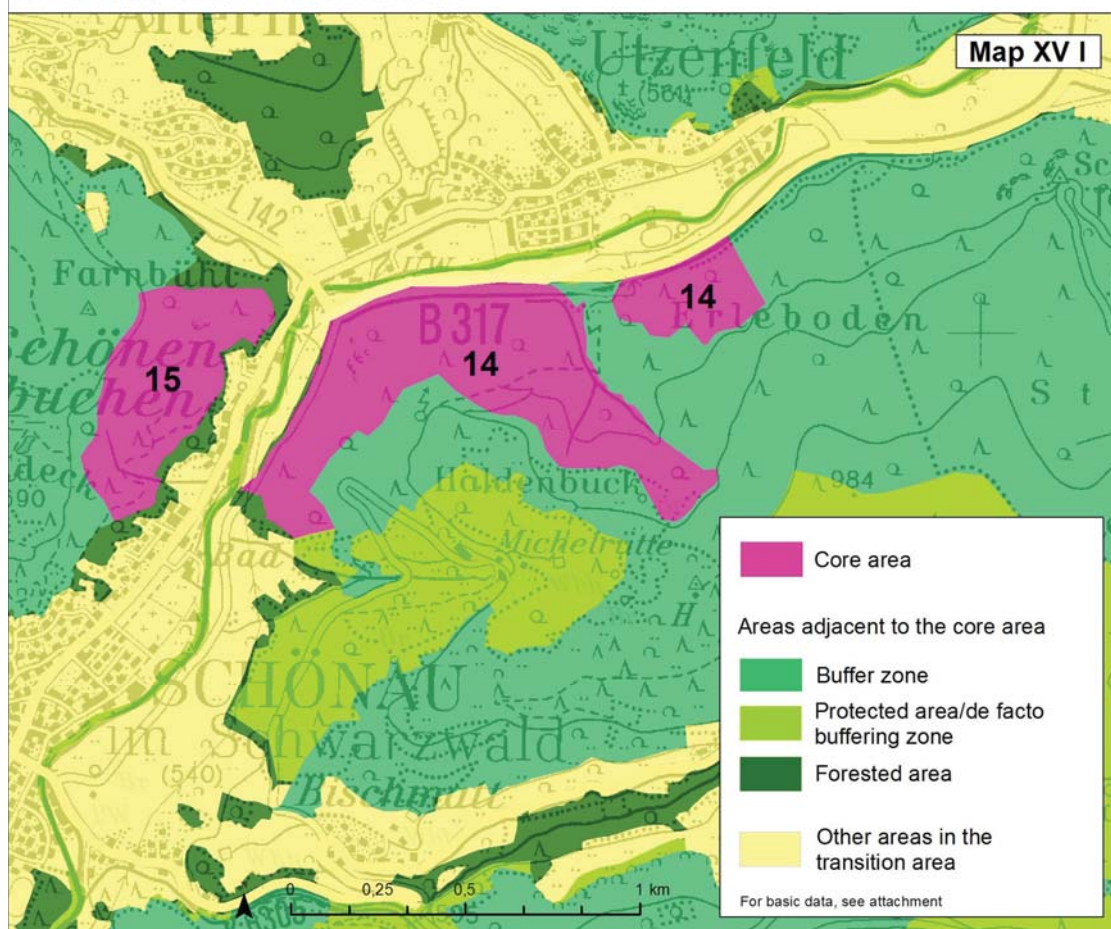


### Core areas 14, 15, 16, and 17

The four core areas are located in the main valley, the Wiesental, and are the lowest lying areas in the biosphere reserve. Warm air masses from the Rhine Valley can penetrate into the centre of the biosphere reserve via the Wiesental (see Map VI, vertical zoning). The climatic differences in the biosphere reserve are thus particularly large. The main part of these four areas lies in the sub montane altitude. With increasing altitude, they extend into the montane, downward sloping (even into the colline) altitudinal belt. Especially in this climate, the competitive conditions of the tree species change considerably. The importance of the firs in the natural forests decreases, that of the beech and even the oak increases. Other deciduous trees such as linden and hornbeams frequently occur as lesser species in these natural forests. On azonal sites, the sycamore and the oak play a larger role than they do in higher locations. This is already evident in the current composition of tree species. Overall, the natural potential (and also dominance) of the deciduous trees is increasing – this singles out the area from other core areas.

Core Areas 14, 15, 16, and 17 thus form a chain of areas, which depicts these special properties. They are important elements of the entire core area concept. Core Area 11 (Geschwender Halde) is also included in this chain.

#### Core area 14 Ebener Wald Forest Reserve and Erleboden Forest Reserve Core area 15 Schönenbuchen





**Conservational description of Core Area 14, Ebener Wald Forest Reserve and Erleboden Forest Reserve**

At approx. 50 ha, the area achieves the minimum recommended size. The high natural proportion of deciduous trees is outstanding. In particular, the alder (at 10%) is of high value. Much of the area features a western exposure and is heavily shaded. At a height of approx. 800 metres above sea level, the area is in the montane range. Accordingly, the oak is only slightly involved in the natural composition of trees. The two partial areas of Core Area 14 are only separated by a rock, which is iced over in winter and occasionally used by ice climbers. In fact, there is no further use/disturbance; both areas thus form a unit.

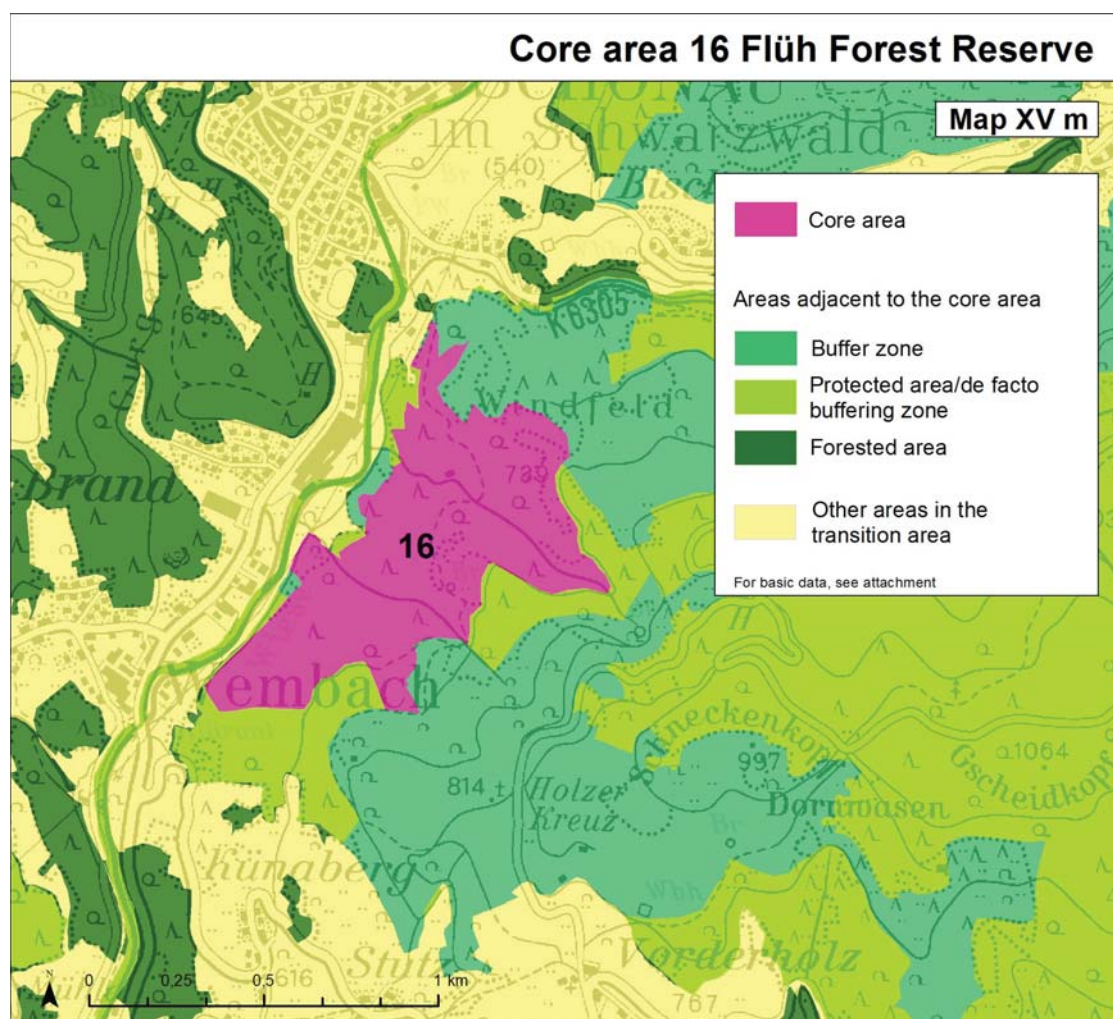
**Conservational description of core area 15, Schönenbuchen**

Core area 15 is the counterpart to Core area 14, so to speak. Because of the very narrow valley, the two core areas are only separated by approx. 250 m. Nevertheless, the two sites differ greatly. The area balance of the site forests reveals the natural potential of the forests. No other core area has an oak potential as high as this relatively small core area (20 ha). The oak, especially the sessile oak, is particularly well represented. It currently accounts for 25% of the forest coverage, which is a very high value for this species in this region. The Schönenbuchen Core Area will be able to provide information about the competitive behaviour of the oak under the influences of climate change. Despite the small size, it is an important piece in the core area composite.

**Individual justification of core areas 14 and 15 in reference to undisturbed development**

In the West and North, both eastern areas of Core Area 14 are directly adjacent to development areas. In the remaining areas, they are surrounded by buffer zones. It is not possible to extend the buffer zones because infrastructure-related transition areas are directly adjacent. However, as meadows, they only have a minimal effect on the forest area. The goals were also discussed with the owners of the adjacent areas. From a technical point of view, Core Area 14, which features high natural proportions of deciduous trees, is so large and valuable, that it should not be dispensed with.

In the West, the westernmost Core Area Schönenbuchen is completely surrounded by buffer zone. In the North and East, it is completely surrounded by forest, which provides an adequate buffer effect.



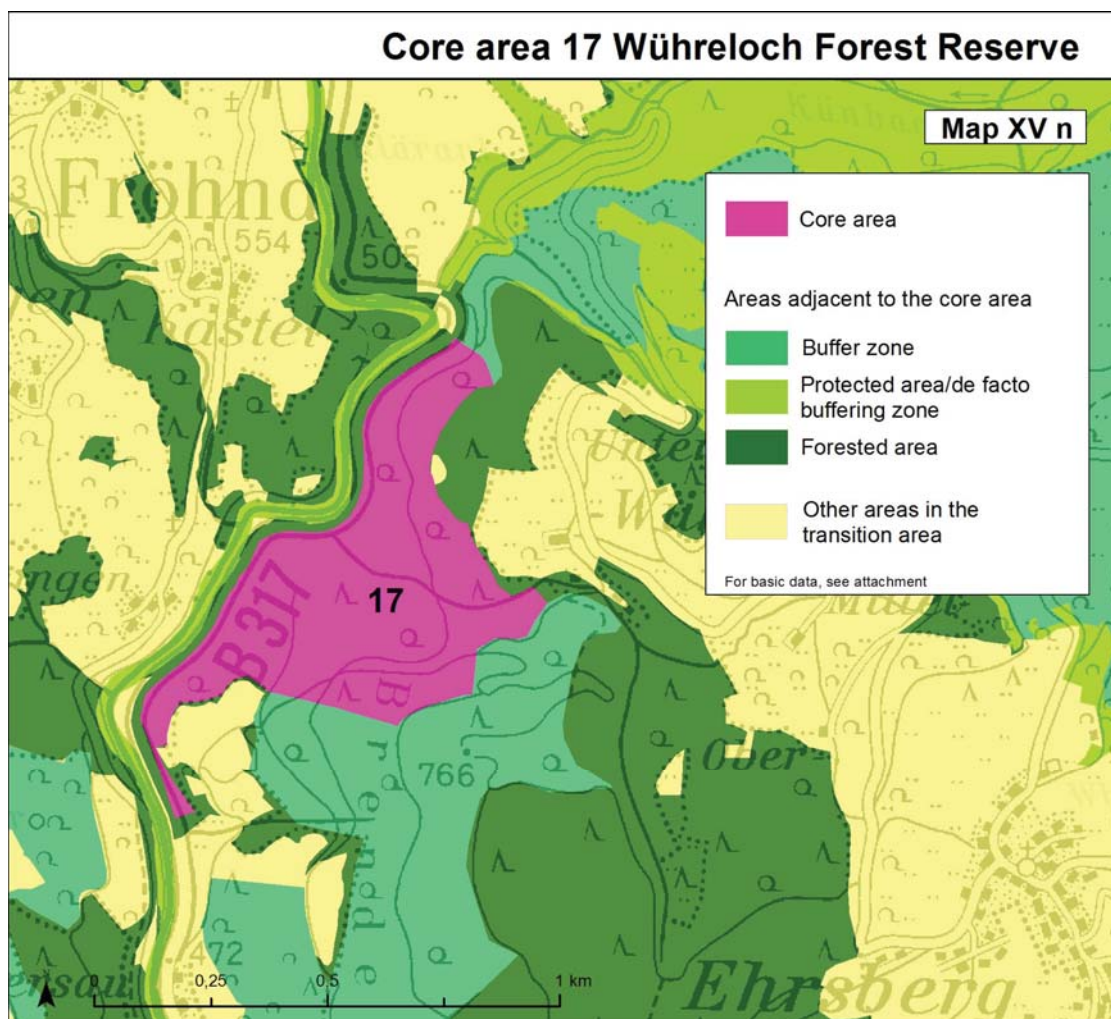
### Conservational description of core area 16, Flüh Forest Reserve

The Flüh Forest Reserve Core Area has been under process protection since 1970. As is the case with Core Area 15 (Schönenbuchen), the beech-sessile oak forest naturally covers nearly 50% of the area.

The forest reserve extends from approx. 500 to approx. 750 metres above sea level and is therefore in the sub-montane altitudinal belt. The forest reserve has a pronounced relief. In some places, rocky and block-covered areas occur. In the forest reserve, there are several permanent observation areas. These have been investigated for 40 years by Schwabe (2015). Of particular interest are investigations on the pastoral mountain succession; several pastures used to be located in the forest reserve.

### Individual justification of core area 16 in reference to undisturbed development

The core area is almost completely surrounded by buffer zones or protected areas with an equivalent function.



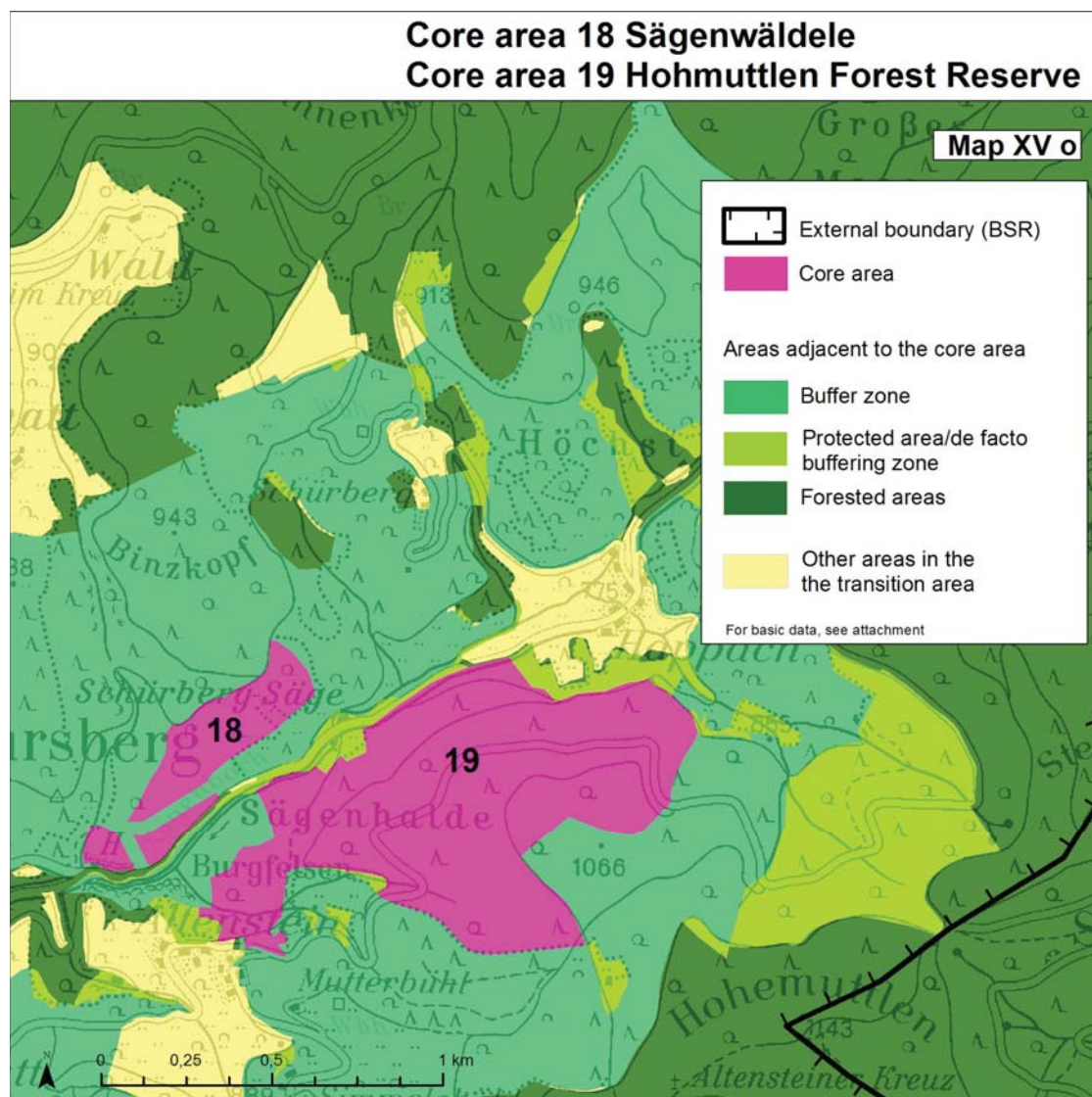
#### Conservational description of core area 17, Wühreloch

The area is located on a narrow site of the Wiesental. Although the area is located further south, the natural proportion of sessile oak is considerably lower than in other core areas of the Wiesental. Fresh and partially spring locations are quite frequent; this favours the ash and the sycamore.

#### Individual justification of core area 17 in reference to undisturbed development

From the map it can be seen that where there is no buffer zone connected to the Wühreloch Core Area, forested areas have emerged. These protect the core areas from other development areas and thereby fulfil a buffer function.



**Core area 18, Sägenwäldele; Core area 19, Hohmuttlen Forest Reserve**

**Description of nature conservation**

Both core areas are located on both sides of the very narrow tributary of the meadow. The goal was to include both valley slopes into the concept, even if the northerly area is small. Both areas are spatially connected; they are only separated by a small road. Area 18 is owned by the Municipality of Hög-Ehrsberg; Area 19 is property of the state.

Area 19 in particular is very steep and features some rocky and rugged parts; the same applies to the Sägenwäldele, albeit it to a lesser extent. Although the areas are not much higher than Areas 14–17, the natural composition of trees deviates considerably. Beech-fir forests predominate. The large communities of beech (some of which are older than 180 years) of Area 19 makes it unique in the biosphere reserve. Individual very old first also occur in the areas. The felling measures planned for 2015 were intentionally not carried out. These unique beech communities were thus left to develop freely.

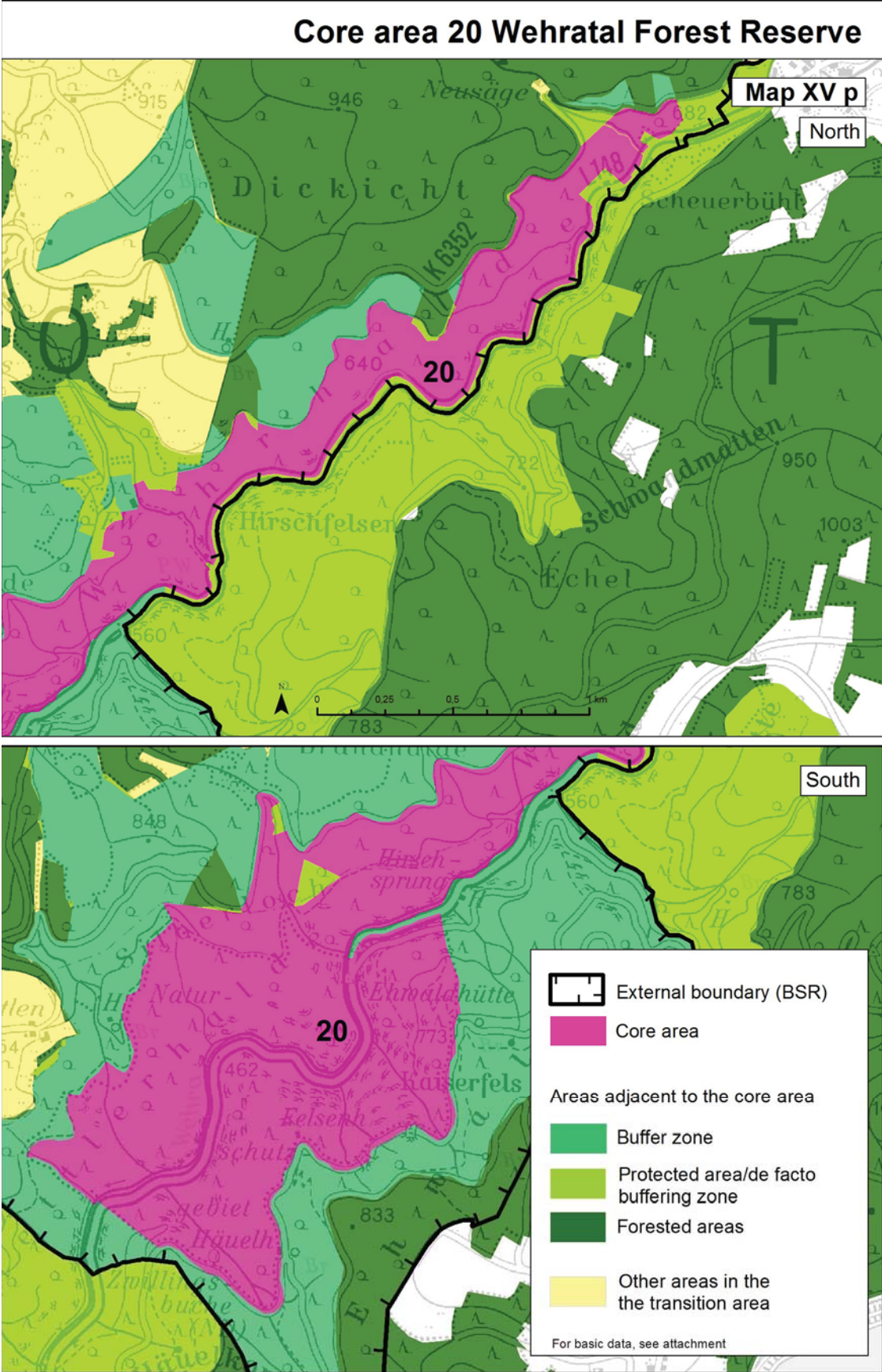
**Individual justification in reference to undisturbed development.**

Core area 18 is nearly completely surrounded by buffer zones. Only the two small partial areas in the south border a street. The majority of the core area remains undisturbed.

Core area 19 is nearly completely surrounded by buffer zones. In small parts, other protection area categories replace the buffer zones. Because of the decisions of the owners, they were not included in the buffer zone area. Nevertheless, an undisturbed development is guaranteed because the goals of the protected area require gentle farming, and the proportion of adjacent areas without a buffer zone area is relatively low.



Core area 20: Wehratal Forest Reserve



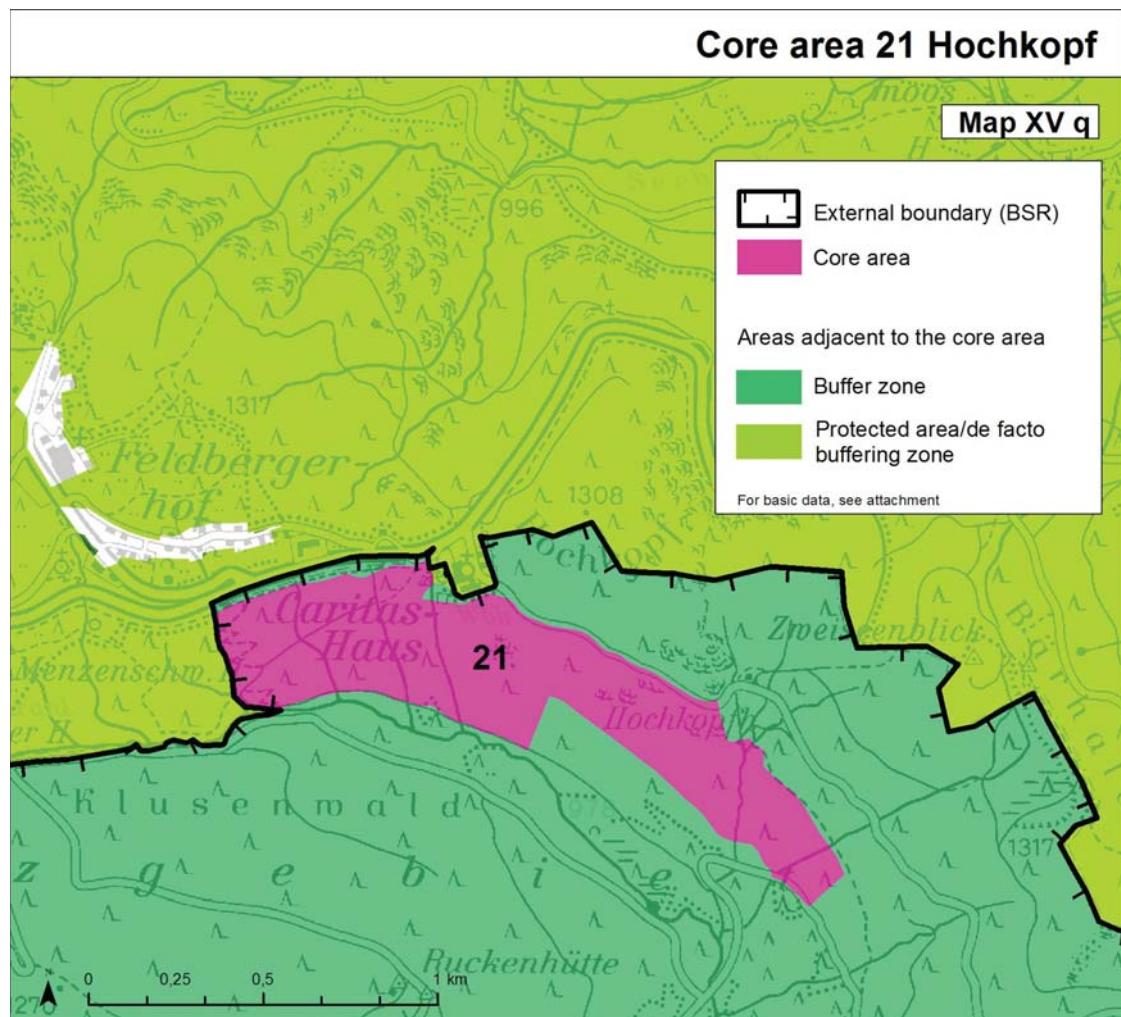
**Description of nature conservation**

The 130-ha Wehratal Forest Reserve (which was designated in 1970), was expanded to 240 ha as part of the core area expansion. The core area is thus the second largest core area in the biosphere reserve. As is the case in the other core areas in the sub-montane levels, the current tree species composition is very diverse and natural. The proportion of spruce (approx. 6%) is low; deciduous trees dominate. Special features are open rock areas in the east of the area.

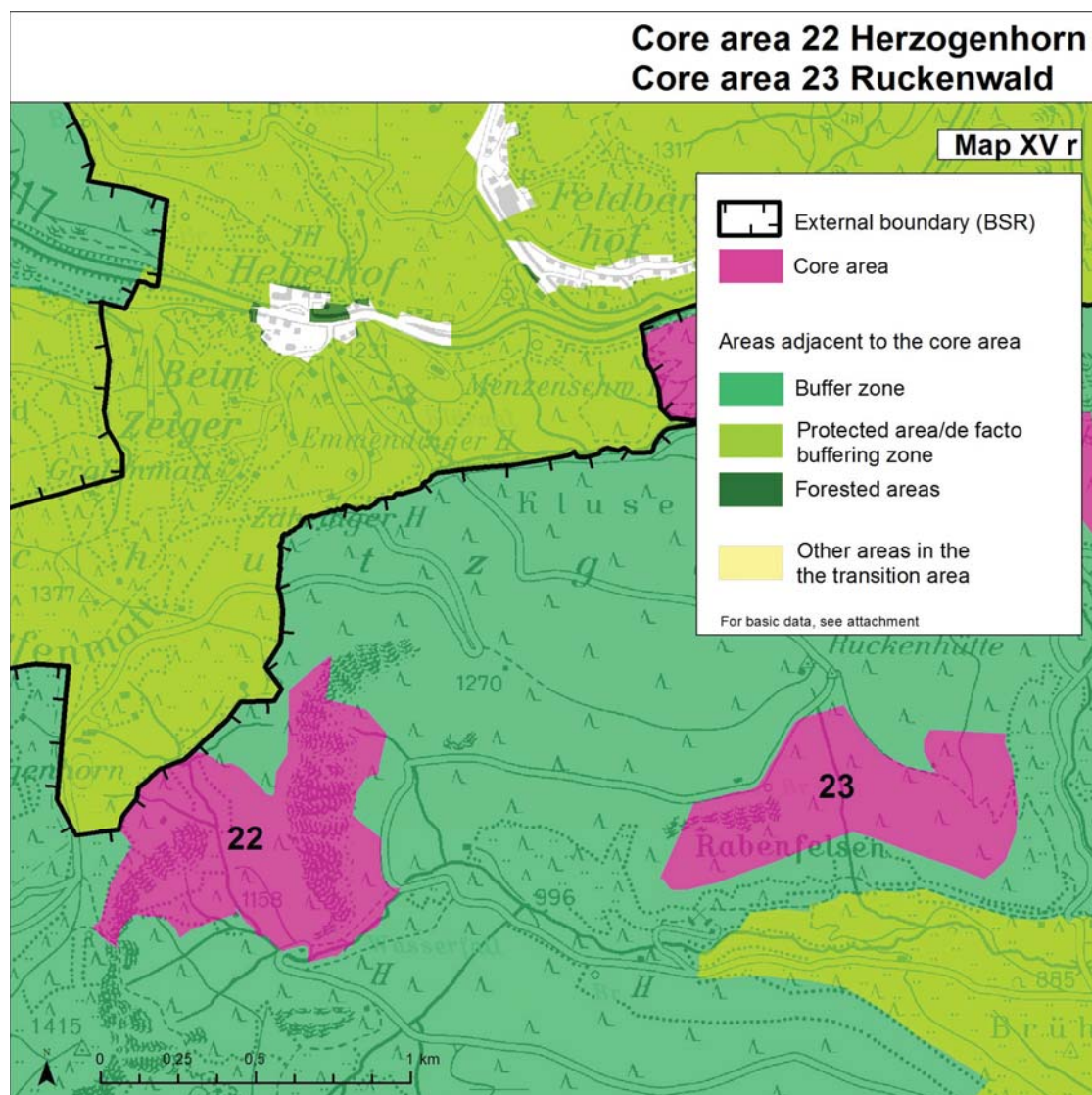
**Individual justification in reference to undisturbed development**

In the southern area, the elongated Core Area Wehratal is completely surrounded by the buffer zone. Although most of the northern part is not directly surrounded by buffer zone, an equivalent buffer function is provided by the existed protected area (outside of the biosphere reserve) as well as the adjacent forested areas, which are near-natural and rich in fir.

**Core area 21, Hochkopf; Core area 22, Herzogenhorn; Core area 23, Ruckenwald**







### Description of nature conservation

Core areas 21, 22, and 23 are located in the eastern Black forest highlands with an emphasis on the high mountain altitude. As a result, spruce would be the natural component of the forests.

The current tree species composition of the south-facing core area 21, Hochkopf is natural. The main feature of this area are the extraordinarily structurally-rich beech-fir forests, which are crossed by several smaller straight watercourses. The area is located in the core area of the grouse occurrence of the Southern black forest.

Inter-municipal Core Area 22: Herzogenhorn (Municipalities of Bernau and St. Blasien) is mostly located in a steep, eastern-facing cirque below the Herzogenhorn, the third largest mountain of the Black Forest (1,414 metres above sea level). The area is located entirely above 1,050 metres above sea level and reaches approx. 1,320 metres above sea level. The current proportion of spruce (63%) appears to be slightly increased compared to the natural forest cover. The structural richness of the forests gives them a natural appearance.

Areas 21 and 22 differ from each other geologically. Core Area 22 (Herzogenhorn) is located in the area of the typical paragneisses, from which silicate cambisols develop. On the other hand, Core Area 22 (Hochkopf) is located on Bärhalde granite, which is a very nutrient-poor parent material for soil formation. The sites are more prone to acidification, which in turn favours the spruce. Against this background, the proportion of beech (52%) is all the more remarkable. It is assumed that the beeches have been growing here for many generations, which in turn indicates a long habitat tradition.

Core area 23 (Ruckenwald) is somewhat lower than Core Areas 21 and 22. The current proportion of fir (over 20%) is considerably higher. An outstanding morphological element is the "Raven Rock".

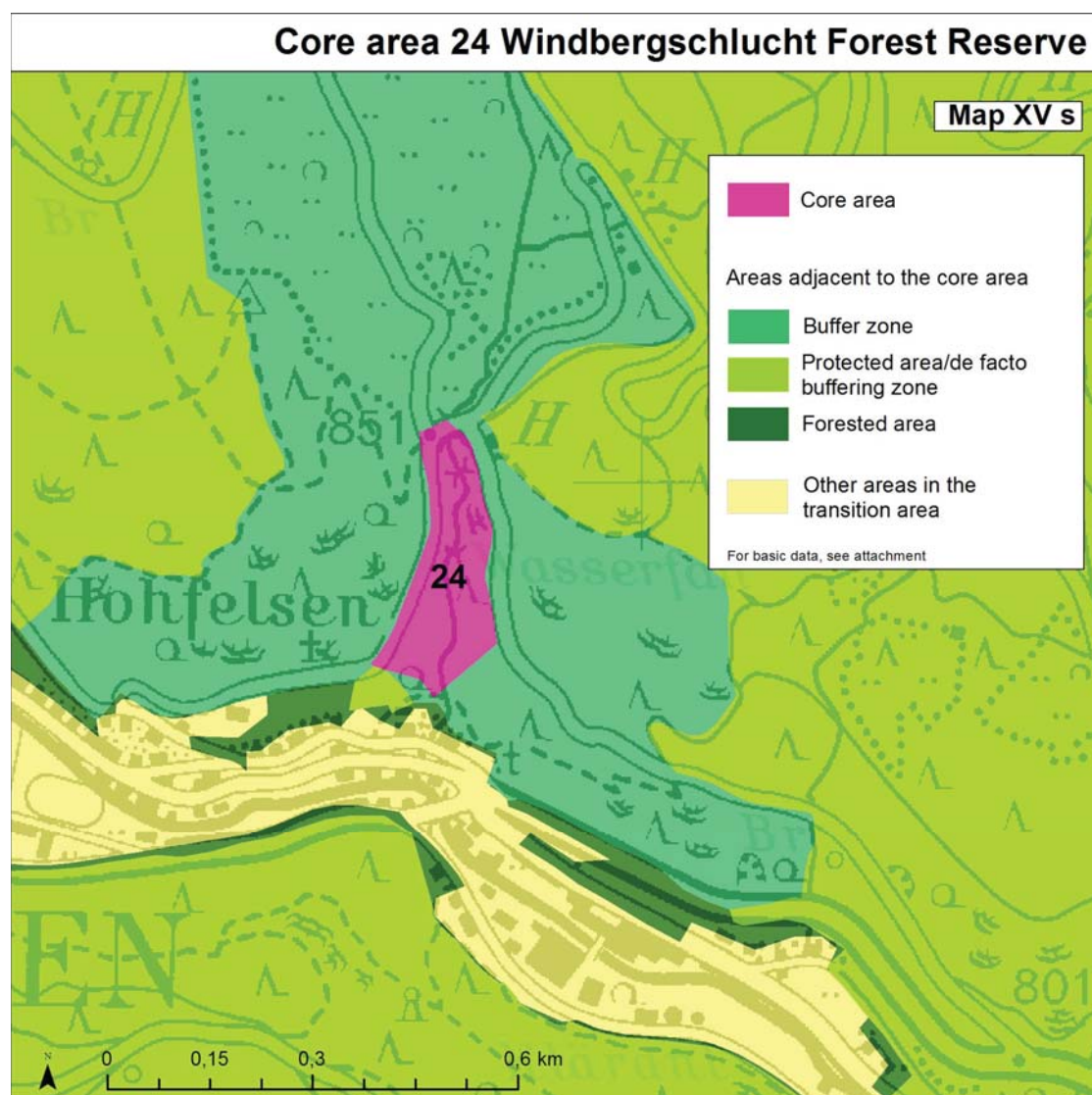
**Individual justification of core areas 21, 22, and 23 in reference to undisturbed development**

Within the biosphere reserve, core areas 21 and 22 are completely surrounded by the buffer zone. Only in the West do the core areas touch on the external border of the area. However, they are directly connected to a protected area (Feldberg Nature Reserve) with buffer function.

Core area 23 is completely surrounded by buffer zones.



### Core area 24 Windbergschlucht forest reserve



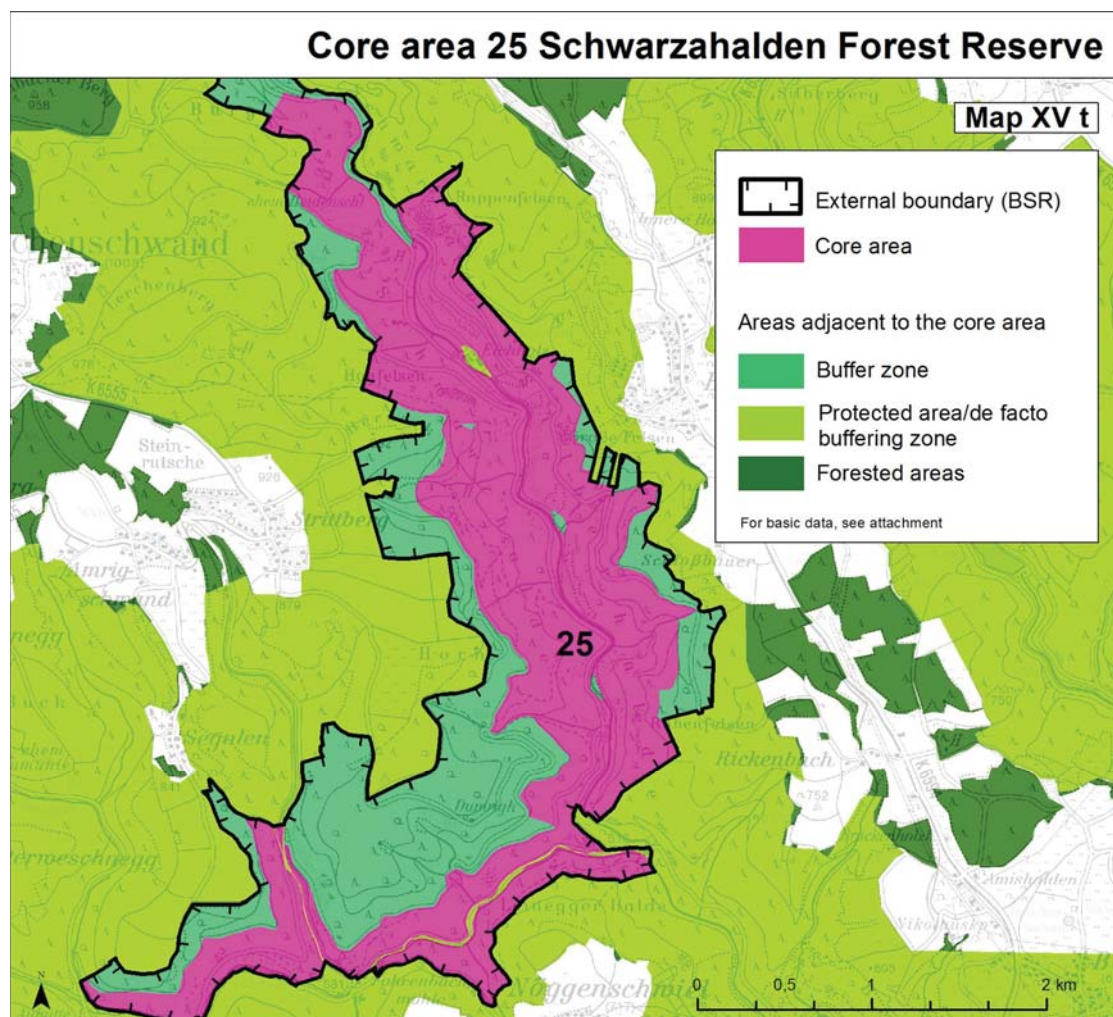
#### Description of nature conservation

Since 1992, the Windbergschlucht forest reserve has been under process protection. Therefore, despite the small size of 4 ha, the area was integrated into the core area concept. Fresh site conditions dominate, which, at this altitude, favours the sycamore.

#### Individual justification in reference to undisturbed development

The core area is almost completely surrounded by buffer zones. An undisturbed development is guaranteed.

### Core area 25 Schwarzhalden forest reserve



#### Description of nature conservation

This 430 ha core area was named after the Schwarza, a mountain stream. In 1970, approx. 280 ha were taken out of use and designated as a forest reserve. In 2012, the forest reserve was expanded by 150 ha to give the current area. The steep slopes on both sides of the valley are largely located in the sub-montane altitudinal belt. The oak is therefore naturally involved in the forest structure. The naturally unforested area of approx. 13%

underlines the steepness of the terrain. The high proportion of fir (approx. 41%) is well above the average. The occurrence of the asp viper is also relevant with respect to natural conservation.

#### Individual justification in reference to undisturbed development

The deep and steep valley of the Schwarza forms the largest core area of the biosphere reserve. The borders of the core area are mainly located on the top edges of the slopes. Because of morphology, the inaccessible areas are largely undisturbed.

Otherwise, the core area is primarily surrounded by buffer zones. Where these are lacking, the core area is without exception embedded in existing protected areas and surrounded by these. These core area is thus also surrounded by a protective buffer.

### 19.3 List of legal documents

#### 19.3.1 Federal Nature Conservation Act (BNatSchG; from 29 July 2009, last changed though paragraph 421 of the enactment from 21 August 2015)

Among other things, the BNatSchG regulates species and area protection, landscape planning, the compensation of interventions in nature and landscape, habitat connectivity and networking, marine conservation, recreation in nature and landscape, and exemptions for the entire Federal Republic of Germany. The biosphere reserve areas are legally anchored in §25:

§25 Biosphere Reserves

- (1) Biosphere reserves are areas that are to be uniformly protected and developed, which
  1. are spacious and characteristic of certain types of landscape
  2. fulfil the requirements of a conservation area in substantial parts of their territory and in the remaining, mostly those of a protected landscape
  3. are primarily intended to preserve, develop, or restore a landscape shaped by varied use and the diversity of species and biotopes that historically grew within them including the wild forms and formerly cultivated forms of commercially used and/or usable animal and plant species and
  4. exemplify the development and testing of farming practices that conserve natural resources.

(2) If so authorised by the protective purpose, biosphere reserve also provide opportunities for the research and observation of nature and landscape as well as education for sustainable development.

(3) Biosphere reserves should be developed through core areas, buffer zones, and transition areas (taking into consideration exceptional areas) and protected in the same manner as nature reserves and landscape protection areas.

(4) Biosphere reserves can also be referred to as biosphere reserve s or biosphere regions.

In §67, the exemptions from the enforcements and prohibitions laid down in the legislation are regulated:

§67 Exemptions

- (1) In a legal regulation pursuant to §57 or according to the conservation laws of the federal states, upon request, exemption from the enforcements and prohibitions of this legislation can be granted if
  1. this is necessary for reasons of overriding public interest, including those of a social and economic nature or
  2. the implementation of the provisions would result in an unreasonable burden in individual cases and the deviation is compatible with the interests of nature conservation and landscape management
 In Chapter 5, clause 1 only applies to §§39, 40, 42, and 43.

(2) Upon application, exemptions from §33 Subsection 1 Clause 1 and §44 as well as the enforcements and prohibitions the sense of §32 Subsection 3 can be granted if the implementation of the enforcements would result in an unacceptable nuisance. In the case of the movement of animals or plants from abroad, the exemption is granted by the Federal Agency for Nature Conservation.

(3) The exemption may be provided with collateral clauses. §15 Subsections 1 through 4 and subsection 6 as well as §17 Subsections 5 through 7 also apply if there is no intervention in nature and landscape within the meaning of §14

#### 19.3.2 Law of the Land of Baden-Württemberg on nature conservation and the maintenance of the landscape (Nature Conservation Act – NatSchG from 23 June 2015)

The NatSchG supplements the BNatSchG and regulated the protection of nature and landscape as well as wild species of plants and animals. In §23 Section 2, it is stipulated that the declaration as a biosphere reserve in accordance with §of the 25 BNatSchG shall be carried out by the ordinance of the top nature conservation authority.

**19.3.3 Enactment of the Ministry of Rural Affairs and Consumer Protection concerning the Biosphere Reserve Black Forest**

The enactment was signed on 4 January 2016 and published in the law gazette of the Federal State of Baden-Württemberg. The enactment came into force on 1 February 2016. It contains the descriptions, goals, administration, financing, and other legal liabilities of the Biosphere Reserve Black Forest.





## Baden-Württemberg

### MINISTRY OF RURAL AFFAIRS AND CONSUMER PROTECTION

## **Enactment of the Ministry of Rural Affairs and Consumer Protection concerning the Biosphere Reserve Black Forest (Biosphere Reserve Black Forest Enactment)**

From 4 January 2016

Pursuant to § 23 Subsection 2 of the Nature Conservation Act (NatSchG) from 23 June 2015 (GB1 Pg. 585) in connection with § 20 Subsection 2 Item 3, and § 22 Subsection 1 and 2 as well as § 25 of the Federal Nature Conservation Act (BNatSchG) of 29 June 2009 (BGBl. I Pg. 2542), which has recently been amended through Paragraph 421 of the Enactment from 31. August 2015 (Federal Law Gazette I Pg. 1474, 1536), the following is decreed:

### **§1**

#### **Establishment and designation of the Biosphere Reserve Black Forest**

(1) In Southern Black Forest, in the region of Kleines Wiesental, Belchen, Schauinsland, adjacent areas to Feldberg, Schluchsee, Schwarzatal, Oberer Hotzenwald, Albtal, Wehratal, and Mittleres und Oberes Wiesental, a biosphere reserve will be established.

(2) In the West, the area is bordered by the municipal boundary of Kleines Wiesental from Sallneck to Belchen. From there, the western border follows along the Upper Black Forest West Ridge until the Schauinsland area and surrounds the Municipality of Horben. The northern border goes from Kappiortal to Zastlertal via Oberried. From there, it extends to Rinken. There, the area boundary includes a small sub-area of the Communal District of Hinterzarten and once again follows the municipal boundary of Oberried until Highway B 317. The northern municipal boundaries of Todtnau, Bernau in the Black Forest, St Blasien, and Schluchsee form the external border until Highway B 500. From here, the external border follows the south-western shore of Schluchsee, incorporating the eastern border of the Municipality of Häusern. In the area of the Schwarzhalden forest reserve, the Schwarzatal, which extends southwards forms a south-eastern arm, which also touches the municipal areas of Höchenschwand, Ühlingen-Birkendorf, and Weilheim. Further north, it continues to follow the southern municipal boundary of Häusern to the west and then along the eastern side of the Albtal until Albbruck am Hochrhein. Along the western edge of the Albtal, the border extends north. It follows the Ibach until the Ibach Moor and continues along the western border of Ibach and the south-western border of Bernau in the Black Forest until the icy basin of Präg. From here, it follows the eastern municipal boundaries of Hög-Ehrsberg and Schopfheim until approx. 1 km north of the Wehra water reservoir. The southern border



finally extends along the southern communal district boundaries of SchopfheimGersbach, Schopfheim-Raitbach, and Schopfheim-Kürnberg (Dinkelberg) until Hausen im Wiesental. From there, the external area border extends north-west along the communal district boundary of Schopfheim-Langenau and includes the western municipal boundary of Kleinen Wiesental.

(3) The area is called “Biosphere Reserve Black Forest”.

## **§2**

### **Spatial delimitation and zoning of the Biosphere Reserve Black Forest**

(1) The Biosphere Reserve Black Forest encompasses 63 236 ha.

(2) The Biosphere Reserve Black Forest includes the communal districts or parts of the communal districts of the following municipalities:

1. in the District of Lörrach:

- a) Aitern
- b) Böllen
- c) Fröhnd
- d) Hausen im Wiesental
- e) Hüg-Ehrsberg
- f) Kleines Wiesental
- g) Schönau in the Black Forest
- h) Schönenberg
- i) Schopfheim
- j) Todtnau
- k) Tunau
- l) Utzenfeld
- m) Wembach
- n) Wieden
- o) Zell im Wiesental

2. in the District of Waldshut:

- a) Albbruck
- b) Bernau in the Black Forest
- c) Dachsberg (Southern Black Forest)
- d) Höchenschwand
- e) Häusern
- f) Ibach
- g) St Blasien
- h) Ühlingen-Birkendorf
- i) Wehr

3. in the District of Breisgau-Hochschwarzwald:

- a) Hinterzarten
- b) Horben

- c) Oberried
- d) Schluchsee

#### 4. The city of Freiburg im Breisgau.

The Biosphere Reserve Black Forest also includes a part of the Communal District of the Municipality of Weilheim in the District of Waldshut.

(3) The biosphere region is divided into core areas, buffer zones, and transition areas.

(4) In the maps in Annex 1 (Total map with representation of the zones at a scale of 1: 75,000), Annex 2 (inter-territorial representation of the existing protected areas at a scale of 1: 75,000), and Annex 3 (individual representation of the 30 municipalities mentioned in Subsection 2 at a scale of 1: 10,000), which are a part of this enactment, the external borders of the Biosphere Reserve Black Forest are indicated with a thick magenta line. In Annexes 1 and 3, the areas of the core areas have a violet border and raster. The areas of the buffer zones feature an ochre-coloured raster. The remaining areas of the Biosphere Reserve Black Forest are developmental zones. In Annex 2, the border of the Southern Black Forest Nature Park is represented by a solid yellow line. In addition, the areas concerning the Biosphere Reserve Black Forest, which are of community interest in the sense of Directive 92/43/EEC of the council of 21 May 1992 concerning the conservation of natural habitats as well as the wild fauna and flora (ABI. L 206 from 22 July 1992, Pg. 7) and which were recently amended by Directive 2013/17/EC (ABI. L 158 from 10 June 2013, Pg. 193), is bordered by a solid blue line and features blue hatching. The bird protection area is surrounded by a solid magenta line with magenta hatching. The nature reserves are solid red, and the conservation area is solid green. The forest reserves are surrounded by a solid brown line and feature brown horizontal hatching. The : protected woodlands are surrounded by a solid green line and feature green vertical hatching.

### **§3**

#### **Cause of the Biosphere Reserve Black Forest**

(1) The Biosphere Reserve Black Forest includes naturally and culturally influenced habitats.

(2) In addition to the populated areas of the Biosphere Reserve Black Forest as well as those used for tourism, the landscape is also characterised by:

1. the highlands and valleys formed during the ice age,
2. the large, extensively used pastures,
3. the various local forests,
4. the wide variety of special locations such as avalanche tracks, moors, rocks, and boulders,
5. numerous rivers, including many natural mountain streams,
6. still waters with lakes and ponds.

(3) The Biosphere Reserve Black Forest includes geologically, naturally, and culturally influenced habitats, which are particularly important for biodiversity. Characteristic features include:

1. large, partially communal pastures, which feature different characteristics depending on location and altitude,
2. the glacially influenced communities of the highlands with numerous glacial relict species, active avalanche tracks, and spring/irrigation swamps,
3. natural beech and beech-fir forests with different local, use-related, and structural characteristics (e.g. selection and timber forests) in sub to high mountainous locations,
4. ravine forests in moist layers, blocks and talus forests in the environment of rocks, high mountainous mixed alpine forests with natural spruce,
5. open screes and boulders,
6. moors with various characteristics,
7. natural and semi-natural watercourses including accompanying vegetation as well as spring and tall herb swamps,
8. lowland and mountain hay meadows,
9. special structures (e.g. from mining, stone fences) required for previous or current use,

#### **§4**

#### **Objective of the Biosphere Reserve Black Forest**

(1) The municipalities and districts referred to in § 2 Subsection 2 Clause 1 have joined forces with the state and with the population to link the economic management with the maintenance and development of the natural and cultural landscape in the Biosphere Reserve Black Forest and to positively structure these. Here, there is close cooperation with the associations and the Southern Black Forest Nature Park. The diverse and characteristic ecosystems should be conserved in accordance with the needs of the people. The ecological, economic and social concerns are to be considered equal in particular taking into account the demographic changes in rural areas. For this purpose, strategies and projects shall be developed and implemented. Another central role of the Biosphere Reserve Black Forest is education for sustainable development. The driving force for development of the Biosphere Reserve Black Forest is the people living there as well as the federal state and the districts and municipalities involved. These are encouraged to contribute their ideas for the Biosphere Reserve Black Forest in order to create a mission statement.

(2) The natural character of the Southern Black Forest and the landscape characterised by multiple use with its historical species and biotopes, including wild and previously cultivated animal and plant species, should be maintained, developed, and, where necessary, recreated (§25 Federal Nature Conservation Act). The cultural landscape of the Biosphere Reserve

Black Forest should also be maintained and developed as an attractive and sustainable recreation area for the purposes of strengthening tourism. The basis for this is the long-term security and development of sustainable agriculture, forestry, and water management as well as hunting and fishing with a widespread network of efficient and profitable agricultural holdings. Another focus is strengthening the economy through the sustainable development of residential, commercial, service, recreation, tourism, and industrial sites as well as the required infrastructure. The aspects of culture, leisure, sport, and health shall be given special consideration. The centuries-old settlement structures, which feature typical constructions, are particularly influential. These shall be preserved and further developed. In the foreground is also the endeavour of to achieve a harmonious coexistence with nature. The economic, social, cultural, and ethnic aspects will be given as much attention as the interests of nature conservation.

## **§5**

### **Core areas**

(1) In the core areas, nature shall develop unaffected by humans. The core areas serve for the protection of nature and natural processes as well as the preservation of genetic resources, characteristic plant and animal species, and their habitats. They consist of the forest reserves pursuant to § 32 of the State Forestry Act as well as the core zone areas protected by this enactment.

(2) All actions that can lead to

1. the destruction, damage, or alteration of the core areas or their forests, their ground vegetation, or locations,
2. a sustainable disruption of the natural balance of the core zone or
3. an impairment of the scientific study of the core areas

shall be refrained from. For the core areas, regardless of the designation as a forest reserve pursuant to § 32 of the State Forestry Act, the provisions of §§ 4 through 11 of the enactment of the regional authority of Freiburg concerning the forest reserves "Seewald", "NapfExpansion", "Scheibenfelsen Expansion", "Hohmüttlen", "Stutzfelsen Expansion", "Salendobel", "Ebener Wald", "Geschwender Halde", "Erleboden", "Finstergrund", "Staltenrain", "Tannenboden", and "Wehratal Expansion" in the future " Biosphere Reserve Black Forest " (Biosphere Forest Reserves Enactment) from 4 December 2015 as amended by the notice from 14 December 2015 2015 (GB1. pg. 1126).

## **§6**

### **Buffer zones**

(1) The buffer zones serve for the protection of nature, the conservation and development of species-rich cultural landscapes and landscape typical habitats, which are primarily characterised by human use. They can also have supporting and buffering functions for the core areas.

(2) All actions that can lead to

1. the destruction, damage, or permanent disturbance of the buffer zones, their ecosystem, or essential components thereof or
  2. the impairment of scientific research of the buffer zones is to be refrained from. § 32 Subsection 4 of the State Forest Act shall apply.
- (3) Excluded from the protective provisions are urgent measures to protect the population and to prevent threats to people as well as considerable material assets.
- (4) Excluded from the protective provisions are measures for the proper use, the proper maintenance and conservation, and the restoration or improvement of road safety on existing public roads including ancillary facilities, public bicycle paths and other public paths; here, the protective purpose of the buffer zones and the objectives of the Biosphere Reserve Black Forest must be appropriately addressed.
- (5) Agriculture, forestry, and fishing as well as hunting and game keeping are permitted in the buffer zones as long as they comply with good agricultural practice and proper forestry and fishing including § 5 Subparagraphs 2 through 4 of the Federal Nature Conservation Act and the general principles of forest equity pursuant to § 8 Subsection 1 of the Hunting and Wildlife Management Act and proper game keeping.
- (6) The current use and maintenance of the lands and waters as well as the maintenance and repair of lawfully existing facilities in their current nature and extent shall remain unaffected.
- (7) The objectives of this enactment does not preclude the expansion and construction of privileged facilities pursuant to § 35 Subsection 1 Item 1 of the Federal Building Code and the supply systems pursuant to § 35 Subsection 1 Item 3 of the Federal Building Code. The same applies to the equipment used for the cultivation of land in the buffer zone. In land consolidation process, the coordination of changes shall take place in consultation with the lower conservation authority.
- (8) The sports and recreational use in the buffer zones is generally allowed as long as other legal provisions do not preclude it.

## **§7**

### **Transition areas**

The transition areas form the focus of living, working, and recreation area for the population in the biosphere reserve. The basis for the success of the Biosphere Reserve Black Forest is prosperous, sustainable, and environmentally-friendly economic and social development. Therefore, in the transition areas, sustainable, natural and environmentally-friendly farming practices, cultural and social projects, agriculture and forestry, and tourism should be promoted and developed. These objectives shall be considered when planning the development of commercial, residential, leisure, and other uses. The objectives laid down in the state and regional planning shall remain unaffected.



## **§8**

### **Framework, information, education, scientific observation, and research**

- (1) With the participation of people living in the Biosphere Reserve Black Forest as well as the municipalities and districts mentioned in § 2 Subsection 2 Clause 1, the Southern Black Forest Nature Park, and associations, a framework will be developed. This will serve to establish a mission statement for the conservation, maintenance, and development of the Biosphere Reserve Black Forest. The coordinated framework must be submitted no later than three years after the recognition of the biosphere area as a biosphere reserve by UNESCO. The content and objectives of the framework should be included in state and regional planning as well as in landscape and land use planning. They should also be considered in the continuation of other sectoral planning.
- (2) For the purpose of education for sustainable development, information facilities for educating the public and promoting professional exchange should be established in the Biosphere Reserve Black Forest. Networking with existing educational institutions will be sought.
- (3) The Biosphere Reserve Black Forest allows for research on human-environmental relationships as well as sustainable ecologically and economically viable uses. Long-term environmental monitoring of the natural processes and the influence of human use in the biosphere reserve should be carried out. The historical development of the cultural landscape of the area should also be researched and presented.

## **§9**

### **Office of the Biosphere Reserve Black Forest**

- (1) For the Biosphere Reserve Black Forest, an office will be established with the local council of Freiburg. It is located in Schönau in the Black Forest.
- (2) The office supports the development of the Biosphere Reserve Black Forest. It shall operate information centres pursuant to § 8 Subsection 2, advise the people living in the Biosphere Reserve Black Forest as well as the municipalities, districts, associations, and project promoters mentioned in § 2 Subsection 2 Clause 1, and support the creation of structures for a sustainable development of the Biosphere Reserve Black Forest.
- (3) The scope of the duties of the office and its cooperation with the boards shall be regulated in agreement to be concluded between the federal state and the municipalities and districts mentioned in § 2 Subsection 2 Clause 1.

## **§10**

### **Financing**

The municipalities and districts in the Biosphere Reserve Black Forest named in § 2 Subsection 2 Clause 1 and the federal state shall jointly support and finance the Biosphere Reserve Black Forest. The project shall be funded by the federal state and (70%) as well as the municipalities and districts (30%).

## **§11 Exemptions**

(1) Upon application, exemption from the provisions of this enactment may be granted in accordance with § 67 of the Federal Nature Conservation Act.

(2) The higher nature conservation authority is responsible for granting the exemption pursuant to Subsection 1; if the core areas are affected, this shall be done in agreement with the higher forest authorities. The conservation law exemption includes forestry law exceptions that are required at the same time.

## **§12 Continued application of other legal regulations**

The ordinances existing when this enactment concerning areas in the Biosphere Reserve Black Forest enters into force shall continue to apply insofar as there is no more stringent regulation in place concerning core areas and buffer zones in this enactment.

## **§13 Land consolidation procedures**

Pursuant to § 149 of the Land Consolidation Act, land consolidation procedures are exempted from this enactment until the final determination.

## **§14**

### **Adjustment clause**

Pursuant to § 2 Subsection 4 but only within 10 years after the enactment has been set into force, the exterior and zoning boundaries of the Biosphere Reserve Black Forest can be adjusted if a municipality involved in or adjacent to the biosphere reserve requests this for its district as long as neither the overall structure nor the important objectives of the biosphere reserve are affected. Necessary amendments to the exterior and zoning boundaries as well the text of the enactment shall remain unaffected.

## **§15**

### **Administrative offences**

In the sense of § 69 Subsection 1 Item 1 of the Nature Conservation Act, administrative offences refer to the infringement (intentional or negligent) of

1. the prohibitions pursuant to § 5 Subsection 2 and § 6 Subsection 2 or
2. enforceable orders that the higher conservation authority has issued pursuant to § 4 Subsection 1 of the Nature Conservation Act and § 3 Subsection 2 of the Federal Nature Conservation Act in connection with §§ 5 and 6 of this enactment

in the Biosphere Reserve Black Forest.

## **§16**

### **Replacement promulgation, reference**

(1) Pursuant to § 3 of the promulgation law, for the purpose of replacement promulgation of the maps mentioned in § 2 Subsection 4, the enactment and maps will be made open to the public free of charge during opening hours at the Ministry of Rural Affairs and Consumer Protection Kernerplatz 10, 70182 Stuttgart, at the Regional Authority of Freiburg Bissierstraße 7, 79114 Freiburg, at the District Offices of Lörrach (Palmstraße 3, 79539 Lörrach, Waldshut, Kaiserstraße 110, 79761 Waldshut-Tiengen, and Breisgau Hochschwarzwald, Stadtstraße 2, 79104 Freiburg im Breisgau), and the Environmental Protection Agency of the City of im Breisgau, Talstraße 4, 79102 Freiburg im Breisgau for a period of two weeks starting the day after the announcement of this enactment in the Official Gazette. The enactment and respective municipality maps will also be located in the town halls of the municipalities mentioned in § 2 Subsection 2.

(2) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 1, Clause 1 so that they can be viewed by the public free of charge during opening hours.

**§17**  
**Entry into force**

This enactment shall enter into force after expiration of the term referred to in § 16 Subsection 1 but not earlier than 1 February 2016:

Stuttgart, 4 January 2016

Bonde

Instructions for proper use:

Pursuant to § 25 Subsection 1 of the Nature Conservation Act, a violation of the procedural and formal requirements mentioned in § 24 of the Nature Conservation Act is significant only if it submitted in writing within one year after promulgation of the enactment at the Ministry of Rural Affairs and Consumer Protection; the facts justifying the violation must be presented.

**19.4.4 Cooperation agreement**

The regulations for cooperation of the federal state, the districts involved, the City of Freiburg, and the municipalities of the Biosphere Reserve Black Forest have been laid down in the cooperation agreement of 19 February 2016. These include matters of the financing, the office, the participation, the advisory council, and the steering committee.





# Baden-Württemberg

## MINISTRY OF RURAL AFFAIRS AND CONSUMER PROTECTION

### Agreement

The Federal State of Baden-Württemberg, represented by the Ministry of Rural Affairs and Consumer Protection, Kernerplatz 10, 70182 Stuttgart, represented by Minister Alexander Bonde

(In the following: Federal State)

and

1. The District of Lörrach,  
represented by district administrator Ms Marion Dammann, Palmstraße 3, 79539 Lörrach,

2. The District of Waldshut,  
represented by district administrator Dr Martin Kistler, Kaiserstraße 110, 79761 Waldshut-Tiengen,

3. The District of Breisgau-Hochschwarzwald,  
represented by district administrator Ms Landrätin Dorothea Störr-Ritter, Stadtstraße 2, 79104 Freiburg im Breisgau,

4. The City of Freiburg im Breisgau, represented by lord mayor Dr Dieter Salomon, Rathausplatz 2-4, 79098 Freiburg im Breisgau

5. The 28 Municipalities of the Biosphere Reserve Black Forest

**Aitern**, represented by mayor Ms Sigrid Böhler,  
Schulweg 6, 79677 Aitern

**Albbruck**, represented by mayor Mr Stefan Kaiser,  
Schulstraße 6, 79774 Albbruck

**Bernau in the Black Forest**, represented by mayor Mr Rolf Schmidt,  
Rathausstraße 18, 79872 Bernau in the Black Forest

**Böllen**, represented by mayor Mr Bruno Kiefer,  
Oberböllen 19, 79677 Böllen

**Dachsberg (Southern Black Forest)**, represented by mayor Mr Helmut Kaiser,  
Rathausstraße 1, 79875 Dachsberg (Southern Black Forest)

**Fröhnd**, represented by mayor Ms Tanja Steinebrunner,

Unterkastel 21, 79677 Fröhnd

**Häg-Ehrsberg**, represented by mayor Mr Bruno Schmidt,

Rathausstraße 27, 79685 Häg-Ehrsberg

**Hausen im Wiesental**, represented by mayor Martin Bühler,

Bahnhofstraße 9, 79688 Hausen im Wiesental

**Häusern**, represented by mayor Mr Thomas Kaiser,

St.-Fridolin-Straße 5, 79837 Häusern

**Hinterzarten**, represented by mayor Mr Klaus-Michael Tatsch,

Rathausstraße 12, 79856 Hinterzarten

**Höchenschwand**, represented by mayor Mr Stefan Dorfmeister,

Waldshuter Straße 5, 79862 Höchenschwand

**Horben**, represented by mayor Mr Markus Riesterer,

Dorfstraße 2, 79289 Horben

**Ibach**, represented by mayor Mr Helmut Kaiser,

Hofrain 1, 79837 Ibach

**Kleines Wiesental**, represented by mayor Mr Gerd Schönbett,

Tegernauer Ortsstraße 9, 79692 Kleines Wiesental

**Oberried**, represented by mayor Mr Klaus Vosberg,

Klosterplatz 4, 79254 Oberried

**Schluchsee**, represented by mayor Mr Jürgen Kaiser,

Fischbacher Straße 7, 79859 Schluchsee

**Schönau in the Black Forest**, represented by mayor Mr Peter Schelshorn,

Talstraße 22, 79677 Schönau in the Black Forest

**Schönenberg**, represented by mayor Mr Michael Quast,

Belchenstraße 1, 79677 Schönenberg

**Schopfheim**, represented by mayor Mr Christof Nitz,

Hauptstraße 29-31, 79650 Schopfheim

**St. Blasien**, represented by mayor Mr Rainer Fritz,

Am Kurgarten 11, 79837 St. Blasien

**Todtnau**, represented by mayor Mr Andreas Wießner,

Rathausplatz 1, 79674 Todtnau

**Tunau**, represented by mayor Mr Klaus Rümmele,

Dorfstraße 2, 79677 Tunau

**Ühlingen-Birkendorf**, represented by mayor Mr Tobias Gantert,

Kirchplatz 1, 79777 Ühlingen-Birkendorf

**Utzenfeld**, represented by mayor Mr Harald Lais,

Wiesentalstraße 29, 79694 Utzenfeld

**Wehr**, represented by mayor Mr Michael Thater,

Hauptstraße 16, 79664 Wehr

**Wembach**, represented by mayor Mr Christian Rüscher,

Biffigstraße 2, 79677 Wembach

**Wieden**, represented by mayor Ms Annette Franz,

Kirchstraße 2, 79695 Wieden

**Zell im Wiesental**, represented by mayor Mr Rudolf Rümmele,

Constanze-Weber-Gasse 4, 79669 Zell im Wiesental

(In the following: Local authorities)

agree to the following with respect to cooperation in the Biosphere Reserve Black Forest Region on the basis of the Enactment of the Ministry of Rural Affairs and Consumer Protection concerning the Biosphere Reserve Black Forest Region (Biosphere Reserve Black Forest Region Enactment) of 4 January 2016 (GB1. pg. 6):

## **§1**

### **Financial participation of the authorities**

(1) The parties agree that pursuant to § 10 of the Biosphere Reserve Black Forest Enactment, the local authorities shall contribute to 30% of the costs of the biosphere reserve from 1 January 2019. These costs include the personnel costs, the material costs, and project funding (€200,000 annually). In total, at the time of establishment of the Biosphere Reserve Black Forest, an amount of €660,000/year shall be used as a basis. For 2016 through 2018, the federal state will assume 100% of the costs.

(2) The districts as well as the City of Freiburg and the municipalities involved in the biosphere reserve have reached an agreement concerning the division of the stake amongst the individual authorities. The districts and the city of Freiburg shall pay the corresponding amounts to the federal state on 1 April of each year.

(3) In five-year intervals, the basis of calculation will be checked and adjusted through joint declaration of the parties if necessary

## **§2**

### **Office of the Biosphere Reserve Black Forest**

The parties agree that the office of the Biosphere Reserve Black Forest shall be run as a branch of the Regional Authority of Freiburg and based in Schönau in the Black Forest (office of the Biosphere Reserve Black Forest).

### **§3**

#### **Participation of the local authorities in the office of the Biosphere Reserve Black Forest**

The local authorities shall participate in the fundamental issues of the office of the Biosphere Reserve Black Forest. These include:

1. Essential personnel decisions, particularly changes to the establishment plan, participation in the selection of personnel in functional points;
2. Amendment of the basis for calculating the financial contribution of the local authorities;
3. The annual work programme of the office of the Biosphere Reserve Black Forest;
4. The use of project funds;
5. Creation and modification of the framework.

### **§4**

#### **Forms of participation**

(1) In the biosphere reserve, the people living there as well as the locally based socio-political, economic, and scientific actors including societies and associations are to be closely involved. This can be done through local forums and working groups. The office is responsible for the coordination of this.

(2) The people and actors shall cooperate in the following thematic areas (pillars):

- a) Land use
- b) Nature conservation
- c) Society and culture
- d) Education for sustainable development
- e) Economy, including tourism

(3) Existing working group of the Southern Black Forest Nature Park, the LEADER action area in Southern Black Forest, and the future LEADER action areas in the biosphere reserve shall be integrated.

(4) Additional forms of participation are regulated in §§ 5 and 6.

### **§5**

#### **Council**

(1) At the regional authority of Freiburg, a council shall be formed to provide advice concerning matters of the Biosphere Reserve Black Forest. The members include three representatives from the regional authority, one representative per local authority, four representatives for each of the topic areas (pillars) mentioned in § 4 Subsection 2, and one representative in the Southern Black Forest Nature Park. At least two of the four representatives from the topic areas pursuant to § 4 Subsection 2 shall come from clubs, associations, or similar organisations. An advisory chair shall be elected by majority vote (based on council members present). The head of the office of the Biosphere Reserve Black Forest shall

participate in all council meetings.

(2) The board may select additional members.

(3) The council shall advise the steering committee pursuant to § 6 and issue recommendations on the affairs of the Biosphere Reserve Black Forest mentioned in § 3 Items 3 through 5. (4) The council shall adopt its statutes.

## **§6**

### **Steering committee**

(1) At the regional authority of Freiburg, a steering committee for the Biosphere Reserve Black Forest shall be established. Members include the authority president of Freiburg as chair, the authority vice president of Freiburg as vice chair, two representatives from the Ministry of Rural Affairs and Consumer Protection, the district administrators of the districts of Lörrach, Waldshut, and Breisgau-Hochschwarzwald, two mayors each from the municipalities of the Biosphere Reserve Black Forest from the districts of Lörrach, Waldshut, and Breisgau-Hochschwarzwald, and one representative from each of the council members from the topic areas (pillars) mentioned in § 4 Subsection 2. The head of the office of the Biosphere Reserve Black Forest as well as the head of the office of the Southern Black Forest Naturpark shall participate in all council meetings in an advisory capacity. The members of the steering committee and their representatives shall be identified by name. With the exception of the representative of the Ministry of Rural Affairs and Consumer Protection, additional representation is not possible. The representatives of the Ministry of Rural Affairs and Consumer Protection can empower other members to exercise their voting rights.

(2) The representatives of the topic areas are not entitled to vote on the affairs of the Biosphere Reserve Black Forest mentioned in § 3 Items 1 and 2.

(3) The steering committee shall pass decisions with majority vote. Each member has one vote. In the case of tie votes, the vote of the chair shall be decisive. The chair shall seek consensual decisions. Depending on their effects, decisions about setting up staff positions and modifying the basis for calculation pursuant to § 3 Item 2 as well as decisions (on an individual basis or permanent) that require the financial services of the federal state or the local authorities and which exceed the stake of the federal state or local authorities resulting from § 1 Subsection 1 require the approval of the Ministry of Rural Affairs and Consumer Protection or the local authorities.

(4) The steering committee shall draw up statutes.



**§7****Duration and termination**

(1) The agreement is valid until 31 December 2025.

(2) In the case of extension of the term beyond the period in Subsection 1, the agreement can be terminated for good cause by any party with a deadline of six months to 31 December of each year.

**§8****Modifications, subsidiary agreements, severability clause**

(1) Modifications to this agreement as well as any subsidiary agreements shall only be valid in writing.

(2) If any provision of this agreement becomes wholly or partially ineffective, proves impractical, or becomes ineffective or impractical as a result of changes to the legal situation after conclusion of the agreement, the remaining provisions and the effectiveness of the agreement as a whole shall not be affected. The parties agree that ineffective or impractical provisions shall be replaced by effective provisions that come closest to the objective. The aforementioned provisions shall apply in the case that the agreement proves to be incomplete.

Schönau in the Black Forest, 19 February 2016

[Signature]

Winfried Kretschmann  
Minister-President

[Signature]

Alexander Bonde  
Minister of Rural Affairs and  
Consumer Protection

[Signature]

District Administrator Marion Dammann  
Kistler  
District of Lörrach

[Signature]

District Administrator Dr Martin  
  
District of Waldshut

[Signature]

District Administrator Dorothea Störr-Ritter  
District of Breisgau-Hochschwarzwald

[Signature]

Lord Mayor Dr Dieter Salomon  
City of Freiburg in Breisgau

[Signature]  
Mayor Sigrid Böhler  
Municipality of Aitern

[Signature]  
Mayor Stefan Kaiser  
Municipality of Albbruck

[Signature]  
Mayor Rolf Schmidt  
Municipality of Bernau in the Black Forest

[Signature]  
Mayor Bruno Kiefer  
Municipality of Böllen

[Signature]  
Mayor Helmut Kaiser  
Municipality of Dachsberg (Southern Black Forest)

[Signature]  
Mayor Tanja Steinebrunner  
Municipality of Fröhnd

[Signature]  
Mayor Bruno Schmidt  
Municipality of Hög-Ehrsberg

[Signature]  
Mayor Martin Bühler  
Municipality of Hausen im Wiesental

[Signature]  
Mayor of Thomas Kaiser  
Municipality of Häusern

[Signature]  
Mayor Klaus-Michael Tatsch  
Municipality of Hinterzarten

[Signature]  
Mayor Stefan Dorfmeister  
Municipality of Höchenschwand

[Signature]  
Mayor Markus Riesterer  
Municipality of Horben

[Signature]  
Mayor Helmut Kaiser  
Municipality of Ibach

[Signature]  
Mayor Gerd Schönbett  
Municipality of Kleines Wiesental

[Signature]  
Mayor Klaus Vosberg  
Municipality of Oberried

[Signature]  
Mayor Jürgen Kaiser  
Municipality of Schluchsee

[Signature]  
Mayor Peter Schelshorn  
City of Schönau in the Black Forest

[Signature]  
Mayor Michael Quast  
Municipality of Schönenberg

[Signature]  
Mayor Christof Nitz  
City of Schopfheim

[Signature]  
Mayor Rainer Fritz  
City of St Blasien

[Signature]  
Mayor Andreas Wießner  
City of Todtnau

[Signature]  
Mayor Klaus Rümmele  
Municipality of Tunau

[Signature]  
Mayor Tobias Gantert  
Municipality of Ühlingen-Birkendorf

[Signature]  
Mayor Harald Lais  
Municipality of Utzenfeld

[Signature]  
Mayor Michael Thater  
City of Wehr

[Signature]  
Mayor Christian Rüscher  
Municipality of Wembach

[Signature]  
Mayor Annette Franz  
Municipality of Wieden

[Signature]  
Mayor Rudolf Rümmele  
City of Zell in Wiesental

**19.4.5 Forest Reserve Enactments**



# **Enactment**

## **of the Forest Authority of Freiburg concerning the forest reserve**

### **“Napf”**

From 19 January 2000

Pursuant to § 32 of the State Forest Law (LWaldG) as amended on 31 August 1995 (GB1. pg. 685), the following is decreed:

### **General provisions**

#### **§1**

#### **Declaration as forest reserve**

The areas in the Forestry District of Kirchzarten in the area of the Municipality of Oberried, Communal District of St Wilhelm, District of Breisgau-Hochschwarzwald, Region of Freiburg, which are described in more detail in § 2, shall be declared as a forest reserve.

The forest reserve shall be known as:

### **“Napf”**

#### **§2**

#### **Object of protection**

- (1) The forest reserve encompasses an area of approx. 177 ha
- (2) Description of the area  
The protection area in the State Forest of Kirchzarten is approx. 4 km south-east of the Hamlet of St Wilhelm in the Municipality of Oberried and includes Departments 6, 7, 8, and 10 (each only partially) as well as Department 9 of District II.
- (3) In an overview map, the borders of the forest reserves are indicated in 1: 25,000 scale with a solid black line with brush signature. In the detailed map, they are indicated in 1: 10,000 scale with a solid black line with brush signature. The maps are part of this regulation. The enactment with maps will be placed at the Forest Authority of Freiburg,

the State Forestry Office in Kirchzarten, and the lower administrative authority in Oberried free of charge for public inspection during opening hours for a period of three weeks beginning the day after this enactment was announced in the legal gazette.

- (4) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 3 Clause 3 so that they can be viewed by the public free of charge during opening hours.

### **§3**

#### **Protective aim**

The protective aim of the forest reserve is to ensure the uninfluenced, spontaneous development of the forest including its flora and fauna (protection of the succession process, process protection) as well as the scientific observation of the development.

This includes the protection of habitats and communities located in the area that are altered or created in the course of the self-dynamic development of the forest resources within the protected area.

### **§4**

#### **Prohibitions**

- (1) In the forest reserve, all actions that can lead to the destruction, damage, or alteration of the reserve or its ecosystem as well as those that can sustainably disturb or hinder the scientific research of the forest reserve – especially those mentioned in Subsection 2 – are forbidden.
- (2) In particular, it is forbidden:
1. to use forest resources for forestry activities or otherwise remove wood;
  2. to introduce, remove, damage, or destroy plants or plant components; this also applies to the extraction of seeds insofar as this does not serve scientific purposes;
  3. creating forest paths with the exception of footpaths;
  4. straying from the designated paths.

## **§5**

### **Permitted actions**

- (1) The proper exercise of hunting is not affected with the proviso that
1. ladder stands are built from natural logs;
  2. no fields, meadows, or feedings are created, shooting paths are kept free, and there is no taming of wild boar;
  3. suitable wild stocks are prepared for the natural regeneration of forest communities.
- (2) The prohibitions of § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority:
1. for officially decreed or approved signage;
  2. for fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations;
  3. for traffic safety measures;
  4. for scientific investigations, especially the removal of plants or plant parts to a limited extent as part of scientific management or for the purposes of genetic conservation.

## **§6**

### **Scientific management**

The scientific management of the forest reserves is the responsibility of the Forest Research Institute of Baden-Württemberg.

## **§7**

### **Exemptions**

The higher forest authorities may be exempted from the provisions of this enactment.

## **§8**

### **Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that are prohibited under § 4 of this enactment.

**§9****Entry into force**

This enactment shall enter into force after expiration of the term referred to in § 2 Subsection 3.

(2) At the same time, the declaration of the Forest Authority of Freiburg from 12 September 1994 concerning the “Napf” forest reserve shall expire.

Freiburg, 19 January 2000

Stübler

# **Collective enactment**

**of the Corporate Forest Authority of Freiburg  
and the Forest Authority of Freiburg**

**concerning the forest reserves**

**“Bahnholz”, “Scheibenfelsen”, “Hügelheimer Rheinwald”**

From 20 February 2004

Pursuant to § 32 Subsection 6 of the State Forest Law (LWaldG) as amended on 31 August 1995 (GB1. pg. 685), the following is decreed:

## **§1**

### **Declaration as forest reserve**

(1) The forest reserves in the Region of Freiburg, Urban District of Freiburg and District of Breisgau-Hochschwarzwald, Forestry Districts of Freiburg-Stadt, Kirchgarten, and Müllheim, which are described in more detail in §2, were set by declaration. Through this enactment, they have been restated without substantially altering their protective purpose and delineation.

(2) The forest reserves have the following descriptions:

#### **Forestry District of Freiburg-Stadt:**

1. “Bahnholz” in the area of the City of Freiburg, Communal District of Hochdorf;

#### **Forestry District of Kirchgarten:**

2. “Scheibenfelsen” in the area of the Municipality of Oberried, Communal District of Zastler;

#### **Forestry District of Müllheim:**

3. “Hügelheimer Rheinwald” in the area of the City of Müllheim, Communal District of Zienken.



## **§2**

### **Object of protection**

(1) Size and location of the forest reserves:

1. The “Bahnholz” forest reserve encompasses an area of approx. 36.1 ha. It is located in the City Forest of Schönau on parcels 2541, 3216, and 3223/1 of the Communal Districts of Hochdorf and includes Department 6 in District XVII.
2. The “Scheibenfelsen” forest reserve encompasses an area of approx. 81.6 ha. It is located in the State Forest of Kirchzarten on parcels 15 and 30 (each only partially) of the Communal District of Zastler and includes Departments 5–7 (each only partially) in District I.
3. The “Hügelheimer-Rheinwald” forest reserve encompasses an area of approx. 5.2 ha. It is located in the City Forest of Müllheim on parcel 1325 (partially) of the Communal District of Zienken and includes District VII (partially).

(2) The locations of the forest reserves are each presented in an overview map at a scale of 1:25,000 with a black line and a point signature. In a detailed map, the borders are indicated in 1: 10,000 scale with a solid black line with brush signature. The maps are part of this regulation.

The enactment with maps will be placed at the Forest Authority of Freiburg, the Municipal Forestry Office of Freiburg, the State Forestry Offices of Kirchzarten and Müllheim, the Cities of Freiburg, Müllheim, and Neuenburg, and the Municipality of Oberried free of charge for public inspection during opening hours for a period of three weeks beginning the day after this enactment was announced in the legal gazette.

(3) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 2 Clause 3 so that they can be viewed by the public free of charge during opening hours.

## **§3**

### **Protective aim**

The protective aim of the forest reserve is to ensure the uninfluenced, spontaneous development of the forest including its flora and fauna (protection of the succession process, process protection) as well as the scientific observation of the development.

This includes the protection of habitats and communities located in the area that are altered or created in the course of the self-dynamic development of the forest resources within the protected area.

## **§4**

### **Prohibitions**

(1) In the forest reserves, all actions that can lead to the destruction, damage, or alteration of the reserve or its ecosystem as well as those that can sustainably disturb or hinder the scientific research of the forest reserve – especially those mentioned in Subsection 2 – are forbidden.

(2) In particular, it is forbidden:

1. to use forest resources for forestry activities or otherwise remove wood;
2. to introduce, remove, damage, or destroy plants or plant components; this also applies to the extraction of seeds insofar as this does not serve scientific purposes;
3. creating forest paths with the exception of footpaths;
4. straying from the designated paths.

## **§5 Permitted actions**

(1) The proper exercise of hunting and fishing is not affected with the proviso that

1. ladder stands are built from natural logs;
2. no fields, wild meadows, or feedings created or shot aisles are kept clear,
3. suitable wild stocks are prepared for the natural regeneration of forest communities.

(2) The prohibitions of § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority:

1. for officially decreed or approved signage;
2. for combating forest pests if these pose a considerable threat to adjacent forests,
3. for fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations;
4. for traffic safety measures;
5. for the removal of plants or plant components in limited quantities in connection with scientific management or for purposes of genetic conservation.

## **§6 Scientific management**

The scientific management of the forest reserves is the responsibility of the Forest Research Institute of Baden-Württemberg.

## **§7 Exemptions**

The higher forest authorities may be exempted from the provisions of this enactment.

## **§8 Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that are prohibited under § 4 of this enactment.

## **§9 Entry into force**

(1) This enactment shall enter into force after expiration of the term referred to in § 2 Subsection 3<sup>4</sup>

(2) At the same time, the following forest reserve declarations of the Corporate Forest Authority of Freiburg shall be repealed

1. "Bahnholz" from 24 October 1994
2. "Hügelheimer Rheinwald" from 10 August 1998

(3) At the same time, the following forest reserve declarations of the Forest Authority of Freiburg shall expire:

1. "Scheibenfelsen" from 15 March 1991

Freiburg i. Breisgau 20 February 2004

Joos

# **Collective enactment**

## **of the Corporate Forest Authority of Freiburg and the Forest Authority of Freiburg**

### **concerning the forest reserves**

#### **“Stutzfels”, “Wehratal”**

From 1 March 2004

Pursuant to § 32 Subsection 6 of the State Forest Law (LWaldG) as amended on 31 August 1995 (GB1. pg. 685), the following is decreed:

#### **§1**

##### **Declaration as forest reserve**

- (1) The forest reserves in the Region of Freiburg, Districts of Lörrach und Waldshut as well as the Forestry Districts of Schönau and Schopfheim, which are described in more detail in §2, were set by declaration. Through this enactment, they have been restated without substantially altering their protective purpose and delineation.
- (2) The forest reserves have the following descriptions:

##### **Forestry District of Schönau:**

1. “Stutzfels” in the area of the Municipality of Bollen, Communal District of Bollen;

##### **Forestry District of Schopfheim:**

2. “Wehratal” in the area of the City of Wehr, Communal District of Wehr;

#### **§2**

##### **Object of protection**

- (1) Size and location of the forest reserves:
  1. The “Stutzfels” forest reserve encompasses an area of approx. 17.8 ha. It is located in the Municipal Forest of Bollen on parcel 757 (partially) of the Communal District of Bollen and includes Department 3 (partially) in District III.
  2. The “Wehratal” forest reserve encompasses an area of approx. 127.8 ha. It is located the State Forest of Schopfheim on parcels 6718 and 6687 of the Communal District of Wehr and includes Departments 14–16 (each only partially) in District II and Departments 3–5 and 6 (partially) in District XIV.

- (2) The locations of the forest reserves are each presented in an overview map at a scale of 1:25,000 with a black line and a point signature. In a detailed map, the borders are indicated in 1: 10,000 scale with a solid black line with brush signature. The maps are part of this regulation.

The enactment with maps will be placed at the Forest Authority of Freiburg, the State Forestry Offices of Schönaun und Schopfheim, the City of Wehr, and the Municipality of Böllen free of charge for public inspection during opening hours for a period of three weeks beginning the day after this enactment was announced in the legal gazette.

- (3) After the inspection period, the enactment with maps is to be placed at the sites specified in Subsection 2 Clause 3 free of charge for public inspection during opening hours.

### §3

#### Protective aim

The protective aim of the forest reserve is to ensure the uninfluenced, spontaneous development of the forest including its flora and fauna (protection of the succession process, process protection) as well as the scientific observation of the development.

This includes the protection of habitats and communities located in the area that are altered or created in the course of the self-dynamic development of the forest resources within the protected area.

### §4

#### Prohibitions

- (1) In the forest reserves, all actions that can lead to the destruction, damage, or alteration of the reserve or its ecosystem as well as those that can sustainably disturb or hinder the scientific research of the forest reserve – especially those mentioned in Subsection 2 – are forbidden.

- (2) In particular, it is forbidden

1. **to use forest resources for forestry activities or otherwise remove wood.**
2. **For the protection of plants and animals**
  - a) to introduce, remove, damage, or destroy plants or plant components;
  - b) to adversely affect or destroy the locations of protected plants through exploration (e.g. photographing, filming, or similar actions);
  - c) to introduce animals, to recreate the wild fauna, to wantonly disturb, catch, injure, or kill animals or to remove, damage, or destroy pupae, larvae, eggs, nests, or other breeding/resting places or habitats of these animals,
  - d) to disturb wild animals in their nesting, breeding, or resting places through exploration, photography, or similar actions
3. to carry out any **building work** or similar operations such as:
  - a) erecting physical structures within the meaning of state building prescriptions or establishing similar measures;
  - b) creating streets, squares, or other transport systems or laying cables or other such systems;

- c) creating forest paths with the exception of footpaths;
  - d) creating, eliminating, or modifying running or standing bodies of water or carrying out drainage or other measures that would change the water balance for the vegetation;
  - e) establishing or installing posters or signboards except for officially approved signage.
- 4. modifying the natural stratification of the **soil** through landfills or excavations.
  - 5. **using pesticides, fertilisers, or other chemicals.** Permitted are soil conservation calcifications to preserve the site in the event of danger to the forest ecosystem.
  - 6.
    - a) traversing the protected area outside of the designated paths;
    - b) using bicycles on paths less than 2 m wide and outside of the designated paths;
    - c) riding outside of designated trails;
    - d) camping, tenting, setting up caravans or sales booths, or parking vehicles outside of designated parking areas;
    - e) leaving or storing rubbish or other items;
    - f) creating fires outside of the designated areas;
    - g) causing noise or air pollution

## **§5**

### **Permitted actions**

- (1) The proper exercise of hunting and fishing is not affected with the proviso that
  - 1. Ladder stands are built from natural logs;
  - 2. no fields, wild meadows, or feedings created or shot aisles are kept clear,
  - 3. suitable wild stocks are prepared for the natural regeneration of forest communities.
- (2) The prohibitions of § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority:
  - 1. for combating forest pests if these pose a considerable threat to adjacent forests,
  - 2. for fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations;
  - 3. for traffic safety measures;
  - 4. for the removal of plants or plant components in limited quantities in connection with scientific management or for purposes of genetic conservation.



## **§6 Scientific management**

The scientific management of the forest reserves is the responsibility of the Forest Research Institute of Baden-Württemberg.

## **§7 Relationship to protected areas touched upon**

Through this collective enactment, the following nature reserve regulations of the regional council of Freiburg remain unaffected:

- “Belchen” from 23 June 1996
- “Wehratal Forest Reserve” from 24 September 1982

## **§8 Exemptions**

The higher forest authorities may be exempted from the provisions of this enactment.

## **§9 Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that are prohibited under § 4 of this enactment.

## **§10 Entry into force**

- (1) This enactment shall enter into force after expiration of the term referred to in § 2 Subsection 3
- (2) At the same time, the following forest reserve declarations of the Corporate Forest Authority of Freiburg and the Ministry of Food, Agriculture, Viticulture and Forestry shall expire:  
“Stutzfels” from 18 1993
- (3) At the same time, the following forest reserve declarations of the Ministry of Food, Agriculture, Viticulture and Forestry shall expire:  
“Wehratal” from 27 January 1970.

**Collective enactment**  
**of the Corporate Forest Authority of Freiburg  
and the Forest Authority of Freiburg**  
**concerning the forest reserves**  
**“Bechtaler Wald”, “Flüh”, “Windbergschlucht”,  
“Schwarzhalden”, and  
“Teichschlucht”**

from 1 March 2004

Pursuant to § 32 Subsection 6 of the State Forest Law (LWaldG) as amended on 31 August 1995 (GB1. pg. 685), the following is decreed:

**§1**  
**Declaration as forest reserve**

(1) The forest reserves in the Region of Freiburg, Districts of Emmendingen, Lörrach, Waldshut und dem Schwarzwald-Baar-Kreis, Forstbezirke Kenzingen, Schönau, St. Blasien, Stühlingen, Waldshut-Tiengen, and Furtwangen, which are described in more detail in § 2, were set by declaration. Through this enactment, they have been restated without substantially altering their protective purpose and delineation.

(2) The forest reserves have the following descriptions:

**Forestry district of Kenzingen:**

1. “Bechtaler Wald” in the area of the Municipality of Weisweil, Communal District of Weisweil.

**Forestry District of Schönau:**

2. “Flüh” in the area of the City of Schönau, Communal Districts of Schönau and Fröhnd.

**Forestry District of St Blasien:**

3. “Windbergschlucht” in the area of the City of St Blasien, Communal District of St Blasien.

**Forestry District of Stühlingen and Waldshut-Tiengen:**

4. “Schwarzhalden” in the area of the Municipality of Höchenschwand, Communal Districts of Amrigschwand and Höchenschwand as well as the Municipality of Ühlingen-Birkendorf, Communal Districts of Brenden and Berau.

**Forestry District of Furtwangen:**

5. “Teichschlucht” in the area of the Municipality of Teichschlucht, Communal District of Gütenbach.

## **§2**

### **Object of protection**

(1) Size and location of the forest reserves:

1. The “Bechtaler Wald” forest reserve encompasses an area of approx. 12.8 ha. It is located in the State Forest of Kenzingen on parcel 4791 of the Communal District of Weisweil and partially includes Dept. 1 in District II
2. The “Flüh” forest reserve encompasses an area of approx. 50.4 ha. It is located in the City Forest of Schönau on parcels 857, 383, and 409, Communal Districts of Fröhnd and Schönau, and includes District III.
3. The “Windbergschlucht” forest reserve encompasses an area of approx. 3.8 ha. It is located in the State Forest of St Blasien on parcel 216 (partially) in the Communal District of St Blasien and includes Departments 6, 18, and 19 (each only partially) in District II.
4. The “Schwarzhalden” forest reserve encompasses an area of approx. 275.9 ha. It is located in the Municipal Forest of Ühlingen-Birkendorf and in the State Forest of Waldshut-Tiengen on parcels 691, 693, 693/103 (each only partially) and parcel 1321 of the Communal Districts of Brenden and Berau as well as parcel 1163/1 of the Communal District of Höchenschwand and 5303/1 of the Communal District of Amrigschwand. It includes Departments 1 and 2 (each only partially) in District IV of the Municipal Forest of Ühlingen-Birkendorf, Departments 2, 4–9, 12, 15, and 16 (each only partially) in District I as well as Departments 1–5 (each only partially) in District VI of the State Forest of Waldshut-Tiengen.
5. The “Teichschlucht” forest reserve encompasses an area of approx. 16.7 ha. It is located in the State Forest of Furtwangen in parcels 200/3 and 115 (each only partially) of the Communal District of Gütenbach and includes Department 1 in both District IV and VI (each only partially).

(2) The locations of the forest reserves are each presented in an overview map at a scale of 1:25,000 with a black line and a point signature. In a detailed map, the borders are indicated in 1: 10,000 scale with a solid black line with brush signature. The maps are part of this regulation.

The enactment with maps will be placed at the Forest Authority of Freiburg, the State Forestry Offices of Furtwangen, Kenzingen, Schönau, St Blasien, and Waldshut-Tiengen, the Cities of Schönau und St Blasien, and the Municipalities of Gütenbach, Ühlingen-Birkendorf, and Weisweil free of charge for public inspection during opening hours for a period of three weeks beginning the day after this enactment was announced in the legal gazette.

(3) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 2 Clause 3 so that they can be viewed by the public free of charge during opening hours as long as the enactment is in force.

## **§3**

### **Protective aim**

The protective aim of the forest reserve is to ensure the uninfluenced, spontaneous development of the forest including its flora and fauna (protection of the succession process, process protection) as well as the scientific observation of the development. This includes the protection of habitats and communities located in the area that are altered or created in the course of the self-dynamic development of the forest resources within the protected area.

## **§4 Prohibitions**

(1) In the forest reserves, all actions that can lead to the destruction, damage, or alteration of the reserve or its ecosystem as well as those that can sustainably disturb or hinder the scientific research of the forest reserve – especially those mentioned in Subsection 2 – are forbidden.

(2) In particular, it is forbidden

1. **to use forest resources for forestry activities or otherwise remove wood.**
2. **For the protection of plants and animals**
  - a) to introduce, remove, damage, or destroy plants or plant components;
  - b) to adversely affect or destroy the locations of protected plants through exploration (e.g. photographing, filming, or similar actions);
  - c) to introduce animals, to recreate the wild fauna, to wantonly disturb, catch, injure, or kill animals or to remove, damage, or destroy pupae, larvae, eggs, nests, or other breeding/resting places or habitats of these animals;
  - d) to disturb wild animals in their nesting, breeding, or resting places through exploration, photography, or similar actions.
3. **to carry out any building work** or similar operations such as:
  - a) erecting physical structures within the meaning of state building prescriptions or establishing similar measures;
  - b) creating streets, squares, or other transport systems or laying cables or other such systems;
  - c) creating forest paths with the exception of footpaths;
  - d) creating, eliminating, or modifying running or standing bodies of water or carrying out drainage or other measures that would change the water balance for the vegetation;
  - e) establishing or installing posters or signboards except for officially approved signage.
4. **modifying the natural stratification of the soil** through landfills or excavations.
5. **using pesticides, fertilisers, or other chemicals.** Permitted are soil conservation calcifications to preserve the site in the event of danger to the forest ecosystem.
6.
  - a) traversing the protected area outside of the designated paths;
  - b) using bicycles on paths less than 2 m wide and outside of the designated paths,
  - c) riding outside of designated trails;
  - d) camping, tenting, setting up caravans or sales booths, or parking vehicles outside of designated parking areas;
  - e) leaving or storing rubbish or other items;
  - f) creating fires outside of the designated areas;
  - g) causing noise or air pollution

## **§5 Permitted actions**

(1) The proper exercise of hunting and fishing is not affected with the proviso that

1. ladder stands are built from natural logs;
2. no fields, wild meadows, or feedings created or shot aisles are kept clear,
3. suitable wild stocks are prepared for the natural regeneration of forest communities.

(2) The prohibitions of § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority:

1. for combating forest pests if these pose a considerable threat to adjacent forests,
2. for fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations;
3. for traffic safety measures;
4. for the removal of plants or plant components in limited quantities in connection with scientific management or for purposes of genetic conservation.

## **§6 Scientific management**

The scientific management of the forest reserves is the responsibility of the Forest Research Institute of Baden-Württemberg.

## **§ 7 Exemptions**

The higher forest authorities may be exempted from the provisions of this enactment.

## **§8 Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that are prohibited under § 4 of this enactment.

## **§9 Entry into force**

(1) This enactment shall enter into force after expiration of the term referred to in § 2 Subsection 3

(2) At the same time, the following forest reserve declarations of the Corporate Forest Authority of Freiburg and the Ministry of Food, Agriculture, Viticulture and Forestry shall expire;

1. "Flüh" from 27 January 1970
2. "Schwarzhalden" from 18 August 1994

(3) At the same time, the following forest reserve declarations of the Forest Authority of Freiburg and the Ministry of Food, Agriculture, Viticulture and Forestry shall expire;

1. "Bechtaler Wald" from 27 January 1970
2. "Windberg Schlucht" from 25 March 1992
3. "Teich Schlucht" from 9 September 1992
4. "Schwarzhalden" from 18 August 1994

Freiburg i. Br. 1 March 2004

Joos



# **Collective enactment**

## **of the Forest Authority of Freiburg concerning the forest reserves**

### **“Conventwald”, “Faulbach”, “Feldseewald”, “Hirschfelsen”, and “Zweribach”**

From 20 February 2004

Pursuant to § 32 Subsection 6 of the State Forest Law (LWaldG) as amended on 31 August 1995 (GB1. pg. 685), the following is decreed:

#### **§1**

#### **Declaration as forest reserve**

- (1) The forest reserves in the Region of Freiburg, Districts of Breisgau-Hochschwarzwald and Emmendingen as well as the Forestry Districts of Kirchzarten and St Märgen, which are described in more detail in § 2, were set by declaration. Through this enactment, they have been restated without substantially altering their protective purpose and delineation.
- (2) The forest reserves have the following descriptions:

#### **Forestry District of Kirchzarten:**

1. “Conventwald” in the area of the Municipality of Stegen, Communal District of Eschbach;
2. “Faulbach” in the area of the Municipality of Oberried, Communal District of Oberried and St Wilhelm;
3. “Feldseewald” in the area of the Municipality of Feldberg, Communal District of Bärenthal;
4. “Hirschfelsen” in the area of the Municipality of Oberried, Communal District of St Wilhelm.

#### **Forestry District of St Märgen:**

5. “Zweribach” in the area of the Municipalities of Simonswald, St Märgen, and St Peter, Communal Districts of Obersimonswald, Wildgutach, St Märgen, and St Peter.

#### **§2**

#### **Object of protection**

- (1) Size and location of the forest reserves:
  1. The “Conventwald” forest reserve encompasses an area of approx. 14.6 ha. It is located in the State Forest of Kirchzarten on parcel 237 of the Communal District of Eschbach and includes Department 1 in District XXI.
  2. The “Faulbach” forest reserve encompasses an area of approx. 76.9 ha. It is located in

the State Forest of Kirchzarten on parcels 46, 184, 187 (partially), 187/1 of the Communal District of St Willhelm as well as parcels 165 (partially) and 165/1 of the Communal District of Oberried and includes Departments 2, 3, and 4 in District II (each only partially) and District IV.

3. The “Feldseewald” forest reserve encompasses an area of approx. 102.6 ha. It is located in the State Forest of Kirchzarten on parcels 79 (partially) and 187 of the Communal District of Feldberg-Bärental and includes Departments 10–13 and 16 (each only partially) in District V.
4. The “Hirschfelsen” forest reserve encompasses an area of approx. 21.1 ha. It is located in the State Forest of Kenzingen on parcel 190 of the Communal District of St Wilhelm and partially includes Dept. 5 in District II.
5. The “Zweribach” forest reserve encompasses an area of approx. 75.8 ha. It is located in the State Forest of St Märgen on parcel 104/1 of the Communal District of Obersimonswald, parcel 2/1 of the Communal District of Wildgutach, parcels 329/1, 330, 453, and 454 (each only partially) of the Communal District of St Peter, and parcel 434 (partially) of the Communal District of St Märgen and includes Departments 8 and 9 (partially) in District VI.

- (2) The locations of the forest reserves are each presented in an overview map at a scale of 1:25,000 with a black line and a point signature. In a detailed map, the borders are indicated in 1: 10,000 scale with a solid black line with brush signature. The maps are part of this regulation.

The enactment with maps will be placed at the Forest Authority of Freiburg, the State Forestry Offices of Kirchzarten and St Märgen, and the municipalities of Feldberg, Oberried, Stegen, Simonswald, St Peter, and St Märgen free of charge for public inspection during opening hours for a period of three weeks beginning the day after this enactment was announced in the legal gazette.

- (3) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 2 Clause 3 so that they can be viewed by the public free of charge during opening hours.

### **§3**

#### **Protective aim**

The protective aim of the forest reserve is to ensure the uninfluenced, spontaneous development of the forest including its flora and fauna (protection of the succession process, process protection) as well as the scientific observation of the development.

This includes the protection of habitats and communities located in the area that are altered or created in the course of the self-dynamic development of the forest resources within the protected area.

## **§4 Prohibitions**

(1) In the forest reserves, all actions that can lead to the destruction, damage, or alteration of the reserve or its ecosystem as well as those that can sustainably disturb or hinder the scientific research of the forest reserve – especially those mentioned in Subsection 2 – are forbidden.

(2) In particular, it is forbidden

1. **to use forest resources for forestry activities or otherwise remove wood.**

2. For the **protection of plants and animals**

- a) to introduce, remove, damage, or destroy plants or plant components;
- b) to adversely affect or destroy the locations of protected plants through exploration (e.g. photographing, filming, or similar actions);
- c) to introduce animals, to recreate the wild fauna, to wantonly disturb, catch, injure, or kill animals or to remove, damage, or destroy pupae, larvae, eggs, nests, or other breeding/resting places or habitats of these animals,
- d) to disturb wild animals in their nesting, breeding, or resting places through exploration, photography, or similar actions.

3. to carry out any **building work** or similar operations such as:

- a) erecting physical structures within the meaning of state building prescriptions or establishing similar measures;
- b) creating streets, squares, or other transport systems or laying cables or other such systems;
- c) creating forest paths with the exception of footpaths;
- d) creating, eliminating, or modifying running or standing bodies of water or carrying out drainage or other measures that would change the water balance for the vegetation;
- e) establishing or installing posters or signboards except for officially approved signage.

4. modifying the natural stratification of the **soil** through landfills or excavations.

5. **using pesticides, fertilisers, or other chemicals.** Permitted are soil conservation calcifications to preserve the site in the event of danger to the forest ecosystem.

6. a) traversing the protected area outside of the designated paths;

- b) using bicycles on paths less than 2 m wide and outside of the designated paths;
- c) riding outside of designated trails;
- d) camping, tenting, setting up caravans or sales booths, or parking vehicles outside of designated parking areas;
- e) leaving or storing rubbish or other items;
- f) creating fires outside of the designated areas;
- g) causing noise or air pollution.

## **§5**

### **Permitted actions**

- (1) The proper exercise of hunting and fishing is not affected with the proviso that
1. ladder stands are built from natural logs;
  2. no fields, wild meadows, or feedings created or shot aisles are kept clear,
  3. suitable wild stocks are prepared for the natural regeneration of forest communities.
- (2) The prohibitions of § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority:
1. for officially decreed or approved signage;
  2. for combating forest pests if these pose a considerable threat to adjacent forests,
  3. for fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations;
  4. for traffic safety measures;
  5. for the removal of plants or plant components to a limited extent in the context of scientific management or the purposes of gene conservation.

## **§6**

### **Scientific management**

The scientific management of the forest reserves is the responsibility of the Forest Research Institute of Baden-Württemberg.

## **§7**

### **Relationship to the protected areas touched on.**

Through this collective enactment, the following nature reserve regulations of the regional council of Freiburg remain unaffected:

- “Zweribach” from 2 September 1969
- “Faulbach Forest Reserve” from 11 December 1975
- “Konventwald Forest Reserve” from 11 December 1975
- “Feldberg” from 27 September 1991

## **§8**

### **Exemptions**

The higher forest authorities may be exempted from the provisions of this enactment.

## **§9**

### **Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that are prohibited under § 4 of this enactment.

## **§10**

### **Entry into force**

- (1) This enactment shall enter into force after expiration of the term referred to in § 2 Subsection 3
- (2) At the same time, the following forest reserve declarations of the Forest Authority of Freiburg and the Ministry of Food, Agriculture, Viticulture and Forestry shall expire;
  1. “Zweribach” from 27 January 1970
  2. “Hirschfelsen” from 31 July 1975
  3. “Conventwald” from 6 February 1976
  4. “Feldseewald” from 3 May 1993
  5. “Faulbach” from 12 September 1994

Freiburg i. Br. 20 February 2000

Joos

**Enactment of the Regional Authority of Freiburg concerning the forest reserves »Seewald«, »Napf Expansion«, »Scheibenfelsen Expansion«, »Hohmüttlen«, »Stutzfelsen Expansion«, »Salendobel«, »Ebener Wald«, »Geschwender Halde«, »Erleboden«, »Finstergrund«, »Staltenrain«, »Tannenboden«, and »Wehratal Expansion« in the future » Biosphere Reserve Black Forest « (Biosphere Reserve Black Forest Enactment)**

from 4 December 2015

Pursuant to § 32 of the State Forest Law as amended on 31 August 1995, which was last amended on several occasions through Paragraph 8 of the Law for the Reorganization of the Right of Conservation and Landscape Maintenance from 23 June 2015 (GB1. pg. 585, 613), the following is decreed:

**§1**

**Declaration as forest reserves**

(1) The forests in the Region of Freiburg in the Districts of Breisgau-Hochschwarzwald, Lörrach, and Waldshut, which are described in more detail in § 2, shall be declared as forest reserves.

(2) The forest reserves have the following descriptions:

1. "Seewald" in the District of Breisgau-Hochschwarzwald in the area of the Municipality of Hinterzarten, Communal District of Hinterzarten;
2. "Napf Expansion" in the District of Breisgau-Hochschwarzwald in the area of the Municipality of Oberried, Communal District of St Wilhelm;
3. "Scheibenfelsen Expansion" in the District of Breisgau-Hochschwarzwald in the area of the Municipality of Oberried, Communal District of Zastler;
4. "Hohmüttlen" in the District of Lörrach in the area of the Municipality of Hüg-Ehrsberg, Communal District of Hüg, and the City of Zell im Wiesental, Communal District of Adelsberg and Zell;
5. "Stutzfelsen Expansion" in the District of Lörrach in the area of the Municipality of Schönenberg, Communal District of Schönenberg;
6. "Salendobel" in the District of Lörrach in the area of the City of Schöna, Communal District of Schöna, and the City of Todtnau, Communal District of Präg;
7. "Ebener Wald" in the District of Lörrach in the area of the City of Schöna, Communal District of Schöna, the Municipality of Utzenfeld, Communal District of Utzenfeld, and the Municipality of Tunau, Communal District of Tunau;
8. "Geschwender Halde" in the District of Lörrach in the area of the City of Todtnau, Communal District of Geschwend;
9. "Erleboden" in the District of Lörrach in the area of the Municipality of Utzenfeld, Communal District of Utzenfeld;
10. "Finstergrund" in the District of Lörrach in the area of the Municipality of Wieden, Communal District of Wieden;
11. "Staltenrain" in the District of Lörrach in the area of the Municipality of Wieden, Communal District of Wieden;
12. "Tannenboden" in the District of Lörrach in the area of the Municipality of Wieden, Communal District of Wieden;
13. "Wehratal Expansion" in the District of Lörrach in the area of the City of Schopfheim, Communal District of Gersbach, and the City of Wehr, Communal District of Wehr.



(3) Individual forest reserves or parts of individual forest reserves are also part of the FFH area no. 8113-341

»Belchen«, 8213-311 »Präg Icy Basin and Pastures in Oberen Wiesental«, 8113-342 »Hochschwarzwald um den Feldberg«, 8214-342 »Bernauer Hochtal and Taubenmoos«, 8313-341 »Pastures near Gersbach and an der Wehra« and bird reserve no. 8114-441 "Southern Black Forest".

(4) The current provisions of the enactment for establishing European bird sanctuaries are not affected.

## §2 Object of protection

(1) The forest reserves have a total area of approximately 488 ha. The individual forest reserves have the following areas and locations:

### Overview of the forest reserves with property type, area, location, and relevant parcels

No.	Name	Property type	Area (ha)	Sub-areas (ha)	Municipality (Gmd), Communal District (Gmkg)	Parcel no. (completely or partially)
1	Seewald	State Forest Breisgau-Hochschwarzwald	82.2	---	Municipality of Hinterzarten, Communal District of Hinterzarten	085490-000-00170/000
2	Napf Expansion	State Forest Breisgau-Hochschwarzwald	20.5	---	Municipality of Oberried, Communal District of St Wilhelm	085451-000-00190/000
3	Scheibenfelsen Expansion	State Forest Breisgau-Hochschwarzwald	43.6	---	Municipality of Oberried, Communal District of Zastler	085453-000-00015/000
4	Hohmuttlen	State Forest Lörrach	68.2	21.2	Municipality of Ehrensberg, Communal District of Häg	087221-000-02536/000
						087221-000-03216/000
						087221-000-03243/000
						087221-000-03248/000
				33.2	City of Zell i. W., Communal District of Adelsberg	087231-000-00372/000
						087231-000-00372/005
13.8	City of Zell i. W., Communal District of Zell	087230-000-00812/000				
5	Stutzfelsen Expansion	Communal Forest of Schönenberg	10.3	---	Municipality of Schönenberg, Communal District of Schönenberg	087110-000-01400/000
6	Salendobel	Municipal Forest Schöna	37.0	29.2	City of Schöna, Communal District of Schöna	087120-000-00865/000
		Municipal Forest Todtnau		7.8	City of Todtnau, Communal District of Präg	087084-000-00974/000
						087084-000-01007/000
						087084-000-01008/000
7	Ebener Wald	Municipal Forest Schöna	41.2	16.7	City of Schöna, Communal District of Schöna	087120-000-00451/000
		Communal Forest Tunau		1.9	Municipality of Tunau, Communal District of Tunau	087125-000-00853/000
		Communal Forest Utzenfeld		22.6	Municipality of Utzenfeld, Communal District of Utzenfeld	087105-000-00001/000
						087105-000-00001/001
No.	Name	Property type	Area (ha)	Sub-areas (ha)	Municipality (Gmd), Communal District (Gmkg)	Parcel no. (completely or partially)

8	Geschwender Halde	Municipal Forest Todtnau	50.2	---	City of Todtnau, Communal District of Geschwend	087082-000-00525/000
						087082-000-00525/009
						087082-000-00577/000
9	Erleboden	Communal Forest Utzenfeld	7.9	---	Municipality of Utzenfeld, Communal District of Utzenfeld	087105-000-01266/000
10	Finstergrund	Communal Forest Wieden	6.8	---	Municipality of Wieden, Communal District of Wieden;	087095-000-01404/000
11	Staltenrain	Communal Forest Wieden	1.4	---	Municipality of Wieden, Communal District of Wieden	087095-000-00470/000
12	Tannenboden	Communal Forest Wieden	8.3	---	Municipality of Wieden, Communal District of Wieden	087095-000-00736/000
						087095-000-00737/000
13	Wehratal Expansion	State Forest Lörrach	110.1	20.5	City of Schopfheim, Communal District of Gersbach	087050-000-06709/000
		State Forest Waldshut		89.6	City of Wehr, Communal District of Wehr	087254-000-01278/001
						087254-000-01345/000
						087254-000-01346/000
						087254-000-01346/001
						087254-000-01700/000
						087254-000-02139/000
						087254-000-02140/000
						087254-000-02141/000
						087254-000-02142/000
						087254-000-02145/000
						087254-000-02147/000
						087254-000-02148/000
						087254-000-02149/000
						087254-000-02151/000
						087254-000-02158/000
						087254-000-02159/000
						087254-000-02163/000
						087254-000-02165/000
						087254-000-02169/000
						087254-000-02170/000
						087254-000-02171/000
						087254-000-02172/000
						087254-000-02173/000
						087254-000-02177/000
						087254-000-02179/000
Sum			487.7			

(2) In the overview maps, the borders of the forest reserves are depicted in a 1: 25,000 scale with a solid black line with brush signature. In the detailed maps, they are depicted in a 1: 5,000 scale with a solid black line with brush signature. Within the protected area, the forest reserve areas are represented by a red dotted raster.

(3) The maps are part of this enactment.

### §3

#### **Protective aim**

The protective aim of the forest reserves is to ensure a flow of natural processes (process protection) unaffected by humans in the mixed mountain forests of the Southern Black Forest, which is characterised by a history of use as well as to permanently protect the natural momentum or natural ecosystem including the sites and the resulting diversity of characteristic habitats, animals, plants and other organisms.

In addition to the protection of nature and natural processes, the forest reserves serve to conserve genetic resources and allow scientific observation and research.

### §4

#### **General protection regulations**

(1) Prohibited are all actions that can lead to

1. the destruction, damage, or alteration of the forest reserves, their ground vegetation, or locations,
2. a sustainable disruption of their natural balance, or
3. an impairment of the scientific study of the forest reserves

(2) In particular, in the forest reserves, it is not permitted to

1. use the forest resources for forestry activities or otherwise remove wood,
2. establish, expand, or modify structural works and advertising structures in the sense of state building regulations and illuminated advertising even if such action does not require approval or if approvals have been granted under other legislation;
3. create or expand streets, roads, or footpaths as well as winter sports facilities (ski tracks, ski slopes, or the like);
4. install image/text panels and signposts without permission of the forest service
5. remove or extract soil components or change the soil character in any other way;
6. use pesticides, fertilisers, and land improvement agents (lime) or other chemicals as well as manure or sewage sludge;
7. modify natural watercourses and bodies of water, their banks or springs, the groundwater level, the water supply, and the water drain or remove water over and above the communal use specified in the water protection regulations;
8. affect or change the habitats of communities of wild fauna and flora (biotopes);
9. damage or remove plants or plant parts;
10. introduce animals or plants;
11. intentionally disturb specific wildlife subject to hunting and fishing regulations, catch them without good cause, remove them from nature, or injure or kill them;
12. feed wild animals;
13. stray from the paths;
14. camp or light fires;
15. participate in geo-caching or similar free-time activities;
16. traverse paths less than 2 m wide and outside of surfaced paths with motorised vehicles of all types, horse or dog teams, or bicycles; wheelchairs are, however permitted on paths less than 2 m wide;
17. allow dogs to run freely;
18. use boats, vehicles, and floats of any kind or swim or dive in the waters;
19. make noise, use model ships, or start or land air vehicles;

20. pollute the area including the waters.

## **§5**

### **Permitted actions**

(1) With due regard to the protective aim of the forest reserves, the following are exempt from the protection provisions in accordance with § 4:

1. Scientific investigations;
2. Urgent measures to protect the population and to prevent threats to people or considerable material assets;
3. The demolition of existing building structures;
4. The management and use of existing huts in the existing scope provided that the protective aim is not significantly affected by sewage or other emissions;
5. Measures to prevent hazards caused by flood, to establish water management objectives laid out in §§ 27 through 31 of the Water Management Act, and to properly maintain the waters;
6. Measures for maintaining traffic safety within a buffer zone of one tree length or on steep slopes within a buffer zone, of up to two tree lengths along existing public roads including their ancillary facilities, public bike paths, other public ways, and on the outer boundaries of the forest reserve areas with the condition that any timber accumulating must remain in the forest reserve.

(2) Measures permissible at the time this enactment entered into force as well as prior lawful uses of existing facilities, including their maintenance, repair, and traffic safety shall remain unaffected. In particular, these include water use, existing water management facilities as well as water supply, waste-water disposal, energy, and telecommunications systems.

## **§6**

### **Right of entry and recreation; climbing**

(1) The public may enter the forest reserves for the purpose of recreation and education but only if the designated routes and marked trails are used and the protection purposes of the forest reserves are not impaired. Individuals shall enter at their own risk. Special safety duties have not been established. The protection provisions of § 4 shall remain unaffected.

(2) When exercising the right to recreation, the public is obliged to carefully interact with nature and landscape and respect the wild flora and fauna as well as the interests of others.

(3) Guided tours and events may only take place under the guidance of the lower forest service or the office of the future "Biosphere Reserve Black Forest".

(4) Organized activities require authorization from the lower forest service.

(5) Insofar as climbing routes and boulders have been approved for climbing by the lower forest service, the installation or replacement of safety hooks in the area of the current climbing routes are permitted. Old and unusable hooks shall be removed. Magnesium (chalk) may not be used as a climbing aid. The rocks may only be accessed using the footpaths specified by the forest service.

## **§7 Exceptions**

(1) The prohibitions under § 4 do not apply for the following measures if they are carried out in agreement with the higher forestry authority and the higher nature conservation authority

1. The implementation of forest protection measures if a forest reserve should pose a hazard for adjacent or neighbouring forests.
2. The construction of fences necessary to assess browsing, protect natural regeneration, or conduct scientific investigations.

(2) The protection policy under § 4 does not apply

1. to officially decreed or approved signage;
2. to the removal of plants, plant components, mushrooms, and animals in limited amounts in the context of scientific management or for the purpose of genetic conservation insofar as species protection aspects are taken into account and approval has been granted.

(3) To ensure the natural regeneration of the forest communities, the conservation of the Natura 2000 biotopes and habitats, and the prevention of significant game damage in the adjacent area used for agriculture and forestry, the game regulation based on the Hunting and Wildlife Management Act is permissible with the condition that

1. the protective purpose of these regulations are considered;
2. hunting dogs may only be let off leads for the exercise of game management.
3. only absolutely necessary hunting equipment (e.g. ladder stands) that is simple and made of untreated wood is set up outside of sensitive areas and that tree material is not removed from the forest reserve.
4. no fields, meadows, and feeding places are created or maintained;
5. no shooting lanes are created;
6. suitable wild stocks are prepared or maintained for the natural regeneration of forest communities;
7. game is regulated in accordance with the protective purpose and taking into account valuable animal and plant sites;
8. the protected area is only traversed in connection with the pursuit of game management and only on designated routes with motor vehicles.
9. The protection policy under § 4 does not apply.

(4) For the proper pursuit of fishery, the protective measures pursuant to § 4 shall not apply insofar as

1. the protective purpose of these regulations are considered;
2. native fish species are only restocked in agreement with the Fisheries Department;
3. no paths and fishing spots are created and no fishing piers are constructed;
4. the forest reserve areas are only traversed in connection with the proper pursuit of fishery and only on designated routes with motor vehicles as far as is absolutely necessary;

**§8****Tree species in unnatural forests**

(1) In order to shape the areas in the forest reserves currently used for forestry in the sense of the objectives of the future “Biosphere Reserve Black Forest” and its core areas and prevent damage to adjacent forests, unnatural components, especially conifer plantations, can be exceptionally converted upon agreement between the higher forest authorities and forest owners. The interventions must be kept to a minimum.

(2) Measures pursuant to Subsection 1 may only be carried out until the forest reserve areas are recognised as core areas of the future “Biosphere Reserve Black Forest” by UNESCO, although not more than three years after this enactment enters into force.

**§9****Scientific management**

The scientific management of the forest reserves is the joint responsibility of the Forest Research Institute of Baden-Württemberg and the office of the future “Biosphere Reserve Black Forest”.

**§10****Exemptions**

(1) Upon application, exemption from the provisions of this enactment may be granted.

(2) The higher forest service is responsible for granting the exemption pursuant to Subsection 1 in agreement with the higher conservation authority.

(3) Insofar as the exemption is to be granted within the nature reserve, the higher conservation authority is responsible in agreement with the higher forest services.

**§11****Administrative offences**

Within the meaning of § 83 Subsection 3 of the State Forestry Act, an administrative offence refers to performing actions (either intentionally or through negligence) that infringe the prohibitions and regulations of § 4, § 6, § 7, or § 8 of this enactment.

**§12****Public display; inspection**

(1) The enactment with maps will be placed at the Regional Authority of Freiburg (höhere Forstbehörde, Bertoldstraße 43, 79098 Freiburg) and the District Offices of Breisgau-Hochschwarzwald (untere Forstbehörde, Stadtstraße 2, 79104 Freiburg), Lörrach (untere Forstbehörde, Karlstraße 11, 79650 Schopfheim) and Waldshut (untere Forstbehörde, Gartenstraße 7, 79761 Waldshut-Tiengen) free of charge for public inspection during opening hours for a period of two weeks beginning the day after this enactment was announced in the legal gazette.

(2) After the inspection period, the enactment including maps is to be kept at the sites designated in Subsection 1 so that they can be viewed by the public free of charge during opening hours as long as the enactment is in force.



### **§13**

#### **Entry into force**

- (1) This enactment shall enter into force after expiration of the term referred to in § 12 Subsection 1.
- (2) With the entry into force of this enactment, the wording of the following enactments shall be changed:
1. Collective enactment of the Corporate Forest Authority Freiburg and the Forest Authority of Freiburg concerning the Schonwälder “Zastler Eislöcher”, “Fürsatzmoos”, “Wunderlemoos”, “Zastler Tal”, “Eschenmoos”, “Steerenmoos”, and “Bubenbacher Moos” from 20 May 2003: § 2 Subsection 1 Item 4 contains the wording “The Schonwald “Zastler Tal” encompasses an area of 329.8 ha. It is located in the State Forest of Breisgau-Hochschwarzwald in the area of the Municipality of Oberried, Communal District of Zastler on the parcels 12, 15, 29/1 and 30 (each only partially) and includes Departments 7 and 8 (each only partially, 9, 10, 11 (partially), 12, and 29 – 33 in District 21.”
  2. Collective enactment of the Corporate Forest Authority Freiburg and the Forest Authority of Freiburg concerning the Schonwälder “Rheinvorland Bad Bellingen” and “Nonnenmattweiherhalde” from 24 September 2004: The Schonwald “Nonnenmattweiherhalde” has perished. § 1 Subsection 2 Item 2, § 2 Subsection 1 Item 2, § 3 Item 2, and § 6 Subsection 2 Item 2 shall be removed. § 10 contains the wording “The enactment concerning the “Kapellengrien” Nature Reserve from 5 December 1994 (GBl. from 13 January 1995, pg 68) shall remain unaffected.”

Freiburg, 04 December 2015

Schäfer

## 19.4 List of land use and management/cooperation plans

Regional development plan			
Federal state	(Regional development plan) 2002 Baden-Württemberg, legally binding since 2002		
Regional plans			
Region of the Southern Upper Rhine	Regional plan 1995: Space utilisation and structural map, legally binding since 1995		
Region of High Rhine-Lake Constance	Regional plan 2000: Land use map West (Rural District of Lörrach), land use map centre (Rural District of Waldshut), land use map East (Rural District of Constance), legally binding since 1998		
Area%:			
Title	Districts	Municipalities [+ localities]	Status of plan
Land-use plan for Dreisamtal	Breisgau-Black forest highlands	Buchenbach, Kirchzarten, Oberried, Stegen	2012
Land-use plan for Feldberg-Schluchsee	Breisgau-Black forest highlands	Feldberg (Black Forest), Schluchsee	2006
Land-use plan for Hinterzarten	Breisgau-Black forest highlands	Breitnau, Hinterzarten	1995
Freiburg i. Breisgau zoning plan	Freiburg (Breisgau)(Urban District)	(Urban District) Freiburg (Breisgau)	2006
Freiburg i. Breisgau zoning plan	(FS) Freiburg (Breisgau)(Urban District)	(Urban District) Freiburg (Breisgau)	2006
Todtnau zoning plan	Freiburg	Todtnau, Todtnauberg	2009
Land use plan of Kleines Wiesental	Lörrach	Kleines Wiesental	1983
Land-use plan for municipal management association of Schönau im Schwarzwald	Lörrach	Aitern, Böllen, Fröhn, Schönau im Schwarzwald , Schönenberg, Tunau, Utzenfeld, Wembach, Wieden,	1997
Land-use plan of Schopfheim-Hasel-Hausen i. Wiesental, Maulburg	Lörrach	Hasel, Hausen (Wiesental), Maulburg, Schopfheim	2002
Land-use plan of Weil a.Rh.	Lörrach	Weil am Rhein	1994
Land-use plan of Zell im Wiesental	Lörrach	Zell im Wiesental	1983
Land-use plan of Albbruck	Waldshut	Albbruck	2000
Land-use plan of Bad Säckingen	Waldshut	Bad Säckingen, Herrischried, Murg, Rickenbach	2003
Land-use plan of Blasien i.S.	Waldshut	Bernau (Black Forest), Dachsberg (Southern black forest), Häusern, Höchenschwand, Ibach, Sankt Blasien, Todtmoos	2006
Land-use plan of municipal management association of Oberes Schlüchtal	Waldshut	Ühlingen-Birkendorf, Grafenhausen	1985
Waldshut-Tiengen zoning plan	Waldshut	Dogern, Lauchringen, Waldshut-Tiengen, Weilheim	1981
Wehr Waldshut Wehr zoning plan	Waldshut	Wehr	2006
Natura 2000 Management plans			
Breisgau-Black forest highlands	Schauinsland (SCI region 8013-341) with part of the SPA 8114-441 Southern black forest		2008
Freiburg im Breisgau, City	Schauinsland (SCI region 8013-341) with part of the SPA 8114-441 Southern black forest		2008

<b>Lörrach</b>	Präg glacial cirque and pastures in Oberen Wiesental (SCI region 8213-311) with part of the SPA 8114-441 Southern black forest	2015
<b>Waldshut</b>	Alb zum Hochrhein with part of the SPA 8114-441 Southern black forest))	in progress
	Blasiwald and Unterkrummen (SCI region 8214-341) with part of the SPA 8114-441 Southern black forest	2010
	Präg glacial cirque and pastures in Oberen Wiesental (SCI region 8213-311) with part of the SPA 8114-441 Southern black forest	2015
	Oberer Hotzenwald (SCI region 8214-343) with part of the SPA 8114-441 Southern black forest	2010
	Pastures in Gersbach and on the Werra (SCI region 8313-341) with part of the SPA 8114-441 Southern black forest	2015

## 19.5 List of species

### 19.5.1 Value adding species for the ecosystems in the Biosphere Reserve Black Forest

Forest ecosystem I			
	Occurrence	Meaning	Remarks
<b>Mid-sized beech forests and beech-mixed forests</b>	Beech forests with different degrees of admixture of fir and in highlands starting at 1000/1,200 metres above sea level of mountain maple and spruce occur throughout the entire region. In all highlands higher than 1,350 metres above sea level, the beeches start to thin out. At lower altitudes, natural proportion of sessile oak.	Location, exposure, and altitude lead to the differentiation of different beech communities including special such as in the high montane sycamore-beech forest, especially in the Napf forest reserve core area. In the lower Albatal, there are small selective orchid-rich beech forests. Habitat of an endemic earthworm species ( <i>Lumbricus badensis</i> ), legally protected biotope type, habitat type of the SCI Directive, occurrence of species of the SCI guideline	Beech and beech-mixed forests are the most expansive and characterise the landscape of the region. These forests are predominantly managed as municipal or state forests. In the municipalities of Wiesental and especially in Hotzenwald, there are more private forests. There are also strongly silvicultural forests with a high proportion of spruce ( <i>Picea abies</i> ).
<b>Heat-loving forests on shallow rock sites</b>	Hornbeam forests and birch-sessile oak forests selectively occur at special locations especially in the "Utzenfluh" Nature Reserve in Wiesental around Aitern, in the lower Albatal, and the Präg glacial cirques.	Legally protected biotope type	
<b>Biotope types</b>	<b>Remarks</b>		
<b>Wood rush-beech forest (Luzulo-Fagetum)</b>	The most common natural forest species in the region. It ranges from the deepest locations (approx. 450 m above sea level) to approx. 1,300 m above sea level and occurs on low alkaline, moderately nutrient-rich, and moderately dry to fresh sites. It is characterised by the predominance of the beech ( <i>Fagus sylvatica</i> ) with varying admixture of fir ( <i>Abies alba</i> ) in the tree layer and a very sparse ground vegetation with regular occurrence of white wood-rush ( <i>Luzula luzuloides</i> ). In the higher locations, certain spruce admixtures are regarded as natural. The population is closely interlinked with the beech-fir forests in which the proportion of conifers (firs and spruce) is naturally higher.		
<b>Beech-fir-spruce forest (Luzulo-Abietetum)</b>			
	Legally protected biotope type (55.12) and habitat type of the SCI directive (9110)		

<b>Woodruff-beech forest (Galio-Fagetum)</b>	The second most common species of the region in somewhat more favourable locations of varying exposure. It occurs at lower elevations. The beech ( <i>Fagus sylvatica</i> ) dominates the tree layer. However, at increasing altitudes, the fir ( <i>Abies alba</i> ) gains importance. Distinctive species of ground vegetation are white lettuce ( <i>Prenanthes purpurea</i> ), golden dead-nettle ( <i>Lamium galeobdolon</i> ), male woodfern ( <i>Dryopteris filix-mas</i> ), woodruff ( <i>Galium odoratum</i> ), partially dog mercury ( <i>Mercurialis perennis</i> ), and various other ferns. The wood fescue ( <i>Festuca altissima</i> ) is typical and highly prevalent in montane areas. In dry and warm locations (e.g. in the lower Albatal), there are isolated sites rich in orchids. These are characterised by sedges ( <i>Carex alba</i> , <i>C. montana</i> ) and Cephalanthera species (transition to sedge-beech forest).	
	Legally protected biotope type (53.21 53.21) and habitat type of the SCI directive (9130, 9150)	
<b>High montane sycamore-beech forest (Aceri-Fagetum)</b>	Distinctive and highly diverse forest community of the highlands above approx. 1,200 m above sea level in Feldberg area, on Belchen, and in the forests of the Präg glacial cirque. Mountain maple ( <i>Acer pseudoplatanus</i> ) regularly occurs alongside beech ( <i>Fagus sylvatica</i> ). The presence of tall perennials of the sub-alpine zone including Alpine sow-thistle ( <i>Cicerbita alpina</i> ), Adenostyles <i>Adenostyles alliariae</i> ), northern wolfsbane ( <i>Aconitum lycoctonum</i> , and aconite ( <i>Aconitum napellus</i> ). The locations are rich in nutrients. The water balance is fresh to seepage. The spruce can be naturally admixed.	
	Legally protected biotope type (55.40) and habit type of the SCI directive (9140)	
<b>Cleaver-oak-hornbeam forests (Galio-Carpinetum)</b>	Small forest communities in the valleys of Utzenfluh im Wiesental (Aitern) and in lower Albatal. As a result of low or medium forest management, these forests have emerged from beech forests and bear witness to a historical forest use. In the region, the oak has a secondary importance. The tree layer is primarily based on hornbeam ( <i>Carpinus betulus</i> ) and beech ( <i>Fagus sylvatica</i> ).	
<b>Birch-sessile oak forest (Betulo-Quercetum pet-raeae)</b>	Small forests on shallow, rocky-stony soils e.g. in “Utzenfluh” nature reserve. Core area of Scheiben-felsen forest reserve	
	Legally protected biotope type (53.12)	
Species of flora that give value		
Common name	Scientific name	Remarks
Fir	<i>Abies alba</i>	
Sycamore maple	<i>Acer pseudplantanus</i>	
Northern wolfsbane	<i>Aconitum lycoctonum</i>	
Aconite	<i>Aconitum napellus</i>	
Baneberry	<i>Actea spicata</i>	
Grey adenostyles	<i>Adenostyles alliariae</i>	
Alpine lady fern	<i>Athyrium distentifolium</i>	
Narrow-leaf helleborine	<i>Cephalanthera longifolia</i>	
Red helleborine	<i>Cephalanthera rubra</i>	
Alpine sow-thistle	<i>Cicerbita alpina</i>	
Broad wood fern	<i>Dryopteris dilatata</i>	
Beech	<i>Fagus sylvatica</i>	
Wood fescue	<i>Festuca altissima</i>	
Woodruff	<i>Galium odoratum</i>	
Oak fern	<i>Gymnocarpium dryopteris</i>	
Black-berried honeysuckle	<i>Lonicera nigra</i>	
White wood-rush	<i>Luzula luzuloides</i>	
Greater wood-rush	<i>Luzula sylvatica</i>	
Dog mercury	<i>Mercurialis perennis</i>	
Herb paris	<i>Paris quadrifolia</i>	
Spiked rampion	<i>Phyteuma spicatum</i>	
Whorled Solomon's-seal	<i>Polygonatum verticillatum</i>	
White lettuce	<i>Prenanthes purpurea</i>	
Oxlip	<i>Primula elatior</i>	
Aconite-leaf buttercup	<i>Ranunculus aconitifolius</i>	

<b>Rock currant</b>	<i>Ribes petraeum</i>	
<b>Mountain dock</b>	<i>Rumex arifolius</i>	
<b>Wood sanicle</b>	<i>Sanicula europaea</i>	
<b>Wood stitchwort</b>	<i>Stellaria nemorum</i>	
<b>Clasping twisted-stalk</b>	<i>Streptopus amplexifolius</i>	RL species BW 2
<b>Beech fern</b>	<i>Thelypteris phegopteris</i>	
<b>Wood speedwell</b>	<i>Veronica montana</i>	
<b>Species of fauna that give value</b>		
<b>Common name</b>	<b>Scientific name</b>	<b>Remarks</b>
<b>Boreal owl</b>	<i>Aegolius funereus</i>	
<b>Barbastelle bat</b>	<i>Barbastella barbastellus</i>	RL species FRG 1; RL species BW 1
<b>Eurasian eagle-owl</b>	<i>Bubo bubo</i>	
<b>Stock pigeon</b>	<i>Columba oenas</i>	
<b>Smooth snake</b>	<i>Coronella austriaca</i>	
<b>Great woodpecker</b>	<i>Dendrocopos major</i>	
<b>Black woodpecker</b>	<i>Dryocopus martius</i>	
<b>Gnome owl</b>	<i>Glaucidium passerinum</i>	
<b>Giant earthworm of Baden</b>	<i>Lumbricus badensis</i>	
<b>Eurasian lynx</b>	<i>Lynx lynx</i>	
<b>Notch-eared bat</b>	<i>Myotis emarginatus</i>	RL species FRG 1; RL species BW 0
<b>Greater mouse-eared bat</b>	<i>Myotis myotis</i>	RL species FRG 3; RL species BW 2
<b>Alpine leaf beetle</b>	<i>Oreia cacaliae</i>	
<b>Wood warbler</b>	<i>Phylliscopus sybillatrix</i>	RL species BW 2
<b>Three-toed woodpecker</b>	<i>Picoides tridactyles</i>	RL species BW 2
<b>Eurasian tawny owl</b>	<i>Strix aluco</i>	
<b>Stag beetle</b>	<i>Lucanus vernalis</i>	
<b>Ring thrush</b>	<i>Turdus torquatus</i>	
<b>Barn owl</b>	<i>Tyto alba</i>	

<b>Forest ecosystem II</b>			
	<b>Occurrence</b>	<b>Meaning</b>	<b>Remarks</b>
<b>Ravine forests, boulder forests, scree forests, and flood plain forests</b>	Ravine forests occur in the entire region – in the steep and deep valleys and side valleys.	Characteristic forest communities of humid ravines.  Legally protected biotope type as well as habitat type of the SCI Directive: occurrence of species of the SCI Directive	Forest types at special locations such as blocky, fresh, or humid locations and on steep slopes in humid locations.
<b>Krummholz bushes</b>	Community selectively occurring in avalanche chutes on the north slope of the Belchen and on Herzogenhorn	Occurrence of endangered and rare animal and plant species Legally protected biotope type	Vegetation type in sub-alpine area adapted to the specific site conditions.

Biotope types		Remarks
<b>Maple-ash ravine forest</b> <b>Maple-ash block forest</b> <b>(Aceri-Fraxinetum)</b>		In the area, linden-maple forests are only present on a small scale e.g. in humid forest rich in rock grus in the Präg glacial cirques. Maple-ash forests occur in narrow gorges throughout the entire region. These are structured forests with a species-rich shrub layer and a fern-rich herbaceous layer. At higher altitudes, mountain elms ( <i>Ulmus glabra</i> ) appear in the tree layer.
<b>Sessile oak-maple-linden block forest</b> <b>(Aceri-Tilietum)</b>		Natural forest community on the south-facing rock and block-rich slopes. Leaved lime and Norway maple contribute to the structure of the forests. Occurrence in Sengalenhalde in the Präg glacial cirques. Legally protected biotope types (54.10, 54.21), habitat type of the SCI Directive; occurrence of species of the SCI Directive
<b>Black alder-ash-floodplain forest</b> <b>(Alno-Fraxinetum)</b>		This forest community occurs in the flood areas of rivers, valley, and mountains. It primarily consists of black alder with admixture of ash in some locations.  Legally protected biotope type (52.30), priority habitat type of the SCI Directive (*91E0), occurrence of species of the SCI Directive
<b>Grey alder-riparian forest</b> <b>(Alnetum incanae)</b>		Forests with small areas in the flood area of the mountain streams in the higher eastern elevations (Belchen, Feldberg area, Bernauer Alb, and along the Präg Stream in the Präg glacial cirque). These consist of grey alder ( <i>Alnus incana</i> ).  Legally protected biotope type (52.34), priority habitat type of the SCI Directive (*91E0), occurrence of species of the SCI Directive
<b>Glen willows</b> <b>(Salicetum appendiculatae)</b>		Characteristic wood community in avalanche chutes; occurrence of large leaved willow ( <i>Salix appendiculata</i> ), rowan berry – possible in the high montane sub-Alpine sub special ( <i>Sorbus aucuparia ssp. glabrata</i> ) as well as green alder ( <i>Alnus alnobetula</i> ). In addition, a special bear's breeches subspecies ( <i>Heracleum sphondylium ssp. elegans</i> ) can be found here; this Alpine species only occurs in Belchen and Feldberg  Legally protected biotope type (42.51)
Species of flora that give value		
Common name	Scientific name	Remarks
Norway maple	<i>Acer platanoides</i>	
Sycamore maple	<i>Acer pseudoplatanus</i>	
Yellow foxglove	<i>Aconitum lycoctonum</i>	
Ramson	<i>Allium ursinum</i>	
Black alder	<i>Alnus glutinosa</i>	
Grey alder	<i>Alnus incana</i>	
Goat's beard	<i>Aruncus dioicus</i>	
Common fragile fern	<i>Cystopteris fragilis</i>	
February daphne	<i>Daphne mezereum</i>	
Ash	<i>Fraxinus excelsior</i>	
Meadow parsnip	<i>Heracleum sphondylium ssp. elegans</i>	
Perennial honesty	<i>Lunaria rediva</i>	
Common hart's tongue	<i>Phyllitis scolopendrium</i>	
Sessile oak	<i>Quercus petraea</i>	
Gooseberry	<i>Ribes uva-crispus</i>	
Large-leaved willow	<i>Salix appendiculata</i>	
Black-bead elder	<i>Sambucus racemosa</i>	
Smooth rowan berry	<i>Sorbus aucuparia ssp. glabrata</i>	
Largeleaf linden	<i>Tilia platyphyllos</i>	
Species of fauna that give value		
Common name	Scientific name	Remarks
Yellow-bellied toad	<i>Bombina variegata</i>	
Fire salamander	<i>Salamandra salamandra</i>	



Forest ecosystem III			
	Occurrence	Meaning	Remarks
Coniferous forests with spruce and fir	Distinctive forest type of the highlands that can be found in the high montane and sub-Alpine area in cool-humid sites around the Feldberg summit and on the north slope of the Belchen as well as in Hotzenwald and Wehratal, although on a smaller scale.	Occurrence of rare and endangered species of animals and plants, legally protected biotope types, and habitat types and species of the SCI Directive	Forests valuable as a natural reserve. These are partially managed as selection forests and have very distinctive structures. They are primarily the habitat of the endangered wood grouse
Bog woodland	Occurrence in the "Taubenmoos" Nature Reserve and in the bogs of Hotzenwald as well as in Scheibelechtenmoos in the "Feldberg" Reserve in Menzenschwander valley.	In the area, bog woodlands occur on a small scale in special locations. They are sensitive and endangered habitats that are predominantly located within nature reserves.  Occurrence of rare and endangered species of animals and plants, legally protected biotope types, and habitat types and species of the SCI Directive.	
Biotope types		Remarks	
Highland spruce forest (Luzulo-Piccetum)	The occurrence of this highland spruce forest is restricted to the high montane to sub-alpine locations around the Feldberg summit and to a smaller scale on the north side of the Belchen. The tree layer is dominated by the spruce ( <i>Picea abies</i> ), which is indigenous to this location. Beech ( <i>Fagus sylvatica</i> ) and fir ( <i>Abies alba</i> ) occur to a much lower extent. This forest type forms transitions to related woodrush-fir forest, which is more prevalent. Both forest types differ mainly in the proportion of spruce in the tree layer. In the herbaceous layer, which is quite dense in some areas, there is a similar species composition, including rare species such as stuff clubmoss ( <i>Lycopodium annotinum</i> ).  Legally protected biotope type (57.35) as well as habitat type of the SCI Directive (9410): occurrence of species of the SCI Directive		
Woodruch-fir forest (Luzulo Abietetum)			
Bazzania spruce forest (Bazzanio-Piceetum)	Natural spruce forests that occur in cold air sinks (Taubenmoos Nature Reserve and on a smaller scale in the Präg glacial cirques), on cool screes (Feldberg area and the north slope of the Belchen), or on north-facing cirques in Zastler Loch and Oberen Hotzenwald. The tree layer is dominated by spruce ( <i>Picea abies</i> ). In addition to blueberry ( <i>Vaccinium myrtillus</i> ), the herbaceous layer features numerous species of moss and peat moss.  Legally protected biotope type (57.20) as well as priority habitat type of the SCI Directive (*91D0), occurrence of species of the SCI Directive		
Uncinate pines-bog forest (Vaccinio uliginosi-Piceetum)	In the highland bogs of the Black Forest, the mountain bog pine ( <i>Pinus mugo ssp. arborea</i> ) occurs in an upright form. They form sparse forest, the herbaceous layers of which include bog bilberry ( <i>Vaccinium uliginosum</i> ) and raised bog species such as sheathed cotton sedge ( <i>Eriophorum vaginatum</i> ) and peat moss.  Legally protected biotope type as well as priority habitat type of the SCI Directive (*91D0), occurrence of species of the SCI Directive		
Species of flora that give value			
Common name	Scientific name	Remarks	
White fir	<i>Abies alba</i>		
Greater whipwort	<i>Bazzania trilobata</i>		
Deer fern	<i>Blechnum spicant</i>		
Wavy hair-grass	<i>Deschampsia flexuosa</i>		
Sylvan horsetail	<i>Equisetum sylvaticum</i>		
Dense cottongrass	<i>Eriophorum vaginatum</i>		

<b>Alpine coltsfoot</b>	<i>Homogyne alpina</i>	RL species BW 2
<b>Fir clubmoss</b>	<i>Huperzia selago</i>	
<b>Lesser twayblade</b>	<i>Listera cordata</i>	RL species FRG 3
<b>Stiff clubmoss</b>	<i>Lycopodium annotinum</i>	
<b>Spruce</b>	<i>Picea abies</i>	
<b>Creeping pine</b>	<i>Pinus mugo ssp. Arborea</i>	
<b>Scots pine</b>	<i>Pinus sylvestris</i>	
<b>One-flower wintergreen</b>	<i>Pyrola uniflora</i>	RL species BW 3
<b>Starflower</b>	<i>Trientalis europaea</i>	RL species BW 3
<b>Blueberry</b>	<i>Vaccinium myrtillus</i>	
<b>Bog bilberry</b>	<i>Vaccinium uliginosum</i>	
<b>Lingonberry</b>	<i>Vaccinium vitis-idaea</i>	RL species BW 3
<b>Species of fauna that give value</b>		
<b>Common name</b>	<b>Scientific name</b>	<b>Remarks</b>
<b>Boreal owl</b>	<i>Aegolius funereus</i>	
<b>Hazelhen</b>	<i>Bonansa bonansia</i>	RL species BW 1
<b>Capercaillie</b>	<i>Tetrao urogallus</i>	RL species FRG 1; RL species BW 1

<b>Grassland ecosystem I: Community pastures</b>			
	<b>Occurrence</b>	<b>Meaning</b>	<b>Remarks</b>
<b>Extensively used rough pastures</b>	Extensive pastures are the characteristic use type of the sub-montane to high montane locations of the biosphere reserve. Outside of the forests, this use type covers the largest area. It can be found on plateaus (Belchen, Schauinsland, and Feldberg area) as well as on the slopes of the middle layers. Worth noting are the particularly well formed and structured extensive grazing areas near Blasiwald, in the "Wiedener Weidberge" nature reserve, the "Belchen" nature reserve, the "Feldberg" nature reserve, the "Präg glacial cirques" (Scheibenbuck) nature reserve, near Todtnau-Weg, in the municipalities of Ibach and Dachsberg within the "Rüttewies-Scheibenrain" nature reserve and the "Kohlhütte-Lampenschweine" nature reserve.	Outstanding significance within the area and national importance as a use type with a high scenic, historical, and conservational value. Occurrence of pasture beeches as a characteristic element of the extensive meadows of the Black Forest. Pasture beeches are also places of growth of rare lobaria lichens.  The occurrence of glacial relicts, legally protected biotope types, and endangered animal and plant species as well as habitat types and species of the SCI Directive.	The extensive pastures represent traditionally collectively used communal pastures, which are property of the political municipalities. They exemplify sustainable mountain agriculture. They feature a mosaic of vegetation that reflects the local differences and intensities of the pastures. They are characterised by a special structural diversity, which leads to an above average diversity of plant and animal species. The landscape has been shaped by pasture beeches, screes that bear witness to glaciations, and boulders of various sizes.
<b>Alpine grasslands</b>	Extremely rare plant community of sub-Alpine sites. In the biosphere reserve, it is found exclusively on Belchen. Fragmentary occurrence also on Herzogenhorn.	The only occurrence of Desvaux wood rush ( <i>Luzula desvauxii</i> ) in Germany.  Legally protected biotope type and habitat type of the SCI directive	

Biotope types	Remarks	
<b>Winged broom willow (Festuco-Genistetum)</b>	<p>The winged broom willow is the characteristic plant community of the extensively used pastures of the intermediate altitudes of the Black Forest at around 1,100 metres above sea level. These neglected grasslands are characterised by their exceptional extensiveness as well as structural and local diversity, which results in a great diversity of flora and fauna. Winged broom willows are the habitat of numerous endangered plant and animal species including mountain arnica (<i>Arnica montana</i>) and catsfoot (<i>Antennaria dioica</i>) as well as wart-biter (<i>Decticus verrucosus</i>) and rock bunting (<i>Emberiza cia</i>). Landscape-shaping pasture beech as well as juniper (<i>Juniperus communis</i>) also occur. In some places, juniper forms small-scale heaths.</p> <p>Wing broom willows: legally protected biotope type (36.42); priority habitat type (*6230) of the SCI directive</p> <p>Juniper heaths: legally protected biotope type (36.30); habitat type (5130) of the SCI directive</p>	
<b>Nardus grasslands (Leontodo helvetic-Nardetum)</b>	<p>Nardus grasslands occur in the highlands of the Black Forest and replace the wing broom willow from an altitude of approx. 1,000 metres above sea level. The Nardus grasslands of the Black Forest have their own characteristic features. The species composition of these grasslands is unique in Germany. This is expressed in the occurrence of numerous glacial relicts such as Swiss dandelion (<i>Leontodon helveticus</i>), yellow bittorwort (<i>Gentiana lutea</i>), Alpine clubmoss (<i>Diphasium alpinum</i>), and mountain thyme (<i>Thymus alpestris</i>) on the Belchen, the only place in Germany where this east pre-alpine species occurs.</p> <p>Legally protected biotope type (36.41) and priority habitat type (*6230) of the SCI directive</p>	
<b>Desvaux wood rush community (Luzuletosum desvauxii)</b>	<p>Desvaux wood rush occupies rippled fields of rock on the north slope of the Belchen. This is the only place in Germany where this species occurs.</p> <p>Legally protected biotope type (36.41) and habitat type (6150) of the SCI directive</p>	
Species of flora that give value		
Common name	Scientific name	Remarks
Catsfoot	<i>Antennaria dioica</i>	RL species FRG 3; RL species BW 2
Alpine sweet vernalgrass	<i>Anthoxanthum alpinum</i>	
Wolf's bane	<i>Arnica montana</i>	RL species FRG 3; RL species BW 2
Common moonwort	<i>Botrychium lunaria</i>	RL species FRG 3; RL species BW 3
Harebell	<i>Campanula rotundifolia</i>	
Scheuchzer's bellflower	<i>Campanula scheuchzeri</i>	
Pale sedge	<i>Carex pallescens</i>	
Pill sedge	<i>Carex pilulifera</i>	
Silver thistle	<i>Carlina acaulis</i>	
Hellweed	<i>Cuscuta epithymum</i>	RL species FRG 3; RL species BW 3
Heath grass	<i>Danthonia decumbens</i>	RL species FRG 2; RL species BW 3
Wavy hair-grass	<i>Deschampsia flexuosa</i>	
Alpine clubmoss	<i>Diphasium alpinum</i>	RL species FRG 2; RL species BW 3
Maiden pink	<i>Dianthus deltoides</i>	RL species FRG 3
Mountain crowberry	<i>Empetrum hermaphroditum</i>	RL species BW 2
Slender bedstraw	<i>Galium pumilum</i>	RL species FRG 3; RL species BW 3
Heath bedstraw	<i>Galium saxatile</i>	
Winged broom	<i>Genista sagittalis</i>	
Bitterwort	<i>Gentiana lutea</i>	RL species FRG 3
Norwegian arctic cudweed	<i>Gnaphalium norvegicum</i>	
Wood cudweed	<i>Gnaphalium sylvaticum</i>	
Fragrant orchid	<i>Gymnadenia conopsea</i>	
European hawkweed	<i>Hieracium lactucella</i>	RL species FRG 3

<b>Mouse-ear hawkweed</b>	<i>Hieracium pilosella</i>	
<b>Perennial sand rapunzel</b>	<i>Jasione laevis</i>	RL species FRG 3; RL species BW 3
<b>Heath rush</b>	<i>Juncus squarrosus</i>	
<b>Swiss dandelion</b>	<i>Leontodon helveticus</i>	
<b>Small white orchid</b>	<i>Leucorchis albida</i>	RL species FRG 2; RL species BW 2
<b>Desvaux wood rush</b>	<i>Luzula desvauxii</i>	
<b>Narrow-leaved wood rush</b>	<i>Luzula luzuloides</i> var. <i>eryan-thema</i>	RL species FRG 3; RL species BW 3
<b>Common clubmoss</b>	<i>Lycopodium clavatum</i>	RL species FRG 3; RL species BW 3
<b>Spignel</b>	<i>Meum athamanticum</i>	
<b>Nard grass</b>	<i>Nardus stricta</i>	
<b>Blue butcher orchid</b>	<i>Orchis mascula</i>	
<b>Green veined orchid</b>	<i>Orchis morio</i>	RL species FRG 2; RL species BW 3
<b>Bird's foot</b>	<i>Ornithopus perpusillus</i>	
<b>Small lousewort</b>	<i>Pedicularis sylvatica</i>	RL species FRG 3; RL species BW 3
<b>Butterfly orchid</b>	<i>Platanthera bifolia</i>	
<b>Greater butterfly orchid</b>	<i>Platanthera chlorantha</i>	RL species FRG 3
<b>Forest bluegrass</b>	<i>Poa chaixii</i>	
<b>Heath milkwort</b>	<i>Polygala serpyllifolia</i>	RL species FRG 3; RL species BW 3
<b>Common milkwort</b>	<i>Polygala vulgaris</i>	
<b>Septfoil</b>	<i>Potentilla erecta</i>	RL species FRG 2; RL species BW 2
<b>Bristlecone yellow rattle</b>	<i>Rhinanthus glazialis</i>	RL species FRG 3
<b>Viper's grass</b>	<i>Scorzonera humilis</i>	RL species FRG 3; RL species BW 3
<b>Autumn lady's tresses</b>	<i>Spiranthes spiralis</i>	RL species FRG 2; RL species BW 2
<b>Horseradish</b>	<i>Teesdalia nudicaulis</i>	RL species FRG 3
<b>Meadowflax</b>	<i>Thesium pyrenaicum</i>	RL species FRG 3; RL species BW 3
<b>Mountain thyme</b>	<i>Thymus alpestris</i>	
<b>Broad-leaved thyme</b>	<i>Thymus pulegioides</i>	
<b>Globe orchid</b>	<i>Traunsteinera globosa</i>	RL species BW 1
<b>Common speedwell</b>	<i>Veronica officinalis</i>	
<b>Dog violet</b>	<i>Viola canina</i>	
<b>Species of fauna that give value</b>		
<b>Common name</b>	<b>Scientific name</b>	<b>Remarks</b>
<b>Small tortoiseshell (butterfly)</b>	<i>Aglaia urticae</i>	
<b>Meadow pipit</b>	<i>Anthus pratensis</i>	
<b>Water pipit</b>	<i>Anthus spinoletta</i>	RL species BW 1
<b>Tree pipit</b>	<i>Anthus trivialis</i>	RL species BW 1
<b>Sulphur</b>	<i>Ascalaphus libelluloides</i>	
<b>Lesser marbled fritillary</b>	<i>Brenthis ino</i>	
<b>Green hairstreak</b>	<i>Callophrys rubi</i>	
<b>Small gold grasshopper</b>	<i>Chrysocraon brachyptera</i>	
<b>Wart biter</b>	<i>Decticus verrucosus</i>	RL species FRG 3; RL species BW 3
<b>Northern wall brown</b>	<i>Dira maera</i>	
<b>European rock bunting</b>	<i>Emberiza zia</i>	RL species BW 1
<b>Yellow-banded ringlet</b>	<i>Erebia meolans posidonia</i>	
<b>High brown fritillary</b>	<i>Fabriciana adippe</i>	RL species FRG 3; RL species BW 3
<b>Niobe fritillary</b>	<i>Fabriciana niobe</i>	RL species FRG 2; RL species BW 3
<b>Purple-shot copper</b>	<i>Heodes alciphron</i>	RL species FRG 2
<b>Scarce copper</b>	<i>Heodes lycanidae</i>	
<b>Scarce copper</b>	<i>Heodes virgaureae</i>	

<b>Scarce swallowtail</b>	<i>Iphiclides podalirius</i>	RL species FRG 3; RL species BW 2
<b>Large blue</b>	<i>Maculinea airon</i>	RL species FRG 3; RL species BW 2
<b>False heath fritillary</b>	<i>Melitaea diamina</i>	RL species BW 3
<b>Heath fritillary</b>	<i>Melitaea athalia</i>	RL species FRG 3
<b>Dark green fritillary</b>	<i>Mesoacidalia aglaja</i>	
<b>Roesel's bush cricket</b>	<i>Metrioptera roeseli</i>	
<b>European wheatear</b>	<i>Oenanthe</i>	RL species BW 1
<b>Swallowtail</b>	<i>Papilio machaon</i>	
<b>Baton blue</b>	<i>Philotes baton</i>	
<b>Rattle grasshopper</b>	<i>Psophus stridulus</i>	RL species FRG 2; RL species BW 3
<b>Alpine citril finch</b>	<i>Serinus citrinella</i>	
<b>Mountain grasshopper</b>	<i>Stauroderus scalaris</i>	RL species FRG 1; RL species BW 1
<b>Greater whitethroat</b>	<i>Sylvia communis</i>	
<b>Adder</b>	<i>Vipera berus</i>	RL species BW 2
<b>Fieldfare</b>	<i>Turdus pilaris</i>	
<b>Wood lark</b>	<i>Lullula arborea</i>	

### Grassland ecosystem II: Meadows

	Occurrence	Meaning	Remarks
<b>Meadows</b>	<p>Meadows for hay are a defining type of usage of the valleys. With respect to area, the meadow economy on the slopes into the montane locations is somewhat less important.</p> <p>The main focus is on the meadows in Wiesental, Kleinen Wiesental, Bernau valley, and Hotzenwald.</p>	<p>The plant species composition of the meadows not only reflects the intensity of the use but also the various site conditions. Accordingly, there is a variety of meadow formations in the area – from wet to moist meadows at half-bog locations to fresh and dry meadows. This differentiation has resulted in a very high diversity of floral species and, in turn, a high diversity of animal species.</p> <p>The extensively used meadows in the biosphere reserve harbour numerous rare and endangered plant and animal species.</p> <p>Occurrence of legally protected biotope types and habitat types of the SCI Directive</p> <p>Special forms of use have cultural and historical significance (water meadows)</p>	<p>Meadow use is one of the oldest proven use forms in mountain regions such as the biosphere reserve. Since the early middle ages, the meadows have been used for hay. Of note are water meadows as witnesses of a meadow economy for optimising the yield of hay in edaphic and climatically disadvantaged regions such as Hotzenwald bei Ibach.</p> <p>In light of the special European responsibility for the conservation of lowland and mountain hay meadows, the biosphere reserve is particularly important for the preservation of extensively used grazing meadows.</p>
<b>Biotope types</b>	Remarks		
<b>Lowland grazing meadows</b>	<p>Tall oatgrass meadows in various forms are the most common meadow community in the biosphere reserve. They occur from the planar to the sub-montane levels and gradually fade away into the montane locations. Depending on nutrient and water balance, a distinction is made between a moist formation with species such as the meadow foxtail (<i>Alopecurus pratensis</i>) and great burnet (<i>Sanguisorba officinalis</i>), a typical formation, and a dry formation in sunny and somewhat flat locations. The latter two form colourful meadow communities, which are characterised by species such as meadow salsify (<i>Tragopogon pratensis</i> agg.), spreading bellflower (<i>Campanula patula</i>), and meadow daisy (<i>Leucanthemum inculturnum</i>) as well as meadow sage (<i>Salvia pratensis</i>), sainfoin (<i>Onobrychis viciifolia</i>) and orchid species such as blue butcher orchid (<i>Orchis mascula</i>) green-veined orchid (<i>Orchis morio</i>) in dryer formations. In locations favoured by warm conditions, brome-rich oat grass</p>		
<b>Tall oatgrass meadows (Arrhenatheretum elatioris) in various forms</b>			

	meadows occur. This transitions into semi-arid grassland ( <i>Mesobrometum erecti</i> ). This is very species rich and rare and occurs on a small scale in the Albtal, in Geschwend and Gersbach, and in the “Utzenfluh” Nature Reserve.	
	Legally protected biotope type (33.43) and habitat type (6510) of the SCI directive	
Mountain grazing meadows	Golden oatgrass meadows are the meadow community of the montane locations of the biosphere reserve. Depending on nutrient and water balance, the well supplied woodland geranium golden oat meadows with species such as woodland geranium ( <i>Geranium sylvaticum</i> ), black rampion ( <i>Phyteuma nigrum</i> ), and the globeflower ( <i>Trollius europaeus</i> ) can be differentiated from bistort gold oat meadows on rougher sites, which feature species such as northern hawk's-beard ( <i>Crepis mollis</i> ), knappweed ( <i>Centaurea nigra</i> ssp. <i>nemoralis</i> ), bistort ( <i>Persicaria bistorta</i> ), and determinative spignel ( <i>Meum athamanticum</i> ).	
Golden oatgrass meadows (Polygono-/Geranio-Trisetum) in various forms	Legally protected biotope type (33.44) and habitat type (6520) of the SCI directive	
Wetlands and wet meadows (Calthion- and Juncion acutiflori)	Wet meadows occur in aquiferous valley and sinks on permanently wet soils. The most common of this is the sharp-flowered rush wet meadow ( <i>Crepido-Juncetum acutiflori</i> ). Orchid species such as march orchid ( <i>Dactylorhiza majalis</i> ) and spotted orchid ( <i>Dactylorhiza maculata</i> ) can be found here. March marigold meadows occur on somewhat more alkaline sites. These perennial-rich stands are characterised by species such as marsh marigold ( <i>Caltha palustris</i> ), brook thistle ( <i>Cirsium rivulare</i> ), and bistort ( <i>Persicaria bistorta</i> ) as well as high perennials such as hairy chervil ( <i>Chaerophyllum hirsutum</i> ) and white bachelor's buttons ( <i>Ranunculus aconitifolius</i> ).	
	Legally protected biotope type (33.23, 33.22)	
Calcareous grasslands	Semi-arid grasses ( <i>Mesobrometum erecti</i> ) selectively occur in a small scale in locations favoured by a warm climate as well as sites where limestone comes to the surface (e.g. in the Albtal).	
	Legally protected biotope type (36.50) and habitat type (6210) of the SCI directive	
Species of flora that give value		
Common name	Scientific name	Remarks
Meadow foxtail	<i>Alopecurus pratensis</i>	
Pyramidal orchid	<i>Anacamptis pyramidalis</i>	
Tall oatgrass	<i>Arrhenatherum elatius</i>	
Shaking grass	<i>Briza media</i>	
Upright brome grass	<i>Bromus erectus</i>	
Marsh marigold	<i>Caltha palustris</i>	
Clustered bellflower	<i>Campanula glomerata</i>	
Spreading bellflower	<i>Campanula patula</i>	
Cuckoo flower	<i>Cardamine pratensis</i>	
Caraway	<i>Carum carvi</i>	
Brown knapweed	<i>Centaurea jacea</i>	
Lesser knapweed	<i>Centaurea nigra</i> ssp. <i>nemoralis</i>	
Hairy chervil	<i>Chaerophyllum hirsutum</i>	
Brook thistle	<i>Cirsium rivulare</i>	
Rough hawk's-beard	<i>Crepis biennis</i>	
Northern hawk's-beard	<i>Crepis mollis</i>	
Marsh hawk's beard	<i>Crepis paludosa</i>	
Carthusian pink	<i>Dianthus carthusianorum</i>	
Cypress spurge	<i>Euphorbia cyparissias</i>	
White bedstraw	<i>Galium album</i>	
Meadow crane's bill	<i>Geranium pratense</i>	
Wood crane's bill	<i>Geranium sylvaticum</i>	
Fragrant orchid	<i>Gymnadenia conopsea</i>	
Short-spurred fragrant orchid	<i>Gymnadenia odoratissima</i>	
Downy Alpine oatgrass	<i>Helictotrichon pubescens</i>	



<b>Lizard orchid</b>	<i>Himantoglossum hircinum</i>	RL species FRG 3; RL species BW 3
<b>Sharp-flowered rush</b>	<i>Juncus acutiflorus</i>	
<b>Filiform rush</b>	<i>Juncus filiformis</i>	
<b>Gypsy rose</b>	<i>Knautia arvensis</i>	
<b>Meadow pea</b>	<i>Lathyrus pratensis</i>	
<b>Common daisy</b>	<i>Leucanthemum ircutianum</i>	
<b>Honeysuckle</b>	<i>Lotus corniculatus</i>	
<b>Marsh birdsfoot trefoil</b>	<i>Lotus uliginosus</i>	
<b>Cuckoo flower</b>	<i>Lychnis flos-cuculi</i>	
<b>Spiguel</b>	<i>Meum athamanticum</i>	
<b>Muscari</b>	<i>Muscari botryoides</i>	
<b>Water forget-me-not</b>	<i>Myosotis scorpioides</i> agg.	
<b>Nargis</b>	<i>Narzissus radiflorus</i>	RL species FRG 2; RL species BW 2
<b>Sainfoin</b>	<i>Onobrychis vicifolia</i>	
<b>Blue butcher orchid</b>	<i>Orchis mascula</i>	
<b>Military orchid</b>	<i>Orchis militaris</i>	RL species FRG 3
<b>Green veined orchid</b>	<i>Orchis morio</i>	RL species FRG 2; RL species BW 3
<b>Serpentary</b>	<i>Persicaria bistorta</i>	
<b>Black rampion</b>	<i>Phyteuma nigrum</i>	
<b>Spiked rampion</b>	<i>Phyteuma spicatum</i>	
<b>Greater burnet-saxifrage</b>	<i>Pimpinella major</i> ssp. <i>major</i> und ssp. <i>rubra</i>	
<b>Burnet saxifrage</b>	<i>Pimpinella saxifraga</i>	
<b>Cowslip</b>	<i>Primula veris</i>	
<b>Aconite-leaf buttercup</b>	<i>Ranunculus aconitifolius</i>	
<b>Bulbous crowfoot</b>	<i>Ranunculus bulbosus</i>	
<b>Wood crowfoot</b>	<i>Ranunculus nemoralis</i>	
<b>Greater yellow-rattle</b>	<i>Rhinanthus alectorolophus</i>	
<b>Bristlecone yellow rattle</b>	<i>Rhinanthus glazialis</i>	RL species FRG 3
<b>Little yellow rattle</b>	<i>Rhinanthus minor</i>	
<b>Meadow sage</b>	<i>Salvia pratensis</i>	
<b>Small burnet</b>	<i>Sanguisorba minor</i>	
<b>Great burnet</b>	<i>Sanguisorba officinalis</i>	
<b>Pincushion flower</b>	<i>Scabiosa columbaria</i>	
<b>Pepper-saxifrage</b>	<i>Silene silaus</i>	
<b>Meadow salsify</b>	<i>Tragopogon pratensis</i> agg.	
<b>Golden oatgrass</b>	<i>Trisetum flavescens</i>	
<b>Globeflower</b>	<i>Trollius europaeus</i>	RL species BW 3

Ecosystem of moors and springs			
	Occurrence	Meaning	Remarks
Highland moor Lowland moor Spring swamps	Highland and lowland moors primarily occur in higher areas with higher levels of precipitation. Large contiguous moors are primarily found in Oberen Hotzenwald (Municipalities of Ibach and Dachsberg). All highland moor of the area are located within nature reserves such as the “Taubenmoos” Nature Reserve in the Municipality of Bernau, the “Feldberg” Nature Reserve (Scheibelechtenmoos im Menzenschwander Tal), the “Kirchspielwald-Ibacher Moor” Nature Reserve and “Hornbacher Moor” Nature Reserve in the Municipality of Ibach as well as the “Ennersbacher Moor” Nature Reserve in the Municipality of Dachsberg.	Highland and lowland moors are the habitats of countless rare, endangered, and partially highly specialised plant and animal species. In addition to shaping the landscape, moors are also important from the perspective of nature conservation.  Occurrence of legally protected biotope types as well as habitat types and species of the SCI Directive	In the rainy elevations of the Black Forest, highland moors formed after the last ice age in Geländesenken as a result of peat growth. Lowland moors formed as a result of mineral influence and extensive cultivation. They are among the particularly vulnerable habitat types.  With respect to climate protection, moors are also gaining importance as CO <sub>2</sub> sinks.
Biotope types		Remarks	
Colourful sphagnum population (Oxycocco-Sphagnetum)	The colourful peat moss community is the characteristic and most widely distributed plant community of the highland moor in Black Forest. Through the growth of varicoloured species of peat moss, the community is characterised by a constantly changing hummock-hollow complex, which displays a high diversity (also floristic) in a relatively small area. In addition to peat moss species such as <i>Sphagnum magellanicum</i> , <i>S. rubellum</i> , and <i>S. fallax</i> , additional characteristic plant species such as bog rosemary ( <i>Andromeda polifolia</i> ), northern cranberry ( <i>Vaccinium oxycoccos</i> ), sheathed cottongrass ( <i>Eriophorum vaginatum</i> ), and round-leaved sundew ( <i>Drosera rotundifolia</i> ) occur on the extremely dry tussocks. In some highland moors, dwarf shrubs such as heather ( <i>Calluna vulgaris</i> ) and lingonberry ( <i>Vaccinium vitis-idaea</i> ) occur. The vegetation of the wet hollows is characterised by the occurrence of the bog sedge ( <i>Carex limosa</i> ) or the white beak sedge ( <i>Rhynchospora alba</i> ) along with other species of peat moss.  Legally protected as biotope type (31.11) and habitat type (7110) of the SCI directive  In places, highland moors occur. These have mainly been degraded by dehydration. Here, moor regeneration stages rich in dwarf shrubs have formed both naturally and partially through re-wetting measures.  Legally protected biotope type (31.31, 31.32) and habitat type (7120) of the SCI directive		
Bog sedge-hollow (Caricetum limosae)			
Beak sedge-hollow (Rhynchosporietum albae) (Rhynchosporietum fuscae)			
Mountain pine-highland moor (Pinus mugo-Sphagnetum magellanicum)	The mountain pine highland moor is characterised by the occurrence of moor pine ( <i>Pinus mugo ssp. rotundata</i> ) together with additional highland moor species. In the project area, the moor pine occurs only in upright form ( <i>Pinus rotundata ssp. arborea</i> ). This rare tree species is endemic to Middle Europe. It relies on highland moor with a largely intact water balance for its continued existence.  Legally protected biotope type (31.11) and habitat type of the SCI directive (7110)		

<b>Bulrush-highland moor</b> <b>(Eriophoro-Trichophoretum cespitosi)</b>	In the area, bulrush-highland moors occur in higher, rainy locations (sub-Alpine coniferous forest stage). It occurs in Taubenmoos (Municipality of Bernau), a moor characterised by particularly low average temperatures. The determining aspect in the bulrush-highland moors is the bulrush ( <i>Trichophorum cespitosum</i> ) together with the northern bilberry ( <i>Vaccinium uliginosum</i> ), the few-flowered sedge ( <i>Carex pauciflora</i> ), and the poorly developed hummock-hollow complex. Attention should be given to the occurrence of Alpine bulrush ( <i>Trichophorum alpinum</i> ).	
	Legally protected biotope type (31.11) and habitat type of the SCI directive (7110)	
<b>Brown sedge-swamps</b> <b>(Caricetum fuscae)</b>	As a result of extensive cultivation, low-growing brown sedge swamps have developed on lime free, peat-like sites. These are characterised by the occurrence of numerous species of sedge. Characteristic is the occurrence of silvery sedge ( <i>Carex canescens</i> ), black sedge ( <i>Carex nigra</i> ), and prickly sedge ( <i>Carex echinata</i> ) as well as rarer and endangered species such as marsh orchid ( <i>Dactylorhiza majalis</i> ), marsh cinquefoil ( <i>Potentilla palustris</i> ), and march trefoil ( <i>Menyanthes trifoliata</i> ). Attention should be given presence of glacial relicts e.g. velvet bells ( <i>Bartsia alpina</i> ) and dwarf birch ( <i>Betula nana</i> ). Heartleaf-brown sedge swamps occur on lime-free yet basic substrates, often in alternation with brown-sedge swamps. This community is characterised by the additional occurrence of species such as bog star ( <i>Parnassia palustris</i> ), beanweed ( <i>Pinguicula vulgaris</i> ), low sedge ( <i>Carex demissa</i> ), yellow sedge ( <i>Carex flava</i> agg.), and Davall's sedge ( <i>Carex davalliana</i> ) in highly alkaline soils. As a special feature, the rare flat sedge ( <i>Blysmus compressus</i> ) occasionally occurs. This extends to the lime flat moors.	
<b>Heart leaf-brown-sedge swamps</b> <b>(Parnassio-Caricetum fuscae)</b>	Legally protected biotope type (32.11, 31.12) and habitat type of the SCI directive (7230)	
<b>Blink-stream corridor</b> <b>(Montio-Philonitidetum fontanae)</b>	Spring swamps in which blinks ( <i>Montia fontana</i> ) and bog starwort ( <i>Stellaria alsine</i> ) as well as countless mosses occur can be found selectively in the immediate vicinity of spring outlets or in seepage areas along streams as well as is in the entire area on a small scale. Of note is the occurrence of glacial relicts such as star saxifrage ( <i>Saxifraga stellaris</i> ) in the spring swamps of the Belchen and Feldberg area. Trickled, stony areas in shady locations are populated by leaved golden saxifrage. Cold-stenothermic springs are habitats of the endemic freshwater snail of Baden ( <i>Bythinella badensis</i> ).	
<b>Saxifrage-corridor</b> <b>(Chrysopenietum oppositifolii)</b>	Protected biotope type (34.30) and priority habitat type (*7220) of the SCI directive	
Species of flora that give value		
Common name	Scientific name	Remarks
Black sedge	<i>Carex nigra</i>	
Silvery sedge	<i>Carex canescens</i>	
Prickly sedge	<i>Carex echinata</i>	
Few-flowered sedge	<i>Carex pauciflora</i>	RL species FRG 3; RL species BW 2
Flea sedge	<i>Carex pulicaris</i>	RL species FRG 2; RL species BW 2
Davall's sedge	<i>Carex davalliana</i>	RL species FRG 3; RL species BW 3
Bog sedge	<i>Carex limosa</i>	RL species FRG 2; RL species BW 2
Yellow sedge	<i>Carex flava</i> agg.	
Green sedge	<i>Carex demissa</i>	
Tawny sedge	<i>Carex hostiana</i>	RL species FRG 2; RL species BW 2
Bog violet	<i>Pinguicula vulgaris</i>	RL species FRG 3; RL species BW 3
Dwarf birch	<i>Betula nana</i>	RL species FRG 2; RL species BW 1
Rannoch-rush	<i>Scheuchzeria palustris</i>	RL species FRG 2; RL species BW 2
Grass-of-Parnassus	<i>Parnassia palustris</i>	RL species FRG 3; RL species BW 3
Marsh cinquefoil	<i>Potentilla palustris</i>	RL species BW 3
Marsh trefoil	<i>Menyanthes trifoliata</i>	RL species FRG 3; RL species BW 3
Broad-leaved marsh orchid	<i>Dactylorhiza majalis</i>	RL species FRG 3; RL species BW 3
Common spotted orchid	<i>Dactylorhiza maculata</i>	
Narrow-leaved marsh orchid	<i>Dactylorhiza traunsteineri</i>	RL species FRG 2; RL species BW 2
Common cranberry	<i>Vaccinium oxycoccos</i>	RL species FRG 3; RL species BW 3
Bog bilberry	<i>Vaccinium uliginosum</i>	

<b>Round-leaved sundew</b>	<i>Drosera rotundifolia</i>	RL species FRG 3; RL species BW 3
<b>Great sundew</b>	<i>Drosera longifolia</i>	RL species FRG 3; RL species BW 2
<b>Bog-rosemary</b>	<i>Andromeda polifolia</i>	RL species FRG 3; RL species BW 3
<b>Dense cottongrass</b>	<i>Eriophorum vaginatum</i>	
<b>Broad-leaved cotton-grass</b>	<i>Eriophorum latifolium</i>	RL species FRG 3; RL species BW 3
<b>Cottongrass</b>	<i>Eriophorum angustifolium</i>	RL species BW 3
<b>Deergass</b>	<i>Trichophorum cespitosum</i>	RL species FRG 3
<b>Velvet balls</b>	<i>Bartsia alpina</i>	
<b>Felwort</b>	<i>Swertia perennis</i>	RL species FRG 2; RL species BW 2
<b>March violet</b>	<i>Viola palustris</i>	
<b>Starflower</b>	<i>Trientalis europaea</i>	RL species BW 3
<b>Skullcap speedwell</b>	<i>Veronica scutellata</i>	RL species BW 3
<b>Star saxifrage</b>	<i>Saxifraga stellaris</i>	RL species BW 3
<b>Hairy stonecrop</b>	<i>Sedum villosum</i>	RL species FRG 1; RL species BW 1
<b>Adder's tongue</b>	<i>Ophioglossum vulgatum</i>	RL species FRG 3; RL species BW 3
<b>Source herb</b>	<i>Montia fontana</i>	
<b>Bog chickweed</b>	<i>Stellaria alsine</i>	
<b>Flat rush</b>	<i>Blymus compressus</i>	RL species FRG 2; RL species BW 2
<b>Heath rush</b>	<i>Juncus squarrosus</i>	
<b>Alpine butterwort</b>	<i>Pinguicula alpina</i>	RL species FRG 3; RL species BW 1
<b>Alpine bulrush</b>	<i>Trichophorum alpinum</i>	
<b>Brown beak-rush</b>	<i>Rhynchospora fusca</i>	RL species FRG 2; RL species BW 2
<b>White beak-rush</b>	<i>Rhynchospora alba</i>	RL species FRG 3; RL species BW 3
<b>Marsh club moss</b>	<i>Lycopodiella inundata</i>	RL species FRG 3; RL species BW 2
<b>Opposite-leaved golden saxifrage</b>	<i>Chrysosplenium oppositifolium</i>	
<b>Moss species</b>	<i>Sphagnum magellanicum</i>	
	<i>Sphagnum rubellum</i>	
	<i>Sphagnum cuspidatum</i>	
	<i>Sphagnum fallax</i>	
	<i>Spagnum compactum</i>	
	<i>Sphagnum palustre</i>	
	<i>Spahgnum angustifolium</i>	
	<i>Polytrichum strictum</i>	
	<i>Aulacomnium palustris</i>	
	<i>Caliergonella cuspidata</i>	
	<i>Philonotis fontana</i>	
	<i>Bryum schleicheri</i>	
	<i>Scapania subalpina</i>	
<b>Species of fauna that give value</b>		
<b>Common name</b>	<b>Scientific name</b>	<b>Remarks</b>
<b>Alpen-Mosaikjungfer</b>	<i>Aeshna caerulea</i>	RL species BW 1
<b>Moorland hawk</b>	<i>Aeshna juncea</i>	RL species BW 3
<b>Bog hawk</b>	<i>Aeshna subartica</i>	RL species BW 2
<b>High brown fritillary</b>	<i>Boloria aquilonaris</i>	RL species FRG 2; RL species BW 2
<b>Bog fritillary</b>	<i>Boloria eunomia</i>	
<b>Baden freshwater snail</b>	<i>Bythinella badensis</i>	
<b>Marsh grasshopper</b>	<i>Chorthippus montanus</i>	RL species BW 3
<b>Northern damselfly</b>	<i>Coenagrion hastulatum</i>	RL species BW 1
<b>Common ringlet</b>	<i>Coenonympha tullia</i>	RL species FRG 2; RL species BW 2
<b>Palaeno sulphur</b>	<i>Colias palaeno</i>	RL species FRG 2; RL species BW 2
<b>Purple-edged copper</b>	<i>Lycaena hippothoe</i>	RL species FRG 3; RL species BW 3
<b>Large marsh grasshopper</b>	<i>Mecostethus grossus</i>	RL species FRG 3; RL species BW 2
<b>Alpine grasshopper</b>	<i>Miramella alpina</i>	

<b>Ringed snake</b>	<i>Natrix natrix helvetica</i>	RL species BW 3
<b>Moor frog</b>	<i>Rana arvalis</i>	RL species BW 1
<b>Cranberry blue</b>	<i>Vacciniina opilete</i>	RL species FRG 1; RL species BW 2
<b>Common lizard</b>	<i>Zootoca vivipara</i>	

Ecosystem of the cliffs and scree slopes			
	Occurrence	Meaning	Remarks
<b>Open stone and scree slopes</b>	Scree slopes primarily occur in the higher locations of the region. They occur in the	Scree slopes were formed through glacial processes. Of note is the occurrence of an endemic species of beetle ( <i>Nebria praegen-</i>	Because of the parent material, scree slopes and rocks are of siliceous origin. In certain places, there are veins of calcite in the stone, which has
<b>Natural rock locations</b>	"Gletscherkessel Präg" Nature Reserve (Seehalde and Sen-galenhalde). Larger and landscape-shaping rocks primarily occur on Belchen, in Oberrieder Tal, in St Willhelmer Tal, in Zastler Tal, and on the Utzen-fluh. Cliffs are regularly found in the highlands on the Allmend pastures.	<i>sis</i> ) on the Seehalde, a scree slope in the "Gletscherkessel Präg" Nature reserve  The occurrence of legally protected biotope types and habitats of the SCI Directive, occurrence of species of the SCI Directive, habitats of rare and endangered plant and animal species (glacial relicts)	led to species of limestone vegetation.
<b>Biotope types</b>	<b>Remarks</b>		
<b>Downy hempenettle (<i>Galeopsietum segetum</i>)</b>	Pioneer community of open siliceous scree characterised by the occurrence of the species downy hempenettle. They are well represented in the "Utzenfluh" Nature Reserve and the Präg "Glacial Cirque" Nature Reserve.  Legally protected biotope type (21.32) and habitat type of the SCI directive (8150)		
<b>Juneberry shrubbery</b>	Characterised by the occurrence of the garden serviceberry ( <i>Amelanchier ovalis</i> ); fragmented occurrence on the rocks of the south slope of the Belchen as well as the Utzenfluh.  Legally protected biotope type		
<b>Community of the brittle bladderfern (<i>Cystopteridum fragilis</i>)</b>	Prevalent crevice and ledge community dominated by various species of fern, the determining factors of which are aridity and sun exposure; example of the small-scale alternating vegetative mosaic in the area.		
<b>Community of the maidenhair spleenwort (<i>Asplenium trichomanes</i>)</b>	The damp and shady rocks are mainly home to the community of the fragile bladderfern. The shady to half-shady rock locations are home to communities of the black spleenwort and the polyploidy. The sunlit rocks are populated by the community of the black spleenwort.		
<b>Community of the polypody (<i>Polypodium vulgare</i>)</b>			
<b>Community of the northern spleenwort (<i>Silene Asplenium septentrionali</i>)</b>			
<b>Auricula community (<i>Primula auricula-Hieracium humile</i>)</b>	Rare community of the crevices that selectively occurs on sunny rocks on the Belchen. Occurrence of rare species classified as glacial relicts such as auricula ( <i>Primula auricula</i> ) and livelong saxifrage ( <i>Saxifraga paniculata</i> ).  Legally protected biotope type (21.11)		

<b>Woodsia community (Woodsio-Asplenietum septentrionalis)</b>	Selectively occurring on the south-facing rocks in the “Utzenfluh” nature reserve. A rare southern woodsia ( <i>Woodsia ilvensis</i> ) occurs here. This glacial relict is only found in a few other locations in Germany.	
	Legally protected biotope type (21.11) and habitat type (8220) of the SCI directive	
<b>Rock campion community (Sileno-Sedetum annui)</b>	This community occurs on the rock ledges and also has a number of rare, glacial relict species such as rock campion ( <i>Silene rupestris</i> ) as well as rare stonecrop species such as annual stonecrop ( <i>Sedum annuum</i> ) and leafy stonecrop ( <i>Sedum dasyphyllum</i> ).	
	Legally protected biotope type (21.11) and habitat type (8230) of the SCI directive	
Species of flora that give value		
Common name	Scientific name	Remarks
Alpen-Maßliebchen	<i>Aster bellidiastrum</i>	
Silvery lady's-mantle	<i>Alchemilla plicatula</i>	
Black spleenwort	<i>Asplenium adiantum-nigrum</i>	RL species BW 3
Wall-rue	<i>Asplenium ruta-muraria</i>	
Northern spleenwort	<i>Asplenium septentrionale</i>	
Maidenhair spleenwort	<i>Asplenium trichomanes</i>	
Common fragile fern	<i>Cystopteris fragilis</i>	
Yellow foxglove	<i>Digitalis grandiflora</i>	
Downy hempenettle	<i>Galeopsis segetum</i>	RL species BW 3
Dawarf hawkweed	<i>Hieracium humile</i>	RL species FRG 3
Schmidt's hawkweed	<i>Hieracium pallidum</i>	
Blue bonnets	<i>Jasione montana</i>	
Mountain cowslip	<i>Primula auricula</i>	RL species FRG 3; RL species BW 3
Stinking primrose	<i>Primula hirsuta</i>	RL species FRG not specified; RL species BW 1
Lifelong saxifrage	<i>Saxifraga paniculata</i>	
Perennial knawel	<i>Scleranthus perennis</i>	RL species BW 2
Biting stonecrop	<i>Sedum acre</i>	
White stonecrop	<i>Sedum album</i>	
Annual stonecrop	<i>Sedum annuum</i>	RL species FRG 3; RL species BW 2
Thick-leaf stonecrop	<i>Sedum dasyphyllum</i>	RL species FRG 3; RL species BW 3
Narrow-leaved Orpine	<i>Sedum fabaria</i>	
Reflexed stonecrop	<i>Sedum reflexum</i>	
Tasteless stonecrop	<i>Sedum sexangulare</i>	
Houseleek	<i>Sempervivum x barbulatum</i>	
Rock campion	<i>Silene rupestris</i>	
Horseradish	<i>Teesdalia nudicaulis</i>	RL species BW 2
Three-leaved valarian	<i>Valeriana tripteris</i>	
Alpine speedwell	<i>Veronica fruticans</i>	RL species BW 3
Oblong woodsia	<i>Woodsia ilvensis</i>	RL species FRG 2; RL species BW 1
Species of fauna that give value		
Common name	Scientific name	Remarks
Smooth snake	<i>Coronilla austriaca</i>	RL species BW 3
Raven	<i>Corvus croax</i>	
Jackdaw	<i>Corvus monedula</i>	RL species BW 3
Small blue	<i>Cupido minimus</i>	
Peregrine falcon	<i>Falco peregrino</i>	
Common copper	<i>Lycaena phlaeas</i>	
Red-band fritillary	<i>Melitaea didyma</i>	RL species BW 3
Präg ground beetle	<i>Nebria praegensis</i>	RL species BW R
Red-winged grasshopper	<i>Oedipoda caerulea</i>	RL species FRG 3; RL species BW 3
Blue-winged grasshopper	<i>Oedipoda germanica</i>	RL species FRG 1; RL species BW 1
Silver-studded blue	<i>Plebeius argus</i>	RL species FRG 3



Sand martin	Riparia riparia		
Asp viper	Vipera aspis	RL species FRG 1; RL species BW 1	
Aesculapian snake	Zamensis longissimus	RL species FRG 2; RL species BW 1	
Aquatic ecosystems			
	Occurrence	Meaning	Remarks
Running waters	In the region, running waters are a widespread habitat type, which have shaped and continue to shape the landscape. They occur in both forests and in open country. They traverse the entire biosphere reserve from the highest elevations into the valleys. Larger rivers include the Wiese and the Kleine Wiese as well as the Wehra and the Alb.	Depending on altitude, slope, and substrate, running waters harbour their own biological communities. They are habitats for highly specialised species of animals and plants. In the area, the headwaters feature undisturbed river dynamics with natural biotopes and biological communities. They partially harbour rare and endangered animal species such as clawed crayfish and stone crab, bullhead, and brook lamprey as well as the European beaver in the Alb. Legally protected biotope type, habitat type of the SCI Directive, occurrence of species of the SCI Directive.	In the biosphere reserve in the area of Feldberg, Belchen, and Schauinsland, numerous mountain rivers originate. These drain in the direction of High Rhine or Upper Rhine.
Still waters	Still waters are relatively rare in the biosphere reserve. Of particular note is the Nonnenmattweiher within the nature reserve of the same name as well as the Klosterweiher in Oberen Hotzenwald in the "Friedrich-August-Grube" nature reserve.	The mainly oligotrophic standing waters mainly feature well formed siltation zones and areas with floating leaf vegetation (e.g. on the Klosterweiher). The Nonnenmattweiher is characterised by a floating peat island with fenlands and transitional moors. Occurrence of legally protected biotope types, habitat types, and species of the SCI Directive	The still waters of the area are primarily of anthropogenic origin. They often used to be used as extinguishing ponds or fishing ponds as well as reservoirs in connection with power generation and electricity storage (Wehratal). These are not considered further here.
Biotope types			
Natural running water	The region exclusively contains highland rivers. The larger rivers such as the Wehra, Alb, and Kleine Wiese also show characteristics of mountain rivers. They are fast flowing and do not meander to any great extent. The bed consists of boulders as well as coarse sand and gravel substrate. In places, a vegetation from occurs from water mosses (e.g. Fontinalis antipyretica). Noteworthy is the occurrence of the clawed crayfish in the southern area of the SCI "Weidfelder bei Gersbach und an der Wehra". This species of crab occurs only in the south west of Baden-Württemberg and reaches its north-eastern distribution boundary. Legally protected biotope type (21.11) and habitat type (3260) of the SCI directive		
Oligotrophic and dystrophic waters	The Nonnenmattweiher in its present form was created by the damming of a former cirque lake. In the Weiher is a peat island with flat and transnitional moor vegetation. Here, the south-west occurrence of the inundated clubmoss (Lycopodiella inundata) is to be noted. The Klosterweiher also originated through the damming of a cirque hollow and served as fishing waters of the St Blasien Monestary. This pond features an outstanding and unique (for the region) silting zone with endangered plant species including small bur reed (Sparganium minimum). Legally protected biotope type (13.20, 13.80) and habitat type (3130) of the SCI directive		
Species of flora that give value			
Common name	Scientific name	Remarks	
Cut-leaf water-parsnip	Berula erecta		
Common bittercress	Cardamine amara		
Beaked sedge	Carex rostrata		
Water horsetail	Equisetum fluviatile		

<b>Two-rowed watercress</b>	<i>Nasturtium officinale</i>	
<b>Yellow water lily</b>	<i>Nuphar lutea</i>	
<b>Bur reed</b>	<i>Sparganium minimum</i>	RL species FRG 2; RL species BW 2
<b>Brooklime</b>	<i>Veronica beccabunga</i>	
<b>Species of fauna that give value</b>		
<b>Common name</b>	<b>Scientific name</b>	<b>Remarks</b>
<b>Dipper</b>	<i>Cinclus cinclus</i>	
<b>Bullhead</b>	<i>Cottus gobio</i>	
<b>Brook lamprey</b>	<i>Lampetra planeri</i>	RL species BW 3
<b>Stone crayfish</b>	<i>Austropotamobius torrentinum</i>	RL species BW 2
<b>River crayfish</b>	<i>Austropotamobius pallipes</i>	RL species BW 1
<b>Sombre goldenring</b>	<i>Cordulegaster bidentatus</i>	
<b>Fire salamander</b>	<i>Salamandra salamandra</i>	
<b>Golden-ringed dragonfly</b>	<i>Cordulegaster boltonii</i>	
<b>Damselfly</b>	<i>Calopteryx virgo</i>	
<b>Kingfisher</b>	<i>Alcedo attis</i>	
<b>Alpine newt</b>	<i>Mesotriton alpestris</i>	
<b>Warty newt</b>	<i>Triturus cristatus</i>	RL species BW 2
<b>Sedge hawk</b>	<i>Aeschna juncea</i>	RL species BW 3
<b>Brown hawk</b>	<i>Aeschna grandis</i>	
<b>Black meadow hawk</b>	<i>Sympetrum danae</i>	RL species BW 3
<b>Brilliant emerald</b>	<i>Somatochlora metallica</i>	
<b>Downy emerald</b>	<i>Cordulia aenea</i>	
<b>Beaver</b>	<i>Castor fiber</i>	RL species BW 2
<b>Ringed snake</b>	<i>Natrix natrix</i>	RL species BW 3

### 19.5.2 Composition of value-adding species in the Biosphere Reserve Black Forest

#### Ferns and flowing plants in communities of the biosphere reserve

Occurrence of flowering plants from the Municipalities of Todtnau, Hüg-Ehrsberg, Bernau, Dachsberg, Häusern, Ibach, Oberried, St. Blasien, Schöna, Utzenfeld, Wieden, Zell and Horben - Entries in the database of the floristic mapping of Baden-Württemberg at the State Museum of Natural History in Stuttgart (1999-2000) with own additions

Scientific name	Common name	Red List Baden-Württemberg	Red List Germany	IUCN
<i>Acer platanoides</i>	Norway maple	* : not endangered	* : not considered to be at risk	
<i>Acer pseudoplatanus</i>	Sycamore maple			
<i>Abies alba</i>	White fir			LC
<i>Aconitum lycoctonum</i>	Northern wolfsbane			
<i>Aconitum napellus</i>	Aconite			LC
<i>Actaea spicata</i>	Baneberry			
<i>Adenostyles alliariae</i>	Grey adenostyles			
<i>Agrostemma githago</i>	Corn cockle	1 : threatened with extinction	1 : threatened with extinction	
<i>Aira caryophyllea</i>	Silver hair-grass	3 : vulnerable		
<i>Alchemilla crinita</i>	Lady's mantle	R : extremely rare		
<i>Alchemilla lineata</i>	Alchemilla	D : Data basis is insufficient		
<i>Alchemilla plicatula</i>	Alchemilla			
<i>Alchemilla vulgaris</i> agg.	Common alchemilla			
<i>Alchemilla xanthochlora</i>				LC

<i>Allium ursinum</i>	Ramson			
<i>Allium victorialis</i>	Alpine leek	1 : threatened with extinction		
<i>Alnus glutinosa</i>	Black alder			LC
<i>Alnus incana</i>	Grey alder			LC
<i>Alopecurus pratensis</i>	Meadow foxtail			
<i>Alopecurus rendlei</i>	Rendle's foxtail	0 : extinct or lost	2 : endangered	
<i>Amaranthus graecizans</i>	Tumbleweed	2 : endangered		
<i>Anacamptis pyramidalis</i>	Pyramidal orchid	3 : vulnerable	2 : endangered	
<i>Andromeda polifolia</i>	Bog rosemary	3 : vulnerable	3 : vulnerable	
<i>Antennaria dioica</i>	Catsfoot			
<i>Anthericum liliago</i>	St. Bernard's lily	3 : vulnerable		
<i>Anthoxanthum alpinum</i>	Alpine sweet vernalgrass	V : Family of the early warning list		
<i>Anthoxanthum aristatum</i>	Annual vernalgrass	2 : endangered		
<i>Arabis hirsuta</i> agg.	Hairy rock-cress	z : no classification of the aggregate		
<i>Arnica montana</i>	Wolf's bane			LC
<i>Arnoseris minima</i>	Lamb succory	1 : threatened with extinction	2 : endangered	
<i>Arrhenatherum elatius</i>	Tall oatgrass			
<i>Artemisia campestris</i>	Boreal wormwood	V : Family of the early warning list		
<i>Artemisia pontica</i>	Green ginger	1 : threatened with extinction		
<i>Aruncus dioicus</i>	Goat's beard			
<i>Asperugo procumbens</i>	German madwort	2 : endangered	3 : vulnerable	
<i>Asplenium adiantum nigrum</i>	Black spleenwort			
<i>Asplenium ruta-muraria</i>	Wall-rue			
<i>Asplenium septentrionale</i>	Northern spleenwort	V : Family of the early warning list		
<i>Asplenium trichomanes</i>	Maidenhair spleenwort			
<i>Aster bellidiastrum</i>	Daisy of the Alps	V : Family of the early warning list		
<i>Athyrium dystentifolium</i>	Alpine lady fern			
<i>Bartsia alpina</i>	Velvet balls			
<i>Berula erecta</i>	Cut-leaf water-parsnip			
<i>Betula nana</i>	Dwarf birch			LC
<i>Blechnum spicant</i>	Deer fern			
<i>Blysmus compressus</i>	Flat rush	2 : endangered	2 : endangered	LC
<i>Botrychium matricariifolium</i>	Matricary grapefern	2 : endangered	2 : endangered	
<i>Botrychum lunaria</i>	Moonwort grapefern			
<i>Briza media</i>	Shaking grass			
<i>Bromus arvensis</i>	Field brome	3 : vulnerable	3 : vulnerable	
<i>Bromus erectus</i>	Upright brome			
<i>Bromus racemosus</i>	Smooth brome	3 : vulnerable	3 : vulnerable	
<i>Bromus secalinus</i>	Rye brome	3 : vulnerable		
<i>Calamagrostis phragmitoides</i>	Scandinavian small-reed	R : extremely rare		
<i>Calla palustris</i>	Water arum	2 : endangered	3 : vulnerable	
<i>Callitriche palustris</i>	Vernal water starwort	D : Data basis is insufficient		
<i>Caltha palustris</i>	Marsh marigold			
<i>Camelina sativa</i> ssp. <i>allysum</i>	Stinking flaxweed	0 : extinct or lost	0 : extinct or lost	
<i>Campanula cervicaria</i>	Bristly bellflower	2 : endangered	1 : threatened with extinction	

<i>Campanula glomerata</i>	Clustered bellflower	V : Family of the early warn- ing list		
<i>Campanula patula</i>	Spreading bellflower			
<i>Campanula scheuchzeri</i>	Scheuchzer's bellflower	V : Family of the early warn- ing list		
<i>Campanula rotundifolia</i>	Harebell			
<i>Cardamine amara</i>	Common bittercress			
<i>Cardamine pratensis</i>	Cuckoo flower			
<i>Carduus defloratus</i>	Alpine thistle	V : Family of the early warn- ing list		
<i>Carex acutiformis</i>	Lesser pond sedge	LC		
<i>Carex brunnescens</i>	Brownish sedge	0 : extinct or lost		
<i>Carex canescens</i>	Silvery sedge	V : Family of the early warn- ing list		
<i>Carex davalliana</i>	Davall's sedge	3 : vulnerable	3 : vulnerable	LC
<i>Carex demissa</i>	Green sedge			
<i>Carex dioica</i>	Dioecious sedge	2 : endangered	2 : endangered	
<i>Carex echinata</i>	Star sedge	V : Family of the early warn- ing list		
<i>Carex flava</i>	Yellow sedge	V : Family of the early warn- ing list		
<i>Carex hostiana</i>	Tawny sedge	2 : endangered	2 : endangered	
<i>Carex lasiocarpa</i>	Slender sedge	3 : vulnerable	3 : vulnerable	LC
<i>Carex lepidocarpa</i>	Long-salked yellow sedge	3 : vulnerable		
<i>Carex limosa</i>	Bog sedge	2 : endangered	2 : endangered	LC
<i>Carex nigra</i>	Black sedge	LC		
<i>Carex oederi</i>	Black sedge	3 : vulnerable		
<i>Carex pallescens</i>	Pale sedge			
<i>Carex pauciflora</i>	Few-flowered sedge	2 : endangered	3 : vulnerable	
<i>Carex pilulifera</i>	Pill sedge			
<i>Carex pulicaris</i>	Flea sedge	2 : endangered	2 : endangered	
<i>Carex rostrata</i>	Beaked sedge	LC		
<i>Carlina acaulis</i>	Silver thistle			
<i>Carum carvi</i>	Caraway			
<i>Centaurea jacea</i>	Brown knapweed			
<i>Centaurea nigra ssp. nemoralis</i>	Lesser knapweed			
<i>Cephalanthera longifolia</i>	Narrow-leaf helleborine	V : Family of the early warn- ing list		
<i>Cephalanthera rubra</i>	Red helleborine	V : Family of the early warn- ing list		
<i>Cerastium pumilum agg.</i>	Dwarf mouse-ear species group	z : no classification of the aggregate		
<i>Chaerophyllum hirsutum</i>	Hairy chervil			
<i>Chenopodium opulifolium</i>	Round-leaved goosefoot	G : endangered, threat category unclear		
<i>Chrysosplenium oppositifolium</i>	Opposite-leaved golden saxifrage			
<i>Cicerbita alpina</i>	Alpine sow-thistle			
<i>Cicerbita plumieri</i>	Hairless blue sow-thistle	1 : threatened with extinc- tion	R : extremely rare	
<i>Cirsium rivulare</i>	Brook thistle	V : Family of the early warn- ing list		
<i>Coeloglossum viride</i>	Frog orchid	2 : endangered	3 : vulnerable	
<i>Colutea arborescens</i>	Bladder-senna	2 : endangered	3 : vulnerable	
<i>Corallorrhiza trifida</i>	Nothern coralroot	V : Family of the early warn- ing list	3 : vulnerable	

<i>Coronopus squamatus</i>	Watercress	3 : vulnerable	3 : vulnerable	
<i>Crepis biennis</i>	Rough hawk's-beard			
<i>Crepis foetida</i>	Stinking hawk's-beard	3 : vulnerable		
<i>Crepis mollis</i>	Northern hawk's-beard	3 : vulnerable	3 : vulnerable	
<i>Crepis paludosa</i>	Marsh hawk's beard			
<i>Crepis pyrenaica</i>	Pyrenean hawk's-beard	R : extremely rare		
<i>Crepis setosa</i>	Bristly hawksbeard	V : Family of the early warn- ing list		
<i>Crocus albiflorus</i>	Spring crocus	1 : threatened with extinc- tion	3 : vulnerable	
<i>Cryptogramma crispa</i>	Mountain parsley	2 : endangered	2 : endangered	
<i>Cuscuta epithymum</i>	Hellweed	V : Family of the early warn- ing list		
<i>Cyperus flavescens</i>	Yellow cyperus	2 : endangered	2 : endangered	
<i>Cypripedium calceolus</i>	Lady's slipper	3 : vulnerable	3 : vulnerable	LC
<i>Cystopteris fragilis</i>	Common fragile fern			
<i>Cystopteris dickieana</i>	Dickie's Bladder-fern	R : extremely rare	D : Data basis is insuffi- cient	
<i>Dactylorhiza fistulosa</i>	Broad-leaved marsh orchid	3 : vulnerable	3 : vulnerable	
<i>Dactylorhiza fuchsii</i>	Common spotted orchid	* : not endangered	3 : vulnerable	
<i>Dactylorhiza latifolia</i>	Western marsh orchid	2 : endangered	2 : endangered	
<i>Dactylorhiza maculata</i>	Common spotted orchid	* : not endangered	3 : vulnerable	
<i>Dactylorhiza majalis</i>	Broad-leaved marsh orchid			
<i>Dactylorhiza traunsteineri</i>	Narrow-leaved marsh orchid	2 : endangered	2 : endangered	
<i>Danthonia decumbens</i>	Heath grass			
<i>Daphne mezereum</i>	February daphne			
<i>Deschampsia flexuosa</i>	Wavy hair-grass			
<i>Descurainia sophia</i>	Fluxweed	3 : vulnerable		
<i>Dianthus carthusianorum</i>	Carthusian pink	V : Family of the early warn- ing list		
<i>Dianthus deltoides</i>	Maiden pink			
<i>Dianthus seguieri</i>	Ragged pink	2 : endangered	2 : endangered	
<i>Dianthus superbus</i>	Large pink	3 : vulnerable		
<i>Digitalis grandiflora</i>	Yellow foxglove			
<i>Diphasium alpinum</i>	Alpine club moss	3 : vulnerable	2 : endangered	
<i>Drosera longifolia</i>	Great sundew			
<i>Drosera rotundifolia</i>	Round-leaved sundew			
<i>Dryopteris dilatata</i>	Broad wood fern			
<i>Eleocharis uniglumis</i>	Slender spikerush	V : Family of the early warn- ing list		LC
<i>Empetrum hermaphroditum</i>	Mountain crowberry			
<i>Epilobium palustre</i>	Marsh willowherb	V : Family of the early warn- ing list		LC
<i>Epipactis atrorubens</i>	Dark red helleborine	V : Family of the early warn- ing list		
<i>Epipactis muelleri</i>	Mueller's epipactis	V : Family of the early warn- ing list		LC
<i>Epipactis palustris</i>	Marsh helleborine	3 : vulnerable	3 : vulnerable	
<i>Epipogium aphyllum</i>	Ghost orchid	V : Family of the early warn- ing list	2 : endangered	
<i>Equisetum fluviatile</i>	Water horsetail			
<i>Equisetum sylvaticum</i>	Sylvan horsetail			
<i>Eragrostis cilianensis</i>	Snake grass	1 : threatened with extinc- tion		
<i>Erigeron gaudinii</i>	Gaudin's fleabane	R : extremely rare	R : extremely rare	

<i>Eriophorum angustifolium</i>	Cottongrass	3 : vulnerable		LC
<i>Eriophorum latifolium</i>	Broad-leaved cotton-grass	3 : vulnerable	3 : vulnerable	LC
<i>Eriophorum vaginatum</i>	Dense cottongrass			
<i>Euphorbia cyparissias</i>	Cypress spurge			
<i>Fagus sylvatica</i>	Beech			
<i>Festuca altissima</i>	Wood fescue			
<i>Festuca filiformis</i>	Hair fescue	V : Family of the early warn- ing list		
<i>Festuca ovina</i>	Echter Schafschwingel	D : Data basis is insufficient		
<i>Festuca rupicola</i>	Furrowed fescue	D : Data basis is insufficient		
<i>Filago lutescens</i>	Yellow filago	1 : threatened with extinc- tion	2 : endangered	
<i>Filago minima</i>	Little cottonrose	3 : vulnerable		
<i>Filago vulgaris</i>	Common cottonrose	3 : vulnerable	2 : endangered	
<i>Filipendula vulgaris</i>	Meadowsweet	3 : vulnerable		
<i>Filipendula ulmaria</i>	Meadwort			
<i>Fraxinus excelsior</i>	Ash			
<i>Galanthus nivalis</i>	Snowdrop	* : not endangered	3 : vulnerable	
<i>Galeopsis segetum</i>	Downy hempnettle	3 : vulnerable		DD
<i>Galium album</i>	White bedstraw			
<i>Galium glaucum</i>	Waxy bedstraw	V : Family of the early warn- ing list		
<i>Galium odoratum</i>	Woodruff			
<i>Galium palustre</i>	Marsh bedstraw			LC
<i>Galium pumilum</i>	Slender bedstraw			
<i>Galium saxatile</i>	Heath bedstraw			
<i>Galium uliginosum</i>	Fen bedstraw			LC
<i>Galium tricornutum</i>	Small goosegrass	2 : endangered	3 : vulnerable	
<i>Genista anglica</i>	Needle whin	* : not endangered	3 : vulnerable	
<i>Genista germanica</i>	German greenweed	3 : vulnerable		
<i>Genista pilosa</i>	Hairy greenweed	V : Family of the early warn- ing list		
<i>Genista sagittalis</i>	Winged broom			LC
<i>Gentiana lutea</i>	Bitterwort	V : Family of the early warn- ing list	3 : vulnerable	
<i>Geranium pratense</i>	Meadow crane's bill			
<i>Geranium sylvaticum</i>	Wood crane's bill			
<i>Gnaphalium luteoalbum</i>	Yellow cudweed	1 : threatened with extinc- tion	2 : endangered	
<i>Gnaphalium norvegicum</i>	Norwegian arctic cudweed			
<i>Gnaphalium supinum</i>	Dwarf cudweed	3 : vulnerable		
<i>Gnaphalium sylvaticum</i>	Wood cudweed			
<i>Goodyera repens</i>	Creeping lady's tresses	V : Family of the early warn- ing list		
<i>Gymnadenia conopsea</i>	Fragrant orchide	V : Family of the early warn- ing list		
<i>Gymnadenia odoratissima</i>	Short-spurred fragrant orchid	3 : vulnerable	3 : vulnerable	LC
<i>Gymnocarpium dryopteris</i>	Oak fern			
<i>Gymnocarpium robertianum</i>	Beech fern			
<i>Gypsophila muralis</i>	Annual gypsophila	3 : vulnerable	3 : vulnerable	
<i>Helictotrichon pratense</i>	Meadow oat-grass	V : Family of the early warn- ing list		
<i>Helictotrichon pubescens</i>	Downy Alpine oatgrass			



<i>Heliotropium europaeum</i>	European heliotrope	1 : threatened with extinction	2 : endangered	
<i>Herminium monorchis</i>	Musk orchid	2 : endangered	2 : endangered	
<i>Hieracium amplexicaule</i>	Sticky hawkweed	R : extremely rare		
<i>Hieracium arvicola</i>	Hawkweed	2 : endangered	G : endangered, threat category unclear	
<i>Hieracium bifidum</i>	Hawkweed	3 : vulnerable		
<i>Hieracium brachiatum</i>	Hawkweed	* : not endangered	G : endangered, threat category unclear	
<i>Hieracium humile</i>	Dwarf hawkweed	V : Family of the early warning list	3 : vulnerable	
<i>Hieracium inuloides</i>	Hawkweed	R : extremely rare	R : extremely rare	
<i>Hieracium kernerii</i>	Kerner's hawkweed	0 : extinct or lost	D : Data basis is insufficient	
<i>Hieracium lactucella</i>	European hawkweed	V : Family of the early warning list	3 : vulnerable	
<i>Hieracium lycopifolium</i>	Hawkweed	3 : vulnerable	3 : vulnerable	
<i>Hieracium pallidum</i>	Schmidt's hawkweed			
<i>Hieracium pilosella</i>	Mouse-ear hawkweed			
<i>Heracleum sphondylium</i> ssp. <i>elegans</i>	Meadow parsnip			
<i>Himantoglossum hircinum</i>	Lizard orchid	3 : vulnerable	3 : vulnerable	
<i>Homogyne alpina</i>	Alpine coltsfoot	2 : endangered		
<i>Huperzia selago</i>	Fir clubmoss	V : Family of the early warning list		
<i>Hypochaeris maculata</i>	Spotted hawkweed	2 : endangered	3 : vulnerable	
<i>Hyssopus officinalis</i>	Hyssop	R : extremely rare		
<i>Iberis amara</i>	Terspic	1 : threatened with extinction	1 : threatened with extinction	
<i>Illecebrum verticillatum</i>	Coral necklace	1 : threatened with extinction	3 : vulnerable	
<i>Iris germanica</i>	German iris	V : Family of the early warning list		
<i>Jasione laevis</i>	Perennial sand rapunzel			
<i>Jasione montana</i>	Blue bonnets			
<i>Juncus acutiflorus</i>	Sharp-flowered rush			
<i>Juncus alpinus</i>	Alpine rush	V : Family of the early warning list	3 : vulnerable	
<i>Juncus filiformis</i>	Filiform rush	V : Family of the early warning list		
<i>Juncus squarrosus</i>	Heath rush	V : Family of the early warning list		
<i>Knautia arvensis</i>	Gypsy rose			
<i>Lathyrus linifolius</i>	Heath pea			
<i>Lathyrus pratensis</i>	Meadow pea			
<i>Legousia hybrida</i>	Venus's looking-glass	1 : threatened with extinction	2 : endangered	
<i>Leontodon helveticus</i>	Swiss dandelion	V : Family of the early warning list		
<i>Leucanthemum ircutianum</i>	Common daisy			
<i>Leucojum vernum</i>	Spring snowflake	V : Family of the early warning list	3 : vulnerable	LC
<i>Leucorchis albida</i>	Small white orchid			
<i>Lilium bulbiferum</i>	Orange lilly	1 : threatened with extinction	3 : vulnerable	

<i>Listera cordata</i>	Lesser twayblade	* : not endangered	3 : vulnerable	
<i>Listera bifolia</i>	May lilly			
<i>Littorella uniflora</i>	Shore plantain	2 : endangered	2 : endangered	
<i>Lonicera nigra</i>	Black-berried honeysuckle			
<i>Lotus corniculatus</i>	Honeysuckle			
<i>Lotus uliginosus</i>	Marsh birdsfoot trefoil			
<i>Lunaria rediviva</i>	Perennial honesty			
<i>Luzula desvauxii</i>	Desvaux wood rush			
<i>Luzula luzuloides</i>	White wood-rush			
<i>Luzula luzuloides</i> var. <i>eryanthema</i>	Narrow-leaved wood rush			
<i>Luzula sudetica</i>	Common wood rush	3 : vulnerable		
<i>Luzula sylvatica</i>	Greater wood-rush			
<i>Lychnis flos-cuculi</i>	Cuckoo flower			
<i>Lycopodiella inundata</i>	Marsh clubmoss	2 : endangered	3 : vulnerable	LC
<i>Lycopodium annotinum</i>	Stiff clubmoss			
<i>Lycopodium clavatum</i>	Common clubmoss			
<i>Malus sylvestris</i>	European wild apple	3 : vulnerable		DD
<i>Menyanthes trifoliata</i>	Marsh trefoil			LC
<i>Mercurialis perennis</i>	Dog mercury			
<i>Mespilus germanica</i>	Common medlar	3 : vulnerable		
<i>Meum athamanticum</i>	Spiguel			
<i>Monita fontana</i>	Source herb			LC
<i>Montia fontana</i> ssp. <i>chondrosperma</i>	Blinks	2 : endangered	3 : vulnerable	LC
<i>Muscari botryoides</i>	Muscari	3 : vulnerable	3 : vulnerable	
<i>Myosotis scorpioides</i> agg.	water forget-me-not			
<i>Narcissus radiiflorus</i>	Nargis	2 : endangered	2 : endangered	
<i>Nardus stricta</i>	Nard grass			
<i>Nasturtium officinale</i>	Two-rowed watercress			
<i>Nuphar lutea</i>	Yellow water lily			LC
<i>Nuphar pumila</i>	Least water lily	2 : endangered	1 : threatened with extinction	
<i>Onobrychis vicifolia</i>	Sainfoin			LC
<i>Ophioglossum vulgatum</i>	Adder's tongue			
<i>Ophrys apifera</i>	Bee orchid	V : Family of the early warning list	2 : endangered	
<i>Orchis coriophora</i>	Bug orchid	1 : threatened with extinction	1 : threatened with extinction	
<i>Orchis mascula</i>	Blue butcher orchid	V : Family of the early warning list		
<i>Orchis militaris</i>	Military orchid		3 : vulnerable	
<i>Orchis morio</i>	Green veined orchid	3 : vulnerable	2 : endangered	
<i>Orchis pallens</i>	Pale-flowered orchid	3 : vulnerable	3 : vulnerable	
<i>Orchis ustulata</i>	Burnt orchid	2 : endangered	2 : endangered	
<i>Ornithogalum nutans</i>	Nodding star-of-Bethlehem	3 : vulnerable		
<i>Ornithopus perpusillus</i>	Bird's foot	V : Family of the early warning list		
<i>Orobanche hederaceae</i>	Ivy broomrape	* : not endangered	3 : vulnerable	
<i>Orobanche purpurea</i>	Yarrow broomrape	2 : endangered	3 : vulnerable	
<i>Paris quadrifolia</i>	Herb paris			
<i>Parnassia palustris</i>	Grass-of-Parnassus	3 : vulnerable	3 : vulnerable	LC
<i>Pastinaca sativa</i> ssp. <i>urens</i>	Burning parsnip	D : Data basis is insufficient		
<i>Pedicularis sylvatica</i>	Small lousewort			
<i>Persicaria bistorta</i>	Serpentory			
<i>Peucedanum ostruthium</i>	Masterwort	3 : vulnerable		

<i>Phleum paniculatum</i>	British timothy	1 : threatened with extinction	2 : endangered	
<i>Phyllitis scolopendrium</i>	Common hart's tongue			
<i>Phyteuma nigrum</i>	Black rampion			
<i>Phyteuma spicatum</i>	Spiked rampion			
<i>Picea abies</i>	Spruce			LC
<i>Pimpinella major ssp. major</i>	Greater burnet-saxifrage			
<i>Pimpinella major ssp. rubra</i>	Greater burnet-saxifrage			
<i>Pimpinella saxifraga</i>	Burnet saxifrage			
<i>Pinguicula alpina</i>	Alpine butterwort			
<i>Pinguicula vulgaris</i>	Bog violet			
<i>Pinus mugo ssp. arborea</i>	Creeping pine			LC
<i>Pinus sylvestris</i>	Scots pine			LC
<i>Platanthera bifolia</i>	Lesser butterfly-orchid	V : Family of the early warning list	3 : vulnerable	
<i>Platanthera chlorantha</i>	Butterfly orchid	V : Family of the early warning list	3 : vulnerable	
<i>Poa alpina</i>	Alpine meadow grass	2 : endangered		
<i>Poa chaixii</i>	Forest bluegrass			
<i>Polemonium caeruleum</i>	Jacob's-ladder	V : Family of the early warning list	3 : vulnerable	
<i>Polycarpon tetraphyllum</i>	Allseed	2 : endangered		
<i>Polygala serpyllifolia</i>	Heath milkwort			
<i>Polygala vulgaris</i>	Common milkwort			
<i>Polygonatum verticillatum</i>	Whorled Solomon's-seal			
<i>Polypodium vulgare</i>	Common polypody			
<i>Polypodium interjectum</i>	Cornish polypody	D : Data basis is insufficient		
<i>Polystichum braunii</i>	Braun's hollyfern	2 : endangered	2 : endangered	
<i>Potamogeton alpinus</i>	Alpine pondweed	2 : endangered	3 : vulnerable	LC
<i>Potamogeton natans</i>	Broadleaf pondweed			LC
<i>Potentilla erecta</i>	Septfoil			
<i>Potentilla palustris</i>	Marsh cinquefoil			
<i>Prenanthes purpurea</i>	White lettuce			
<i>Primula auricula</i>	Mountain cowslip			
<i>Primula elatior</i>	Oxlip			
<i>Primula hirsuta</i>	Stinking primrose			
<i>Primula veris</i>	Cowslip			
<i>Pyrola minor</i>	Common wintergreen	3 : vulnerable		
<i>Pyrola uniflora</i>	One-flower wintergreen			
<i>Quercus robur</i>	German oak			LC
<i>Quercus petraea</i>	Sessile oak			
<i>Ranunculus aconitifolius</i>	Aconite-leaf buttercup			
<i>Ranunculus bulbosus</i>	Bulbous crowfoot			
<i>Ranunculus nemoralis</i>	Wood crowfoot			
<i>Rhinanthus alectorolophus</i>	Greater yellow-rattle			
<i>Rhinanthus glazialis</i>	Bristlecone yellow rattle		3 : vulnerable	
<i>Rhinanthus minor</i>	Little yellow rattle			
<i>Rhynchospora alba</i>	White beak-rush	3 : vulnerable	3 : vulnerable	LC
<i>Rhynchospora fusca</i>	Brown beak-rush	2 : endangered	2 : endangered	
<i>Ribes petraeum</i>	Rock currant			
<i>Ribes uva-crispus</i>	Gooseberry			
<i>Rosa glauca</i>	Red-leaved rose	3 : vulnerable	3 : vulnerable	
<i>Rosa micrantha</i>	Small-flowered sweet-briar	3 : vulnerable	3 : vulnerable	

<i>Rosa pendulina</i>	Alpine rose	V : Family of the early warn- ing list		
<i>Rosa sherardii</i>	Sherard's downy-rose	D : Data basis is insufficient		
<i>Rosa vosagiaca</i>	Glaucous dog rose	* : not endangered	3 : vulnerable	
<i>Rubus al biflorus</i>	White-flowered blackberry	D : Data basis is insufficient		
<i>Rubus nemoralis</i>	Grove blackberry	D : Data basis is insufficient		
<i>Rumex arifolius</i>	Mountain dock			
<i>Sagina saginoides</i>	Alpine pearlwort	R : extremely rare		
<i>Salix cinerea</i>	Grey willow	LC		
<i>Salix appendiculata</i>	Large-leaved willow			
<i>Salvia pratensis</i>	Meadow sage			
<i>Sambucus racemosa</i>	Black-bead elder			
<i>Sanguisorba minor</i>	Small burnet			
<i>Sanguisorba officinalis</i>	Great burnet			
<i>Sanicula europaea</i>	Wood sanicle			
<i>Saxifraga paniculata</i>	Lifelong saxifrage	V : Family of the early warn- ing list		
<i>Saxifraga stellaris</i>	Star saxifrage			
<i>Scabiosa columbaria</i>	Pincushion flower			
<i>Scheuchzeria palustris</i>	Pod grass	2 : endangered	2 : endangered	
<i>Scleranthus perennis</i>	Perennial knawel	2 : endangered		
<i>Scorzonera humilis</i>	Viper's grass	3 : vulnerable	3 : vulnerable	
<i>Sedum acre</i>	Biting stonecrop			
<i>Sedum album</i>	White stonecrop			
<i>Sedum annuum</i>	Annual stonecrop			
<i>Sedum dasyphyllum</i>	Leafy stonecrop	3 : vulnerable	3 : vulnerable	
<i>Sedum fabaria</i>	Narrow-leaved Orpine			
<i>Sedum reflexum</i>	Reflexed stonecrop			
<i>Sedum sexangulare</i>	Tasteless stonecrop			
<i>Sedum villosum</i>	Hairy stonecrop			
<i>Sempervivum x barbulatum</i>	Houseleek			
<i>Serratula tinctoria</i>	Dyer's plumeless saw-wort	3 : vulnerable	3 : vulnerable	
<i>Silaum silaus</i>	Pepper-saxifrage			
<i>Silene gallica</i>	Common catchfly	1 : threatened with extinc- tion		
<i>Silene rupestris</i>	Rock campion			
<i>Sorbus aucuparia ssp. glabrata</i>	Smooth rowan berry			
<i>Sorbus chamaemespilus</i>	False medlar	R : extremely rare		
<i>Sparganium angustifolium</i>	Floating bur-reed[	1 : threatened with extinc- tion	2 : endangered	LC
<i>Sparganium minimum</i>	Bur reed	2 : endangered	2 : endangered	
<i>Spiranthes spiralis</i>	Autumn lady's-tresses	2 : endangered	2 : endangered	
<i>Stellaria alsine</i>	Bog chickweed			
<i>Succisa pratensis</i>	Devil's bit			
<i>Stellaria nemorum</i>	Wood stitchwort			
<i>Streptopus amplexifolius</i>	Clasping twisted-stalk	2 : endangered		
<i>Swertia perennis</i>	Felwort	2 : endangered	2 : endangered	
<i>Taxus baccata</i>	Yew	3 : vulnerable	3 : vulnerable	LC
<i>Teesdalia nudicaulis</i>	Horseradish	2 : endangered		
<i>Teucrium botrys</i>	Cut-leaved germander	V : Family of the early warn- ing list		
<i>Thelypteris phegopteris</i>	Beech fern			
<i>Thesium pyrenaicum</i>	Meadowflax			
<i>Thymus alpestris</i>	Mountain thyme			

<i>Thymus pulegioides</i>	Broad-leaved thyme		
<i>Tilia platyphyllos</i>	Largeleaf linden		LC
<i>Tofieldia calyculata</i>	Alpine asphodel	3 : vulnerable	3 : vulnerable
<i>Tragopogon pratensis</i> agg.	Meadow salsify		
<i>Traunsteinera globosa</i>	Globe orchid	1 : threatened with extinction	
<i>Trichomanes speciosum</i>	Killarney fern		LC
<i>Trichophorum alpinum</i>	Alpine bulrush	2 : endangered	3 : vulnerable
<i>Trichophorum cespitosum</i>	Deergrass		
<i>Trientalis europaea</i>	Starflower		
<i>Trifolium montanum</i>	Mountain clover	3 : vulnerable	
<i>Trifolium ochroleucon</i>	Sulphur clover	2 : endangered	3 : vulnerable
<i>Trifolium rubens</i>	Red feather clover	3 : vulnerable	3 : vulnerable
<i>Trifolium spadiceum</i>	Large brown clover	2 : endangered	2 : endangered
<i>Trifolium striatum</i>	Striated clover	1 : threatened with extinction	3 : vulnerable
<i>Trisetum flavescens</i>	Golden oatgrass		
<i>Trollius europaeus</i>	Globeflower		
<i>Typha angustifolia</i>	Narrow-leaved cattail	V : Family of the early warning list	LC
<i>Utricularia minor</i> s.str.	Lesser bladderwort	2 : endangered	2 : endangered
<i>Utricularia stygia</i>	Arctic bladderwort	1 : threatened with extinction	2 : endangered
<i>Vaccinium oxycoccus</i>	Common cranberry		
<i>Vaccinium uliginosum</i>	Bog bilberry		
<i>Vaccinium vitisidaea</i>	Lingonberry		
<i>Vaccinium myrtillus</i>	Blueberry		
<i>Valeriana tripteris</i>	Three-leaved valerian		
<i>Veronica beccabunga</i>	Brooklime		LC
<i>Veronica fruticans</i>	Alpine speedwell	3 : vulnerable	
<i>Veronica montana</i>	Wood speedwell		
<i>Veronica officinalis</i>	Common speedwell		
<i>Veronica scutellata</i>	Skullcap speedwell	3 : vulnerable	LC
<i>Viola canina</i> s.l.	Dog violet	G : endangered, threat category unclear	
<i>Viola palustris</i>	March violet		
<i>Vulpia bromoides</i>	Barren fescue	3 : vulnerable	
<i>Woodsia ilvensis</i>	Oblong woodsia	1 : threatened with extinction	2 : endangered
Abbreviations: LC: Least Concern; DD: Data Deficient; NT: Near Threatened; EN: Endangered; VU: Vulnerable			

### Selected species of moss in the biosphere reserve

Scientific name	Common name	Red List Baden-Württemberg	Red List Germany
<i>Aulacomnium palustris</i>		V : Type of early warning list	V : Type of early warning list
<i>Bazzania trilobata</i>	Greater whipwort		V : Type of early warning list
<i>Bryum schleicheri</i>	Schleicher's bryum moss	2: endangered	3 : vulnerable
<i>Calliergonella cuspidata</i>	Calliergonella moss		
<i>Philonotis fontana</i>	Philonotis moss	V : Type of early warning list	V : Type of early warning list
<i>Polytrichum strictum</i>	Narrow-leaved haircap	V : Type of early warning list	3 : vulnerable
<i>Scapania subalpina</i>		G : endangered, threat category unclear	3 : vulnerable

<i>Sphagnum compactum</i>	Low sphagnum	3 : vulnerable	3 : vulnerable
<i>Sphagnum angustifolium</i>	Fine bogmoss		V : Type of early warning list
<i>Sphagnum cuspidatum</i>	Feathery bogmoss		3 : vulnerable
<i>Sphagnum fallax</i>	Flat-topped bogmoss		
<i>Sphagnum magellanicum</i>	Magellanic bogmoss		3 : vulnerable
<i>Sphagnum palustre</i>	Blunt-leaved bogmoss		3 : vulnerable
<i>Sphagnum rubellum</i>	Red bogmoss		G : Hazard category unclear
<i>Aulacomnium palustre</i>	Bog groove-moss	SCI Annex II	
<i>Buxbaumia viridis</i>	European green toad	SCI Annex II	
<i>Dicranum viride</i>	Green broom moss	SCI Annex II	

### Selected fauna in the Biosphere Reserve Black Forest

Name		Protection status			Hazard			Tar- get spe- cies
		SCI-/ VS-RL	Specially protected	Strictly protected	Red List		D	
scientific	German				IUCN	BW		
<b>Small mammals</b>								
<i>Apodemus flavicollis</i>	Yellow-necked mouse		p		LC			*
<i>Apodemus sylvaticus</i>	Wood mouse		p		LC			*
<i>Clethrionomys glareolus</i>	Bank vole							*
<i>Microtus agrestis</i>	Field vole				LC			*
<i>Microtus subterraneus</i>	European pine vole		p		LC	G	D	
<i>Muscardinus avellanarius</i>	Hazel dormouse	IV	p	s	LC			
<i>Neomys anomalus</i>	Southern water shrew		p		LC	2	2	
<i>Neomys fodiens</i>	Water shrew		p		LC	3	V	
<i>Sorex alpinus</i>	Alpine shrew		p		NT	2	1	
<i>Sorex araneus</i>	Common shrew		p		LC		*	
<i>Sorex coronatus</i>	Crowned shrew		p		LC	D	*	
<i>Sorex minutus</i>	Eurasian pygmy shrew		p		LC	3	*	
<b>Bats</b>								
<i>Barbastella barbastellus</i>	Barbastelle bat	II, IV	p	s	NT	1	1	LA
<i>Eptesicus nilssonii</i>	Northern bat	IV	p	s	LC	2	2	
<i>Eptesicus serotinus</i>	Serotine bat	IV	p	s	LC	2		LB
<i>Myotis bechsteinii</i>	Bechstein's myotis	II, IV	p	s	NT	2	3	LB
<i>Myotis daubentonii</i>	Daubenton's bat	IV	p	s	LC	3		
<i>Myotis emarginatus</i>	Notch-eared bat	II, IV	p	s	LC	0	1	LA
<i>Myotis myotis</i>	Greater mouse-eared bat	II, IV	p	s	LC	2	3	
<i>Myotis mystacinus</i>	Whiskered bat	IV	p	s	LC		3	
<i>Myotis nattereri</i>	Natterer's bat	IV	p	s	LC	2	3	LB
<i>Nyctalus leisleri</i>	Leisler's bat	IV	p	s	LC	2		
<i>Nyctalus noctula</i>	Mountain noctule bat	IV	p	s	LC		3	
<i>Pipistrellus kuhlii</i>	Kuhl's pipistrelle	IV	p	s	LC	D		
<i>Pipistrellus nathusii</i>	Nathusius' pipistrelle	IV	p	s	LC			
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	IV	p	s	LC	3		
<i>Plecotus auritus</i>	Brown long-eared bat	IV	p	s	LC	3		
<i>Plecotus austriacus</i>	Grey long-eared bat	IV	p	s	LC	1	2	LB
<i>Rhinolophus ferrumequinum</i>	Greater horseshoe bat	II, IV	p	s	LC	1	1	LA
<i>Vespertilio murinus</i>	Leather-winged bat	IV	p	s	LC			
<b>Other mammals</b>								
<i>Felis silvestris</i>	European wildcat	IV	p	s	LC			LA
<i>Lynx lynx</i>	Eurasian lynx	II, IV	p	s	LC			
<i>Castor fiber</i>	Beaver	II, IV	p	s	LC	2		LB
<b>Birds</b>								



<i>Aegolius funereus</i>	Boreal owl	x	p	s	LC	V	* N
<i>Alauda arvensis</i>	Eurasian skylark		p		LC	3	
<i>Alcedo attis</i>	Kingfisher		p		LC		
<i>Anthus pratensis</i>	Meadow pipit		p		NT	*	LB
<i>Anthus spinoletta</i>	Water pipit		p		LC	1	* LA
<i>Anthus trivialis</i>	Tree pipit		p		LC	1	V N
<i>Bonansa bonansia</i>	Hazelhen	x	p	s		1	
<i>Bubo bubo</i>	Eurasian eagle-owl	x	p	s			
<i>Carduelis citrinella</i>	Alpine citril finch	x	p		LC	1	3 LA
<i>Cinclus cinclus</i>	Dipper		p		LC		
<i>Columba oenas</i>	Stock pigeon	x	p				
<i>Corvus corax</i>	Raven		p		LC	*	*
<i>Corvus monedula</i>	Jackdaw		p		LC	3	
<i>Cuculus canorus</i>	Eurasian cuckoo		p		LC	3	
<i>Delichon urbicum</i>	Norther house martin		p		LC	3	
<i>Dendrocopus major</i>	Great woodpecker		p				
<i>Dryocopus martius</i>	Black woodpecker	x	p	s	LC	*	*
<i>Emberiza calandra</i>	Corn bunting	x	p	s		2	LA
<i>Emberiza cia</i>	European rock bunting	x	p	s	LC	1	1 LA
<i>Falco peregrinus</i>	Peregrine falcon	x	p	s	LC	*	*
<i>Falco subbuteo</i>	Eurasian hobby		p	s	LC	3	
<i>Gallinula chloropus</i>	Common moorhen		p	s	LC	3	
<i>Glaucidium passerinum</i>	Gnome owl	x	p	s	LC	*	* N
<i>Hirundo rustica</i>	Eurasian swallow		p		LC	3	
<i>Jynx torquilla</i>	Eurasian wryneck	x	p	s	LC	2	LB
<i>Lanius collurio</i>	Red-backed shrike	x	p		LC	V	*
<i>Milvus milvus</i>	Red kite	x	p	s	NT	*	
<i>Pernis apivorus</i>	European honey buzzard		p	s	LC	3	
<i>Phylloscopus bonelli</i>	Bonelli's warbler	x	p	s	LC	1	LA
<i>Phylloscopus sibilatrix</i>	Wood warbler		p		LC	2	
<i>Picoides tridactylus</i>	Eurasian three-toed woodpecker	x	p	s	LC	2	2 LA
<i>Picus canus</i>	Grey woodpecker	x	p	s	LC	V	
<i>Picus viridis</i>	Green woodpecker		p				
<i>Saxicola rubetra</i>	European whinchat	x	p		LC	1	LA
<i>Strix aluco</i>	Eurasian tawny owl		p				
<i>Tachybaptus ruficollis</i>	Little grebe		p		LC	2	
<i>Tetrao urogallus</i>	Capercaillie	x	p	s	LC	1	1 LA
<i>Tetrastes bonasia</i>	Hazelhen	x	p		LC	1	LA
<i>Turdus torquatus</i>	Ring thrush	x	p		LC	V	* N
<b>Reptiles</b>							
<i>Alytes obstetricans</i>	Midwife toad		p	s	LC	2	3 LB
<i>Anguis fragilis</i>	Blindworm		p			*	*
<i>Bombina variegata</i>	Yellow-bellied toad	II, IV	p	s	LC		LB
<i>Bufo calamita</i>	Natterjack	IV	p	s		2	LB
<i>Coronella austriaca</i>	Smooth snake	IV	p	s		3	3
<i>Hyla arborea</i>	European tree frog	IV	p	s	LC	2	LB
<i>Lacerta agilis</i>	Sand lizard	IV	p	s	LC	V	V
<i>Lacerta vivipara</i>	Common lizard		p			*	*
<i>Mesotriton alpestris</i>	Alpine newt		p				
<i>Natrix natrix</i>	Ringed snake		p		LR/lc	3	
<i>Podarcis muralis</i>	European wall lizard	IV	p	s	LC	2	LB
<i>Rana dalmatina</i>	Agile frog	IV	p	s	LC	3	
<i>Rana lessonae</i>	Pool frog	IV	p	s		G	

<i>Rana temporaria</i>	Grass frog	p		V	*
<i>Salamandra salamandra</i>	Fire salamander	p		LC 3	
<i>Triturus cristatus</i>	Warty newt	II, IV	p s	LC 2	V
<i>Vipera aspis</i>	Asp viper	p	s	LC 1	
<i>Vipera berus</i>	Adder	p		2	2 LA
<b>Butterflies and moths</b>					
<i>Adscita statices</i>	Forester	p		3	N
<i>Aglaia urticae</i>	Small tortoiseshell (butterfly)			*	
<i>Antiochris caryocarpus</i>	Orange tip			*	
<i>Apatura iris</i>	Purple emperor	p		V	V
<i>Aporia crataegi</i>	Black-veined white			V	V
<i>Argynnis adippe</i>	High brown fritillary	p		3	N
<i>Boloria aquilonaris</i>	High brown fritillary	p		2	2
<i>Boloria dia</i>	Violet fritillary	p		V	N
<i>Boloria eunomia</i>	Bog fritillary	p		3!	LB
<i>Boloria euphrosyne</i>	Pearl-bordered fritillary	p		3	N
<i>Boloria selene</i>	Silver-bordered fritillary	p		3	N
<i>Boloria titania</i>	Purple bog fritillary	p		2	LB
<i>Brintesia circe</i>	Great banded grayling	p		1!	LA
<i>Callimorpha quadripunctaria</i>	Jersey tiger	II			
<i>Carcharodus alceae</i>	Mallow skipper	p		3	N
<i>Clossiana titania</i>	Purple bog fritillary	p		2	
<i>Coenonympha glycerion</i>	Chestnut heath	p		3	N
<i>Coenonympha tullia</i>	Common ringlet	p		1	LA
<i>Colias palaeno</i>	Palaeno sulphur	p		2	2
<i>Cupido argiades</i>	Short-tailed blue			V!	N
<i>Erebia aethiops</i>	Scotch argus	p		3	N
<i>Erebia meolans</i>	Yellow-banded ringlet	p		LC *	V
<i>Fabriciana adippe</i>	High brown fritillary	p		3	
<i>Fabriciana niobe</i>	Niobe fritillary	p		2	
<i>Glaucopsyche alexis</i>	Green-underside blue	p		2	3
<i>Hamearis lucina</i>	Duke of Burgundy			3	3
<i>Hesperia comma</i>	Common branded skipper			3	N
<i>Lasiommata maera</i>	Northern wall brown			3	N
<i>Limenitis populi</i>	Poplar admiral	p		1	LA
<i>Lycaena alciphron</i>	Purple-shot copper	p		2	2
<i>Lycaena dispar</i>	Large copper	II, IV	p s	LR/nt 3!	LB
<i>Lycaena hippothoe</i>	Purple-edged copper	p		3	LB
<i>Lycaena virgaureae</i>	Scarce copper	p		2	3
<i>Maculinea arion</i>	Large blue	IV	p s	2	2
<i>Melitaea athalia</i>	Heath fritillary			3	N
<i>Melitaea cinxia</i>	Glanville fritillary			2	LB
<i>Melitaea didyma</i>	Red-band fritillary			3	2
<i>Melitaea parthenoides</i>	Meadow fritillary			LC 2!	LB
<i>Mesoacidalia aglaja</i>	Dark green fritillary	p		V	
<i>Proserpinus proserpina</i>	Willowherb hawk moth	IV	p s	DD	
<i>Nymphalis antiopa</i>	Morning cloak	p		3	V
<i>Papilio machaon</i>	Swallowtail	p		*	V
<i>Plebeius argyrognomon</i>	Reverdin's Blue	p		V	N
<i>Polyommatus bellargus</i>	Adonis blue	p		3	N
<i>Polyommatus thersites</i>	Chapman's blue	p		EN 3	N
<i>Proclossiana eunomia</i>	Bog fritillary	p		3	
<i>Pseudophilotes baton</i>	Baton blue	p		LC 2	2

<i>Pyrgus alveus</i>	Large grizzled skipper	p	2	2
<i>Rhagades pruni</i>	Forester	p	3	N
<i>Satyrus acaciae</i>	Sloe hairstreak		3	N
<i>Satyrus w-album</i>	White-letter hairstreak		V	3
<i>Thymelicus acteon</i>	Lulworth skipper		V	N
<i>Vacciniina optilete</i>	Cranberry blue	p	2	
<i>Zygaena carniolica</i>	Eastern burnet	p	3	N
<i>Zygaena minos</i>	Blood droplet burnet	p	3	N
<i>Zygaena osterodensis</i>	Spring burnet	p	2!	LB
<i>Zygaena purpuralis</i>	Transparent burnet	p	3	N
<i>Zygaena transalpina</i>	Southern six spot burnet	p	3	N
<i>Zygaena trifolii</i>	Five-spot burnet	p	3	N
<b>False darkling beetle</b>				
<i>Abdera flexuosa</i>			*	3
<i>Acalles hypocrita</i>			*	
<i>Agathidium nigripenne</i>			*	
<i>Agrilus viridis</i>	Beech agrilus	p	*	
<i>Alosterna tabacicolor</i>		p	*	
<i>Ampedus aethiops</i>			LC	*
<i>Ampedus erythrogonus</i>			*	3
<i>Ampedus pomorum</i>			*	
<i>Ampedus sanguineus</i>	Red click beetle		*	
<i>Anaspis ruficollis</i>			*	2
<i>Anaspis rufilabris</i>			*	
<i>Anastrangalia dubia</i>		p	*	
<i>Anastrangalia sanguinolenta</i>		p	*	
<i>Anisotoma humeralis</i>			*	
<i>Anobium costatum</i>			*	
<i>Anostirus purpureus</i>			*	
<i>Anthaxia helvetica</i>	Schweizer Prachtkäfer	p	*	
<i>Anthaxia quadripunctata</i>	Metallic wood-boring beetle	p	*	
<i>Anthribus albinus</i>			*	
<i>Arhopalus rusticus</i>	Rusty longhorn beetle	p	*	
<i>Aromia moschata</i>	Musk beetle	p	*	
<i>Atrecus affinis</i>			*	
<i>Bibloporus bicolor</i>			*	
<i>Bitoma crenata</i>			*	
<i>Bolitochara obliqua</i>			*	
<i>Bolitophagus reticulatus</i>			3	3
<i>Buprestis rustica</i>	Jewel beetle	p	*	
<i>Callidium violaceum</i>	Violet longhorn beetle	p	*	
<i>Cerylon fagi</i>			*	
<i>Cerylon ferrugineum</i>			*	
<i>Cerylon histeroideus</i>			*	
<i>Chrysobothris affinis</i>	Gold pit oak splendour beetle	p	*	
<i>Cis boleti</i>			*	
<i>Cis dentatus</i>			*	3
<i>Cis hispidus</i>			*	
<i>Cis nitidus</i>			*	
<i>Cis punctulatus</i>			*	
<i>Cis setiger</i>			*	
<i>Clytus arietis</i>	Wasp beetle	p	*	
<i>Clytus lama</i>		p	LC	*
				3

<i>Corticeus unicolor</i>	Darkling beetle		*	
<i>Corymbia maculicornis</i>		p	*	
<i>Corymbia rubra</i>	Red longhorn beetle	p	*	
<i>Cryphalus abietis</i>	Fir bark beetle		*	
<i>Cryphalus piceae</i>	Fir bark beetle		*	3
<i>Cryptorhynchus lapathi</i>	Poplar and willow borer		*	
<i>Crypturgus cinereus</i>	Engraver beetle		*	
<i>Crypturgus pusillus</i>	Bark beetle		*	
<i>Cychramus luteus</i>			*	
<i>Cychramus luteus</i>			V	2
<i>Dacne bipustulata</i>			*	
<i>Dasytes cyaneus</i>			*	
<i>Dasytes niger</i>			*	
<i>Dinaraea aequata</i>			*	
<i>Dirhagus lepidus</i>			*	3
<i>Dissoleucas niveirostris</i>			*	
<i>Dorcatoma punctulata</i>			3	2
<i>Dryocoetes autographus</i>	Hairy spruce bark-beetle		*	
<i>Dryophthorus corticalis</i>			V	3
<i>Endomychus coccineus</i>			*	
<i>Enicmus brevicornis</i>			*	3
<i>Enicmus testaceus</i>			G	2
<i>Ennearthron cornutum</i>			*	
<i>Epuraea pallescens</i>			*	
<i>Epuraea pygmaea</i>			*	
<i>Epuraea rufomarginata</i>			D	
<i>Ernoporicus fagi</i>	Bark beetle		*	
<i>Gabrius splendidulus</i>			*	
<i>Gaurotes virginea</i>		p	*	
<i>Glischrochilus quadriguttatus</i>			*	
<i>Gnorimus nobilis</i>	Noble chafer		3	3
<i>Grynobius planus</i>			*	3
<i>Gyrophaena boleti</i>			*	
<i>Hedobia imperialis</i>			*	
<i>Homalota plana</i>			*	
<i>Hylastes cunicularius</i>	Bark beetle		*	
<i>Hylecoetus dermestoides</i>	Large timberworm		*	
<i>Hylesinus crenatus</i>	Larch elm bark beetle		*	
<i>Hylurgops palliatus</i>	Lesser spruce shoot beetle		*	
<i>Ips typographus</i>	Typographer beetle		*	
<i>Ischnomera cyanea</i>			*	
<i>Judolia sexmaculata</i>		p	2	2
<i>Leiopus nebulosus</i>	Black-clouded longhorn beetle	p	*	
<i>Leperisinus fraxini</i>	Ash bark beetle		*	
<i>Leptura maculata</i>	Harlequin longhorn	p	*	
<i>Leptura quadrifasciata</i>		p	*	
<i>Leptusa fumida</i>			*	
<i>Leptusa pulchella</i>			*	
<i>Litargus connexus</i>			*	
<i>Lucanus vernus</i>	Stag beetle	II p		
<i>Malthinus punctatus</i>			*	
<i>Megatoma undata</i>			*	3
<i>Melandrya barbata</i>			2	2

<i>Melanotus rufipes</i>			*
<i>Melasis buprestoides</i>			*
<i>Molorchus minor</i>	Spruce shortwing beetle	p	*
<i>Monochamus sutor</i>	Small white-marmorated longhorn beetle	p	*
<i>Mordellochroa abdominalis</i>			*
<i>Mycetophagus atomarius</i>			*
<i>Nemosoma elongatum</i>			*
<i>Nudobius lentus</i>			*
<i>Oberea linearis</i>	Hazel longhorned beetle	p	*
<i>Oberea oculata</i>	Twin spot longhorn beetle	p	*
<i>Obrium brunneum</i>		p	*
<i>Octotemnus glabriculus</i>			*
<i>Orchesia minor</i>			*
<i>Orchesia undulata</i>			*
<i>Orthocis alni</i>			*
<i>Orthocis festivus</i>			*
<i>Orthotomicus laricis</i>	Pattern engraver beetle		*
<i>Oxymirus cursor</i>	Lepturine longicorn beetle	p	*
<i>Pachytodes cerambyciformis</i>		p	*
<i>Phloeocharis subtilissima</i>			*
<i>Phloeonomus minimus</i>			*
<i>Phloeonomus punctipennis</i>			*
<i>Phloeonomus pusillus</i>			*
<i>Phloeopora corticalis</i>			*
<i>Phloeostiba lapponicus</i>			*
<i>Phloeostiba planus</i>			*
<i>Phloiotrya rufipes</i>			*
<i>Phymatodes testaceus</i>	Tanbark borer	p	*
<i>Pidonia lurida</i>		p	*
<i>Pissodes piceae</i>	White fir weevil		*
<i>Pityogenes chalcographus</i>	Six-dentated bark beetle		*
<i>Pityokteines curvidens</i>			*
<i>Pityokteines vorontzovi</i>			*
<i>Pityophagus ferrugineus</i>			*
<i>Pityophthorus pityographus</i>	Fir bark beetle		*
<i>Placusa pumilio</i>			*
<i>Placusa tachyporoides</i>			*
<i>Platyrhinus resinosus</i>			*
<i>Platysoma compressum</i>			*
<i>Plectrophloeus fischeri</i>			*
<i>Pogonocherus fasciculatus</i>		p	*
<i>Polygraphus poligraphus</i>	Small spruce bark beetle		*
<i>Ptilinus pectinicornis</i>	Fan-bearing wood borer		*
<i>Pyrochroa coccinea</i>	Black-headed cardinal beetle		*
<i>Quedius plagiatus</i>			*
<i>Quedius xanthopus</i>			*
<i>Rabocerus foveolatus</i>			*
<i>Rhagium bifasciatum</i>	Two-banded longhorn beetle	p	*
<i>Rhagium inquisitor</i>	Ribbed pine borer	p	*
<i>Rhagium mordax</i>	Black-spotted longhorn beetle	p	*

<i>Rhizophagus depressus</i>			*	
<i>Rhizophagus dispar</i>			*	
<i>Rhizophagus ferrugineus</i>			*	
<i>Rhizophagus nitidulus</i>			*	
<i>Rhyncolus ater</i>			*	
<i>Ropalodontus perforatus</i>			3	
<i>Salpingus planirostris</i>			*	
<i>Salpingus ruficollis</i>			*	
<i>Saperda populnea</i>	Small poplar longhorn beetle	p	*	
<i>Saperda scalaris</i>	Long-horned beetle	p	*	
<i>Scaphidium quadrimaculatum</i>			*	
<i>Scaphisoma agaricinum</i>			*	
<i>Schizotus pectinicornis</i>			*	
<i>Sepedophilus bipunctatus</i>			*	
<i>Sepedophilus testaceus</i>			*	
<i>Silvanus bidentatus</i>			*	
<i>Sinodendron cylindricum</i>	Horned stag beetle	p	*	3
<i>Stenurella bifasciata</i>		p	*	
<i>Stenurella melanura</i>			*	
<i>Stephostethus alternans</i>			*	
<i>Sulcacis affinis</i>			*	
<i>Tachyta nana</i>			*	
<i>Taphrorychus bicolor</i>	Beech bark beetle		*	
<i>Tetratoma ancora</i>			*	3
<i>Tetropium castaneum</i>	Black spruce beetle		*	
<i>Tetropium fuscum</i>	Brown spruce longhorn beetle		*	
<i>Thanasimus formicarius</i>	Ant beetle		*	
<i>Thymalus limbatus</i>			3	3
<i>Trachodes hispidus</i>			*	
<i>Trichius fasciatus</i>	Bee beetle		*	
<i>Triplax lepida</i>			2	2
<i>Triplax russica</i>			*	
<i>Tyrus mucronatus</i>			*	3
<i>Uleiota planata</i>			*	
<i>Variimorda villosa</i>			*	
<i>Velleius dilatatus</i>			3	3
<i>Xestobium plumbeum</i>			*	
<i>Xyleborus dispar</i>	European shothole borer		*	
<i>Xyleborus germanus</i>	Smaller alder bark beetle		*	
<i>Xyleborus saxeseni</i>	Lesser shothole		*	
<i>Xyloterus domesticus</i>	European hardwood ambrosia beetle		*	
<i>Xyloterus lineatus</i>	Spruce timber beetle		*	
<b>Ground beetles</b>				
<i>Abax ovalis</i>	Carabid beetle		*	
<i>Abax parallelepipedus</i>	Ground beetle		*	
<i>Agonum fuliginosum</i>	Ground beetle		*	
<i>Agonum scitulum</i>	Ground beetle		2	3
<i>Agonum viridicupreum</i>	Ground beetle		2	LB
<i>Amara lunicollis</i>	Ground beetle		*	
<i>Bembidion ascendens</i>	Ground beetle		3	N



<i>Bembidion atrocaeruleum</i>	Ground beetle		3	N
<i>Bembidion decoratum</i>	Ground beetle		V	z
<i>Bembidion elongatum</i>	Ground beetle		V	z
<i>Bembidion monticola</i>	Ground beetle		3	N
<i>Bembidion stomoides</i>	Ground beetle		3	LB
<i>Bembidion tibiale</i>	Ground beetle		*	
<i>Calathus melanocephalus</i>	Ground beetle		*	
<i>Calosoma sycophanta</i>	European calosoma beetle		2	LA
<i>Carabus auronitens</i>	Golden ground beetle	p	*	
<i>Carabus intricatus</i>		p	LR/nt 3	3
<i>Carabus irregularis</i>	Ground beetle	p	*	V
<i>Carabus nemoralis</i>	Ground beetle	p	*	
<i>Carabus sylvestris</i>	Ground beetle	p	*	
<i>Carabus violaceus</i>	Ground beetle	p	*	
<i>Cicindela campestris</i>	Green tiger beetle	p	*	
<i>Cychrus attenuatus</i>	Ground beetle		*	
<i>Cychrus caraboides</i>	Snail hunter		*	
<i>Dromius agilis</i>			*	
<i>Dromius angustus</i>			*	
<i>Dromius fenestratus</i>			*	
<i>Elaphrus aureus</i>	Ground beetle		2	LB
<i>Elaphrus cupreus</i>	Ground beetle		*	
<i>Elaphrus uliginosus</i>	Ground beetle		2	LB
<i>Harpalus latus</i>	Ground beetle		*	
<i>Leistus piceus</i>	Ground beetle		*	
<i>Limodromus assimilis</i>			*	
<i>Lionychus quadrillum</i>	River shingle ground beetle		V	z
<i>Loricera pilicornis</i>	Eye-brow beetle		*	
<i>Molops elatus</i>	Ground beetle		*	
<i>Molops piceus</i>	Woodland ground beetle		*	
<i>Nebria castanea</i>	Ground beetle			
<i>Nebria praegensis</i>	Präg ground beetle			
<i>Nebria rufescens</i>	Ground beetle		*	
<i>Notiophilus biguttatus</i>	Ground beetle		*	
<i>Paranchus albipes</i>	Ground beetle		*	
<i>Patrobus atrorufus</i>	Ground beetle		*	
<i>Pterostichus aethiops</i>	Ground beetle		*	
<i>Pterostichus burmeisteri</i>	Ground beetle		*	
<i>Pterostichus cristatus</i>	Ground beetle		*	
<i>Pterostichus hagenbachii</i>	Ground beetle		R	R
<i>Pterostichus madidus</i>	Black clock beetle		*	
<i>Pterostichus melanarius</i>	Common black ground beetle		*	
<i>Pterostichus oblongopunctatus</i>	Ground beetle		*	
<i>Pterostichus panzeri</i>			*	
<i>Pterostichus pumilio</i>	Ground beetle		*	
<i>Pterostichus rhaeticus</i>	Ground beetle		V	
<i>Pterostichus strenuus</i>	Ground beetle		*	
<i>Thalassophilus longicornis</i>	Ground beetle		2	LB
<i>Trechus obtusus</i>	Ground beetle		*	
<i>Trechus quadristriatus</i>			*	
<i>Trechus rubens</i>	Ground beetle		2	LB
<i>Trichotichnus laevicollis</i>	Ground beetle		*	

<i>Trichotichnus nitens</i>	Ground beetle			*		
<b>Dragonflies</b>						
<i>Aeshna grandis</i>	Brown hawker	p		LC		
<i>Aeshna caerulea</i>	Alpen-Mosaikjungfer	p	s	LC	1	1
<i>Aeshna juncea</i>	Sedge hawker	p		LC	3	3
<i>Aeshna subarctica elisabetha</i>	Bog hawker	p	s		2	
<i>Calopteryx virgo</i>	Damselfly	p		LC	*	3
<i>Coenagrion hastulatum</i>	Northern damselfly	p		LC	1	LA
<i>Cordulegaster bidentata</i>	Sombre goldenring	p		NT	*	2
<i>Cordulegaster boltonii</i>	Golden-ringed dragonfly	p			*	3
<i>Cordulia aenea</i>	Downy emerald	p		LC		
<i>Leucorrhinia dubia</i>	Small whiteface	p		LC	3	2
<i>Somatochlora alpestris</i>	Alpine emerald	p	s		1	1
<i>Somatochlora arctica</i>	Northern emerald	p			2	2
<i>Somatochlora metallica</i>	Brilliant emerald	p		LC		
<i>Sympetrum danae</i>	Black meadow hawk	p				
<b>Locusts</b>						
<i>Calliptamus italicus</i>	Italian locust	p			1	2 LA
<i>Chorthippus biguttulus</i>	Bow-winged grasshopper				*	*
<i>Chorthippus brunneus</i>	Field grasshopper			LC	*	*
<i>Chorthippus mollis</i>	Grasshopper				3	*
<i>Chorthippus montanus</i>	Water-meadow grasshop- per				3	V
<i>Chorthippus parallelus</i>	Meadow grasshopper				*	*
<i>Chorthippus vagans</i>	Heath grasshopper				3	3
<i>Chrysochraon dispar</i>	Large gold grasshopper				*	*
<i>Decticus verrucivorus</i>	Wart biter				2	3 LB
<i>Euthystira brachyptera</i>	Small gold grasshopper				V	*
<i>Gomphocerippus rufus</i>	Rufous grasshopper				*	*
<i>Gryllus campestris</i>	European field cricket				V	*
<i>Mecostethus parapleurus</i>	Greek leek grasshopper				V	3
<i>Metrioptera bicolor</i>	Two-coloured bush-cricket				V	*
<i>Metrioptera brachyptera</i>	Bog bush cricket				V	*
<i>Metrioptera roeselii</i>	Roesel's bush cricket				*	*
<i>Miramella alpina</i>	Alpine grasshopper				*	*
<i>Myrmeleotettix maculatus</i>	Mottled grasshopper				3	*
<i>Nemobius sylvestris</i>	Wood cricket				*	*
<i>Oedipoda caerulea</i>	Blue-winged grasshopper	p			3	V
<i>Oedipoda germanica</i>	Red-winged grasshopper	p			1	1 LA
<i>Omocestus haemorrhoidalis</i>	Orange-tipped grasshopper				2	3 LA
<i>Omocestus rufipes</i>	Woodland grasshopper				3	2
<i>Omocestus viridulus</i>	Common green grasshop- per				V	*
<i>Pholidoptera griseoptera</i>	Dark bush cricket				*	*
<i>Platycleis albopunctata</i>	Grey bush cricket				3	*
<i>Platycleis tessellata</i>	Brown-spotted bush-cricket	p	s		2	LA
<i>Polysarcus denticauda</i>	Large saw-tailed bush cricket				3	LB
<i>Psophus stridulus</i>	Rattle grasshopper	p			2	2 LB
<i>Sphingonotus caeruleus</i>	Slender blue-winged grasshopper				3	
<i>Stauroderus scalaris</i>	Large mountain grasshop- per				3	2 LB
<i>Stenobothrus lineatus</i>	Stripe-winged grasshopper				3	3

<i>Stenobothrus stigmaticus</i>	Lesser mottled grasshopper			2	3	LB
<i>Stethophyma grossum</i>	Large moss grasshopper			2	*	LB
<i>Tetrix bipunctata</i>	Two-spotted ground-hopper			3	2	
<i>Tetrix subulata</i>	Slender ground-hopper			*	*	
<i>Tetrix tenuicornis</i>	Long-horned grasshopper			*	*	
<i>Tettigonia cantans</i>	Upland green bush cricket			*	*	
<i>Tettigonia viridissima</i>	Great green bush cricket			*	*	
<b>Fish, lampreys and crayfish</b>						
<i>Alburnoides bipunctatus</i>	Schneider					LB
<i>Astacus astacus</i>	River crayfish		p	s	VU	LB
<i>Austropotamobius pallipes</i>	River crayfish	II			EN	LA
<i>Austropotamobius torrentium</i>	Stone crayfish	II	p		DD	
<i>Cottus gobio</i>	Bullhead	II			LC	
<i>Lampetra planeri</i>	Brook lamprey	II	p		LC	
<i>Leuciscus souffia agassizi</i>	Vairone	II				LB
<i>Lota lota</i>	Burbot				LC	LA
<i>Salmo salar</i>	Atlantic salmon	II			LR/lc	LA
<b>Molluscs</b>						
<i>Unio crassus</i>	Thick-shelled river mussel	II, IV	p	s	EN	1 LA
<i>Bythinella badensis</i>	Freshwater snail of Baden				NT	3 LB
<i>Bythinella dunkeri</i>	Freshwater snail				DD	3 LB
<i>Bulgarica cana</i>	Terrestrial snail					LB
Abbreviations: II: Species of Annex II of the SCI Directive; IV: II: Species of Annex IV of the SCI Directive; X: Species of Annex 1 of the Birds Directive or migratory species; b: specially protected in accordance with the BNatSchG; s: strictly protected in accordance with the BNatSchG; LC: Least Concern; DD: Data Deficient; NT: Near Threatened; EN: Endangered; VU: Vulnerable; 1: critically endangered; 2: endangered; 3: endangered; V: Type of early warning list; R: Extremely rare; LA: State species Group A; LB: State species Group B; N: Nature space species; Z: additional target species of the target species concept Baden-Württemberg.						

19.6 Overview of the legally protected areas according to BNatSchG und LWaldG

Protection area	Name	Number	Enactment date	Municipality	District	Subregion of landscape	Area (ha)	Within biosphere reserve (%)	Description
Grouse region		1 or 2					10684.21		
Bannwald [Forest Reserve]	Schwarzhalden Expansion	100138	2012	Höchenschwand, Ühlingen-Birkendorf	Waldshut	Albtal and Schluchsee	151.1	100	
Bannwald [Forest Reserve]	Schwarzhalden	100005	1970	Höchenschwand, Ühlingen-Birkendorf	Waldshut	Albtal and Schluchsee	281.5	100	
Bannwald [Forest Reserve]	Windberg Schlucht	100060	1992	St Blasien	Waldshut	Albtal and Schluchsee	3.9	100	
Bannwald [Forest Reserve]	Scheibenfelsen Expansion		2015	Oberried	Breisgau-Black forest highlands	Dreisamtal	43.6	100	
Bannwald [Forest Reserve]	Seewald		2015	Hinterzarten	Breisgau-Black forest highlands	Dreisamtal	82.2	100	
Bannwald [Forest Reserve]	Faulbach	100008	1970	Oberried	Breisgau-Black forest highlands	Dreisamtal	76.8	100	
Bannwald [Forest Reserve]	Hirschfelsen	100041	1975	Oberried	Breisgau-Black forest highlands	Dreisamtal	21.2	100	
Bannwald [Forest Reserve]	Napf Expansion		2015	Oberried	Breisgau-Black forest highlands	Dreisamtal	20.5	100	
Bannwald [Forest Reserve]	Scheibenfelsen	100056	1991	Oberried	Breisgau-Black forest highlands	Dreisamtal	81.3	100	
Bannwald [Forest Reserve]	Napf	100009	1970	Oberried	Breisgau-Black forest highlands	Dreisamtal	175.1	100	
Bannwald [Forest Reserve]	Geschwender Halde		2015	Todtnau	Lörrach	Wiesental	50.2	100	
Bannwald [Forest Reserve]	Staltenrain		2015	Wieden	Lörrach	Wiesental	1.4	100	
Bannwald [Forest Reserve]	Wehratal Expansion		2015	Schopfheim, Wehr	Lörrach	Wiesental	110.1	100	
Bannwald [Forest Reserve]	Wehratal	100006	1970	Wehr	Waldshut	Wiesental	128.3	100	
Bannwald [Forest Reserve]	Stutzfels	100065	1993	Böllen	Lörrach	Wiesental	18	100	

<b>Bannwald [Forest Reserve]</b>	Salendobel	2015	Schönau i.Schw., Todtnau	Lörrach	Wiesental	37	100	
<b>Bannwald [Forest Reserve]</b>	Hohmüttlen	2015	Häg-Ehrsberg, Zell i. W.	Lörrach	Wiesental	68.2	100	
<b>Bannwald [Forest Reserve]</b>	Flüh	100007	Schönau, Fröhnd	Lörrach	Wiesental	49.7	100	
<b>Bannwald [Forest Reserve]</b>	Finstergund	2015	Wieden	Lörrach	Wiesental	6.8	100	
<b>Bannwald [Forest Reserve]</b>	Erleboden	2015	Utzenfeld	Lörrach	Wiesental	7.9	100	
<b>Bannwald [Forest Reserve]</b>	Ebener Wald	2015	Schönau, Tunau, Utzenfeld	Lörrach	Wiesental	41.2	100	
<b>Bannwald [Forest Reserve]</b>	Stutzfelsen Expansion	2015	Schönenberg	Lörrach	Wiesental	10.3	100	
<b>Bannwald [Forest Reserve]</b>	Tannenboden	2015	Wieden	Lörrach	Wiesental	8.3	100	
<b>SPA</b>	Southern black forest	8114441	20 November 2007	Breisgau-Black forest highlands, Lörrach, Freiburg i.Br., Waldshut	Dreisamthal, Kleines Wiesental, Wiesental, Albtal und Schluchsee, Oberer Hotzenwald	25942.9	77	Black forest highlands between Höllental and Hochrhein with Schauinsland, Feldberg, Belchen, Gletscherkessel Präg, Oberer Hotzenwald, Wehratal, Albtal, Schwarza-/Schlücht-Tal, approx. three quarters of the area is forested, the rest is primarily grassland (Allmend pastures!)
<b>SCI</b>	Blasiwald and Unterkrummen	8214341	1 January 2005	St Blasien, Schluchsee	Waldshut, Breisgau-Black forest highlands	358.8	100	Typical cultural landscape with extensively used pastures with stone fences, pasture streams, moored areas, and groves as well as extensively used mountain grazing meadows.
<b>SCI</b>	Black forest highlands around the Feldberg	8113342	1 January 2005	Hinterzarten, Bernau, Oberried, Todtnau, St Blasien, Schluchsee,	Breisgau-Black forest highlands, Lörrach, Waldshut	4118.2	82	Highest mountain in the Black Forest (1493 m) with unique flora and fauna, occurrence of alpine and high montane species. Feldsee as corrie lake with unique mud soil vegetation.
<b>SCI</b>	Valleys of Schwarza, Mettma, Schlücht, Steina	8315341	1 January 2005	Weilheim, Ühlingen-Birkendorf, Höchenschwand, Häusern, Schluchsee	Waldshut, Breisgau-Black forest highlands	637.6	16	Four deep, near-natural canyons as a habitat for river and stream biological communities. Canyon forests, rocks, screes, fir-beech forests, highland and transitional moor, acid lowland moor and meadow
<b>SCI</b>	Bernaauer Hochtal and Taubenmoos	8214342	1 January 2005	St Blasien, Ibach, Bernau	Waldshut	1698.6	100	Glacially formed highland moor, covered with extended pastures (with rough grassland vegetation) Moors are found in valley and end

									moraines where run-off is restricted. Otherwise mountain grazing meadows, wet meadows, and lowland moors.
<b>SCI</b>	Schauinsland	8013341	1 January 2005	Freiburg i.Br., Oberried	Freiburg i. Br., Breisgau-Black forest highlands	Dreisamtal	651.0	71	Landscape of the Schauinsland with extended rough grasses, mountain grazing meadows, and numerous pasture beeches in the summit area, partially near-natural forests on partially blocky slopes.
<b>SCI</b>	Black forest highlands around Hinterzarten	8114341	1 January 2005	Oberried	Breisgau-Black forest highlands	Dreisamtal	547.8	31	Erosion valleys with large scree and rock formations and natural ravine forests; glacially formed plateaus with paludification, species-rich rough meadows, and extended near-natural forests.
<b>SCI</b>	Kandelwald, Roßkopf, and Zartener Becken	8013342	1 January 2005	Freiburg i.Br., Oberried	Freiburg i. Br., Breisgau-Black forest highlands	Dreisamtal	106.7	5	Richly-structured Black Forest landscape of eastern Freiburg between Kandelgipfel and Zartener Becken with extensive near-natural deciduous forests, running waters, extensively used meadows and pastures, tall herb fringe, and rocky areas
<b>SCI</b>	Röttler Forest	8312341	1 January 2005	Schopfheim, Hausen i. W., Kleines Wiesental, Zell i. W.	Lörrach	Kleines Wiesental, Wiesental	546.4	22	Structurally rich forest and meadow area with well-formed old beech communities as a habitat for various rare plant and animal species and individual watercourses.
<b>SCI</b>	Alb zum Hochrhein	8314341	1 January 2005	Albbruck, Dachsberg, St Blasien	Waldshut	Oberer Hotzenwald	788.5	66	Deep canyon in Southern black forest with near-natural mountain stream, alluvial forests, ravine forests, and beech forests as well as rocks and scree. Species-rich grassland in the bottom of the valley. Extended beech forests in the South-west.
<b>SCI</b>	Oberer Hotzenwald	8214343	1 January 2005	Dachsberg, St Blasien, Ibach, Häusern	Waldshut	Oberer Hotzenwald, Alb-tal, and Schluchsee	1412.1	77	Plateau landscape in the granite and gneiss area of the Southern black forest with extended pastures, highland moors, and transitional moors. Extensively used mountain meadows as well as widespread near-natural beech-fir forests and moor forests.
<b>SCI</b>	Präg glacial cirques and pastures in Oberen Wiesental	8213311	1 January 2005	Wembach, Schönau i.Schw., Todtnau, Utzenfeld, Tunau, Hög-Ehrsberg, Fröhnd, Zell i. W.	Lörrach	Wiesental	4778.2	100	Extensively used pasture landscape of the Southern black forest with natural forests and the occurrence of many rare and endangered plant and animal species, important documentation of unique glacial processes.



<b>SCI</b>	Pastures near Gersbach and on the Wehra	8313341	1 January 2005	Schopfheim, Wehr, Häß-Ehrsberg	Lörrach, Waldshut	Wiesental	942.2	48	Typical cultural landscape with extensively used pastures with stone fences, pasture streams, moored areas, and groves as well as extensively used grazing meadows.
<b>SCI</b>	Belchen	8113341	1 January 2005	Böllen, Schönenberg, Aiertern, Wieden, Schönaui.Schw., Todtnau, Utzenfeld, Münstertal, Kleines Wiesental, Fröhnd	Lörrach	Wiesental, Kleines Wiesental	2456.2	86	Richly structured pasture landscape with near-natural deciduous forests with the Belchen as the third largest Black Forest summit (1414 m); well-formed glacial cirque with corrie lake, fens, transitional moors, and moraine wall.
<b>Conservation area</b>	Häusern	3,37,018	6 August 1996	Häusern	Waldshut	Albtal and Schluchsee	766.7	100	Varied forested hilltop landscape with rich wetlands, enclosed basins, and rocky knolls characterised by uniqueness, diversity, and beauty as well as excellent suitability for recreation.
<b>Conservation area</b>	Schwarzwaldtäler (Schluchttal)	3,37,007	5 March 1954	Grafenhausen, Höchenschwand, Weilheim, Waldshut-Tiengen, Ühlingen-Birkendorf	Waldshut	Albtal and Schluchsee	712.3	13	The ravine and the Schwarz, Mettna, and Haselbach flow through valleys with groups of rocks and beautiful communities of trees; unfortunately largely drained.
<b>Conservation area</b>	Schauinsland (District of Breisgau-Black forest highlands)	3,15,032	30 January 2003	Kirchzarten, Oberried, Münstertal, Ehrenkirchen	Breisgau-Black forest highlands	Dreisamtal	1659.1	44	Historical cultural landscape with glacially formed forms and alternation between forests and corridors, multi-faceted forest edges, meadows, pastures, and striking pasture beeches; natural and near-natural habitats for numerous plant and animal species within the forests and grassland area, part of the European ecological network "Natura 2000", numerous natural, partially glacially formed formations in the landscape (rocks, screes, and cirque formations) as sites of specialised plant and animal species, general recreation area.
<b>Conservation area</b>	Markgräfler Hügelland and adjacent western Southern black forest	3,15,035	12 December 2005	Auggen, Badenweiler, Müllheim, Sulzburg	Breisgau-Black forest highlands	Kleines Wiesental	3.6	< 1	
<b>Conservation area</b>	Horben	3,15,002	14 August 1995	Bollschweil, Horben, Wittau	Breisgau-Black forest highlands	Dreisamtal	843.7	100	Typical landscape of the southern KammSchwarzwald between the foothills and the plateaus. The landscape is especially characterised by the alternation between forests and extended meadows, which are divided by numerous trees.

<b>Conservation area</b>	Black forest highlands - areas of Feldberg, Friedenweiler, and Schluchsee	3,15,019	26 May 1995	Eisenbach, Feldberg, Friedenweiler, Löffingen, Titiensee-Neustadt	Breisgau-Black forest highlands	Albtal and Schluchsee	0.3	< 1	Typical Black forest highlands landscape with large-scale forests, meadows, and valleys; large-scale ecological space with significant recreational function.
<b>Conservation area</b>	St Blasien	3,37,023	23 September 2002	St Blasien	Waldshut	Albtal and Schluchsee	3578.2	100	Glacially formed landscape with rocky trough valleys, cirques, moutonnée, and glacial landfills such as primary and terminal moraines as well as numerous, mostly rocky, forested knolls; with pastures, grazing meadows, and forested area, landscape with special uniqueness, considerable diversity and beauty, general recreation function, habitat of the "Alb zum Hochrhein" SCI, landscape-forming biotope: Running water with flooding water vegetation, moist tall herb fringe, scree, rocks, canyon, slope, and mixed forest in the Albtal below St Blasien, alluvial forests with alder, ash, and willow, (especially grey alder forests).
<b>Conservation area</b>	Feldberg-Schluchsee	3,15,036	15 December 2006	Feldberg, Hinterzarten, Lenzkirch, Schluchsee	Breisgau-Hochschwarzwald	Albtal and Schluchsee	2821.7	35.8	
<b>Conservation area</b>	Feldberg	3,36,020	27 September 1991	Todtnau	Lörrach	Wiesental	124.4	100	Securing the nature reserve of the same name, maintaining the performance levels of a balanced ecosystem, and the special recovery work is to be ensured.
<b>Conservation area</b>	Feldberg	3,15,022	12 November 1991	Feldberg, Oberried	Breisgau-Black forest highlands	Dreisamthal	31.0	14	Securing the nature reserve of the same name, maintaining the performance levels of a balanced ecosystem, and the special recovery work is to be ensured.
<b>Conservation area</b>	Dachsborg	3,37,012	27 November 2001	Dachsborg, Ibach	Waldshut	Oberer Hotzenwald	4755.0	100	Nearly untouched landscape of the Hotzenwald; recreational landscape.
<b>Conservation area</b>	Breitnau-Hinterzarten	3,15,026	12 January 2004	Breitnau, Buchenbach, Feldberg, Hinterzarten, Lenzkirch, Oberried, Sankt Märgen, Titisee-Neustadt	Breisgau-Black forest highlands	Dreisamthal	0.4	< 1	Typical Black Forest with extended forested areas, hedges, meadows, pastures, and fields, rocky landscape of the valleys and gullies, ecologically contiguous space with special diversity and beauty; important recreational function for regional and supra-regional catchment area.
<b>Conservation area</b>	Bernau im Schwarzwald	3,37,022	16 September 2007	Bernau	Waldshut	Albtal and Schluchsee	3202.2		Typical Black Forest landscape featuring large-scale pastures and grazing meadows as well as forest areas at different altitudes. This represents

sents a contiguous ecological space with special uniqueness, diversity, and beauty; important recreational function.									
<b>Conservation area</b>	Albtal (Underflow of Hau- ensteiner Alb)	3,37,001	19 January 1943	Albruck, Dachsberg, Görwihl	Waldshut	Oberer Hotzenwald	277.4	68	Transverse valley of the Alb through the bed-rock to the Rhine; with towering cliffs, pristine acidophilous oak-mixed forests, oak-maple, or linden forests.
<b>Conservation area</b>	Heubronner Eck	3,15,009	15 February 1951	Münstertal	Breisgau-Black forest high-lands	Kleines Wiesental	0.3	30	Environment of the Dekan-Strohmeyer Memorial Chapel at Heubronner Eck.
<b>Conservation area</b>	Nonnenmattweiher	3,36,010	23 January 1941	Kleines Wiesental	Lörrach	Kleines Wiesental	2.8	100	Area remaining through declaration of the nature reserve of the same name.
<b>Conservation area</b>	Wehratal	3,37,009	24 October 1940	Herrischried, Wehr	Waldshut	Wiesental	60.3	36	Highly scenic erosion valley with magnificent landscapes and beautiful mixed forests on the steep slopes.
<b>Conservation area</b>	Wiedener Eck and Lückle	3,36,019	1 September 1938	Wieden	Lörrach	Wiesental	10.9	100	
<b>Conservation area</b>	Wehratal	3,36,011	24 October 1940	Herrischried, Wehr	Waldshut	Wiesental	66.3	39	Highly scenic erosion valley with magnificent landscapes and beautiful mixed forests on the steep slopes.
<b>Conservation area</b>	Wiedener Eck and Trubelsmattkopf	3,36,009	22 September 1938	Wieden	Lörrach	Wiesental	9.2	100	Beautiful high pasture with striking pasture oaks
<b>Conservation area</b>	Heubronner Eck	3,36,013	26 January 1951	Kleines Wiesental	Lörrach	Kleines Wiesental	0.3	100	Environment of the Dekan-Strohmeyer Memorial Chapel at Heubronner Eck.
<b>Conservation area</b>	Schauinsland (Urban District of Freiburg)	3,11,008	30 January 2003	Freiburg i.Br., Oberried	Freiburg	Dreisamtal	1741.0	100	Historical cultural landscape with glacially formed forms and alternation between forests and corridors, multi-faceted forest edges, meadows, pastures, and striking pasture beeches; natural and near-natural habitats for numerous plant and animal species within the forests and grassland area, part of the European network "Natura 2000", numerous natural, partially glacially formed formations in the landscape (rocks, screes, and cirque formations) as sites of specialised plant and animal species, general recreation area.
<b>Nature reserve</b>	Taubenmoos	3,276	16 September 2007	Bernau	Waldshut	Albtal and Schluchsee	204.7	100	Typical post-glacial valley of the Black Forest plateau landscape and the agriculturally formed cultural landscape with meadows, pastures, forests, and moors; mosaic of various

moors, forests, Nardus grasses, and rough meadows.									
Nature reserve	Faulbach forest reserve	3,091	11 December 1975	Oberried	Breisgau-Black forest highlands	Dreisamtal	21.6	100	Heaps with scree and old stands of fir, spruce, and beech. Typical trough valley landscape with steep slopes and rocky ridges; crippled beech-fir-spruce stands; admixture of low-growing oak, birch, whitebeam, and rowan trees.
Nature reserve	Schauinsland	3,264	12 December 2002	Freiburg i.Br., Oberried	Freiburg, Breisgau-Black forest highlands	Dreisamtal	746.3	71	Area with large spatial and structural diversity with landscape-forming pastures, moors, wetlands, springs, rocks, stone fences, trees, near-natural mountain forests, and mining tailings.
Nature reserve	Feldberg	3,001	11 February 1937	Todtnau, Bernau, Schluchsee, Hinterzarten, St Blasien, Oberried	Breisgau-Black forest highlands, Waldshut	Dreisamtal, Wiesental, Alb, and Schluchsee	3287.1	78	Area with special diversity, uniqueness, and beauty; example of a glacially formed mountain landscape as a document of the post-glacial natural history, unique plant communities with Artic-Alpine, montane, and Atlantic flora.
Nature reserve	Nonnenmattweiher	3,161	31 July 1987	Kleines Wiesental	Lörrach	Kleines Wiesental	70.8	100	Well-formed glacial cirque with steep slopes, corrie lake, and moraine walls. Peat island with the vegetation of fens and transitional moors.
Nature reserve	Belchen	3,042	11 October 1949	Wieden, Böllen, Kleines Wiesental, Schönenberg, Altmern	Lörrach	Kleines Wiesental, Wiesental	1239.6	77	Summit of the Belchen (1414 m) featuring high pastures with Nardus grass communities, partially also heather communities with berry bushes; numerous Alpine and sub-Alpine plant species on steep slopes and outcrops.
Nature reserve	Kirchspielwald-Ibacher Moos	3,262	27 November 2001	Dachsberg, Ibach	Waldshut	Oberer Hotzenwald	283.0	50	Moor area with numerous endangered plant and animal species; mosaic of various habitats and near-natural forests, moors, Nardus grasses, rough meadows, and river sections; little traffic and few settlements, largely undisturbed area.
Nature reserve	Horbacher Moor	3,012	5 January 1939	Dachsberg	Waldshut	Oberer Hotzenwald	11.7	100	Highland moor in Southern black forest (Hotzenwald); forest edge of mountain pine, which get smaller towards the centre of the moor; open moor area with well-formed regeneration complex.

<b>Nature reserve</b>	Ennersbacher Moor	3,176	21 December 1990	Dachsberg	Waldshut	Oberer Hotzenwald	20.0	100	Highland moor and fens as well as parts of adjacent forests as a habitat for rare and endangered plant and animal species.
<b>Nature reserve</b>	Bruggmatt	3,078	10 December 1969	Dachsberg	Waldshut	Oberer Hotzenwald	2.1	100	Mountain meadow and spring fen with floristic rarities in a large forest area in the Southern black forest (Hotzenwald).
<b>Nature reserve</b>	Kohlhütte-Lampenschweine	3,221	21 April 1996	lbach	Waldshut	Oberer Hotzenwald	150.7	100	Representative landscape with treeless pastures, highland and lowland moor complexes, near-natural forest communities and open, rocky slopes.
<b>Nature reserve</b>	Friedrich-August-Grube	3,270	11 April 2005	Dachsberg	Waldshut	Oberer Hotzenwald	6.3	100	Habitat of highly specialised lichen communities on sites rich in heavy metals as well as species-rich rock vegetation. Area with habitat types/species of the SCI directive. Mosaic of reed, sedge, transitional moor, and rough grassland.
<b>Nature reserve</b>	Snowdrop site in communal district of Buch, District of Waldshut	3,046	31 March 1953	Albruck	Waldshut	Oberer Hotzenwald	1.8	100	South-east slope on the Alb consisting mainly of ash and hazel; partially rocky subsurface; geophyte and fern-rich herbaceous layer.
<b>Nature reserve</b>	Rüttewies-Scheibenrain	3,244	10 December 1997	Dachsberg	Lörrach	Oberer Hotzenwald	64.3	100	Diverse mosaic of various habitats (e.g. highland and lowland moors, wet and rough meadows, rough grasses, and forests) as a habitat for endangered plant and animal species and a biotope network of extensively used rough grasses.
<b>Nature reserve</b>	Langenbach-Trubelsbach	3,207	15 May 1995	Todtnau	Lörrach	Wiesental	36.0	100	Diverse mosaic of highland and transitional moors, fens, wet meadows, Nardus grasses and other biotopes; important topic of research, especially moor research.
<b>Nature reserve</b>	Wehratal forest reserve	3,122	24 September 1982	Wehr	Waldshut	Wiesental	127.7	100	Rich natural landscape with special uniqueness and beauty; outstanding importance for science; habitat of numerous rare and endangered plant and animal species.
<b>Nature reserve</b>	Wiedener Weidberge	3,279	20 September 2009	Wieden	Lörrach	Wiesental	379.0	100	Large-scale extensively used grassland area with a high structural and species diversity as well as individual pasture beeches; various SCI habitat types, especially species-rich Nardus grasses.
<b>Nature reserve</b>	Utzenfluh	3,034	6 December 1940	Utzenfeld	Lörrach	Wiesental	272.5	100	Rock outcrops from Kleinen und der Großen Utzenfluh (porphyry, greywacke and biotite granite); interesting flora and fauna; during

the expansion of the protection area (2011), the surrounding pastures were included.									
<b>Nature reserve</b>	Präg Glacial Cirques	3,201	27 June 1994	Todtnau, Tunau, Schöna	Lörrach	Wiesental	2866.8	100	Important document of unique glacial process; area with diverse natural communities with large-scale, extensively used pastures and near-natural forests; habitat for many rare and endangered plant and animal species.
<b>Protected woodland</b>	Rollspitz	200412	15 October 2013	Wieden	Lörrach	Wiesental	22.7	100	
<b>Protected woodland</b>	Zastler Tal	200356	20 May 2003	Oberried	Breisgau-Black forest high-lands	Dreisamtal	373.4	100	
<b>Protected woodland</b>	Zastler Loch	200358	23 August 2004	Feldberg, Oberried	Breisgau-Black forest high-lands	Dreisamtal	43.0	51	
<b>Protected woodland</b>	Zastler ice holes	200019	12 September 1994	Oberried	Breisgau-Black forest high-lands	Dreisamtal	4.8	100	
<b>Protected woodland</b>	Wittmoos	200357	23 August 2004	Oberried	Breisgau-Black forest high-lands	Dreisamtal	9.5	100	
<b>Protected woodland</b>	Schauinsland	200363	23 August 2004	Freiburg i.Br.	Freiburg i.Br.	Dreisamtal	285.4	100	
<b>Protected woodland</b>	Ob dem Hirschsprung	200198	3 August 1987	Wehr	Waldshut	Wiesental	31.5	100	
<b>Protected woodland</b>	Nonnenmattweiherhalde	200155	27 February 1996	Kleines Wiesental	Lörrach	Kleines Wiesental	17.5	100	
<b>Protected woodland</b>	St Wilhelm ice holes	200020	15 March 1991	Oberried	Breisgau-Black forest high-lands	Dreisamtal	2.7	100	
<b>Protected woodland</b>	Mutterslehener Moos	200183	1 October 1985	lbach	Waldshut	Oberer Hotzenwald	6.1	100	
<b>Protected woodland</b>	Albtal-Bergwald	200309	25 March 1992	St Blasien	Waldshut	Albtal and Schluchsee	38.3	100	
<b>Protected woodland</b>	Burgfelsen	200252	15 August 1988	Zell i. W., Hüg-Ehrsberg	Lörrach	Wiesental	7.3	100	
<b>Protected woodland</b>	Eschenmoos	200018	13 December 1973	Schluchsee	Breisgau-Black forest high-lands	Albtal and Schluchsee	36.8	100	
<b>Protected woodland</b>	Kirchspielwald - lbacher Moos	200398	27 November 2001	Herrischried, lbach, Todtmoos	Waldshut	Oberer Hotzenwald	70.0	24	



# 19.7 Habitat types and value-adding species of the SCI in the Biosphere Reserve Black Forest

Habitat types of Annex II of the SCI directive in the SCI regions in the biosphere reserve												
	Dreisamtal, Wiesental, Alb, and Schluchsee	Dreisamtal			Kleines Wiesental	Wiesental			Albtal and Schluchsee	Oberer Hotzenwald		
SCI in the biosphere reserve	Black forest highlands around the Feldberg and Bernauer Hochtal	Black forest highlands around Hinterzarten	Kandelwald, Roßkopf, and Zartener Becken	Schauinsland	Röttler Wald und Dinkelberg	Pastures near Gersbach and on the Wehra	Belchen	Präg glacial cirques and pastures im Oberen Wiesental	Blasiwald and Unterkrummen	Valleys of Schwarza, Mettna, Schlücht, Steina	Alb zum Hochrhein	Oberer Hotzenwald
		8114341	8013342	8013341	8312311	8313341	8113341	8213311	8214341	8315341	8314341	8214343
Registered SCI-habitat types				MaP 2008		MaP 2015		MaP 2015	MaP 2010			MaP 2010
3110	Nutrient-poor still water	9.0	111.0									
3130	Nutrient poor to moderately nutrient-rich still water		2.3									3.1
3150	Natural nutrient-rich lakes									3.0		
3160	Dystrophic lakes		2.0									
3180	Temporary karst lakes											
3260	Watercourses flooding water vegetation	4.0		26.7	2.4	10.0	14.8	40.2	0.6	50.0	17.0	18.9
4030	Dry heaths	51.9	0.5	1.0	2.1		0.06	80.9	33.7			28.9
5130	Juniper heaths		19.0	4.0	0.4			7.0	5.8	3.6		3.8
6150	Bereo-Alpine grassland							0.2				

Habitat types of Annex II of the SCI directive in the SCI regions in the biosphere reserve													
		Dreisamtal, Wiesental, Alb, and Schluchsee	Dreisamtal			Kleines Wiesental	Wiesental			Albtal and Schluchsee		Oberer Hotzenwald	
SCI in the biosphere reserve  Registered SCI-habitat types		Black forest highlands around the Feldberg and Ber-nauer Hochtal	Black forest highlands around Hinter-zarten	Kandelwald, Roßkopf, and Zartener Be-cken	Schauins-land	Röttler Wald und Dinkel-berg	Pastures near Gersbach and on the Wehra	Belchen	Präg glacial cirques and pastures im Oberen Wie-sental	Blasiwald and Unter-krummen	Valleys of Schwarza, Mettna, Schlücht, Steina	Alb zum Hochrhein	Oberer Hotzen-wald
		8114311	8114341	8013342	8013341	8312311	8313341	8113341	8213311	8214341	8315341	8314341	8214343
					MaP 2008		MaP 2015		MaP 2015	MaP 2010			MaP 2010
6210	Calcareous grasslands			4.0		10.0		2.7			22.3		
6230*	Species-rich Nardus gras-ses	527.6	101.5	33.9	102.3		96.1	400.0	556.4	118.7	4.0		189.7
6430	Humid tall herb fringes	54.2	4.3	2.7	0.5	3.6	0.6	5.3	3.8	0.3	60.8	8.0	1.6
6510	Rough lowland grazing meadows	0.1	3.0	109.0		233.0	14.1	20.0	58		98.0	34.0	1.8
6520	Mountain grazing meadows	85.0	33.0	17.0	29.7	0.4	38.2	38.0	38	24.8	70.0	3.0	88.2
7110*	Near-natural highland moors	9.3	9.0								1.0	2.5	5.7
7120	Damaged highland moors	11.5	13.5				0.5						5.9
7140	Transitional moors and quaking bogs	15.3	10.0		2.3			1.0		0.1			30
7150	Peat bog-hollows	0.0	0.1					0.0				0.0	0
7220*	Tufa formation										1.0		
7230	Alkaline fens	1.0	0.5						0.4	0.5	0.5		13.7

Habitat types of Annex II of the SCI directive in the SCI regions in the biosphere reserve											
		Dreisamtal			Kleines Wiesental	Wiesental			Albtal and Schluchsee		Oberer Hotzenwald
		Black forest highlands around Hinterzarten	Kandelwald, Roßkopf, and Zartener Becken	Schauinsland		Pastures near Gersbach and on the Wehra	Belchen	Präg glacial cirques and pastures in Obere Wiesental	Blasiwald and Unterkrummen	Valleys of Schwarza, Mettma, Schlücht, Steina	
SCI in the biosphere reserve	Registered SCI-habitat types	8114311	8114341	8013342	8013341	8312311	8313341	8113341	8213311	8214341	8214343
					MaP 2008		MaP 2015		MaP 2010		MaP 2010
8110	Hoch montane siliceous scree	1.0			0.6				1.2		
8150	Siliceous scree	22.0	23.5		1		1.1	11.2	19.6	25.0	0
8210	Limestone rocks with crevice vegetation	0.1	0.1			0.1		0.1		0.8	
8220	Silicate rocks with crevice vegetation	50.1	10.2	1.5	1.8		17.2	91.3	30	10.0	2
8230	Pioneer turf on silicate rock knolls		1.0				0.03	2.0	0.7	1.0	0
8310	Caves and overhanging rocks					0.0			0		
9110	Wood rush-beech forest	535.3	94.2	390.9	120.7	1158.3	378.8	289.8	502.2	78.6	11.7
9130	Woodruff-beech forest	85.0	77.9	68.8	25.6	1036.7	224.7	152.9	298	379.3	
9140	Sub-Alpine beech forests	141.4	4.1	7.5	5.3			18.7	33.2		
9150	Orchid-beech forests									6.4	
9170	Bedstraw-oak-hornbeam forest									2.4	0.7

Habitat types of Annex II of the SCI directive in the SCI regions in the biosphere reserve													
		Dreisamtal, Wiesental, Alb, and Schluchsee	Dreisamtal			Kleines Wiesental	Wiesental			Albtal and Schluchsee		Oberer Hotzenwald	
SCI in the biosphere reserve  Registered SCI-habitat types		Black forest highlands around the Feldberg and Bernauer Hochtal	Black forest highlands around Hinterzarten	Kandelwald, Roßkopf, and Zartener Becken	Schauinsland	Röttler Wald und Dinkelberg	Pastures near Gersbach and on the Wehra	Belchen	Präg glacial cirques and pastures in the Obere Wiesental	Blasiwald and Unterkrummen	Valleys of Schwarza, Mettna, Schlucht, Steina	Alb zum Hochrhein	Oberer Hotzenwald
		8114311	8114341	8013342	8013341	8312311	8313341	8113341	8213311	8214341	8315341	8314341	8214343
					MaP 2008		MaP 2015		MaP 2015	MaP 2010			MaP 2010
9180*	Ravine and slope mixed forests	17.9	40.5	1.4	0	4.3	60.7	2.9	78.3		179.2	36.8	
91D0*	Bog woodland	12.8	47.3							8.4	7.3	0.5	56
91E0*	Alluvial forests with alder, ash, and willow	20.1	10.7	42.2		24.7	6.7	23.5	48.5		48.8	24.0	7.8
9410	Acidophilous coniferous forests	172.0	150.4				2.4	35.0	3.5		41.9	0.1	176.7

If no management plans have been created, the information has been taken from the registered areas and relate to the entire SCI (numerical data in ha).

Species in Annex II of the SCI directive in the SCI regions of the biosphere reserve													
	Dreisamthal Wiesental Alb and Schluch- see	Dreisamthal			Kleines Wiesental	Wiesental		Alb and Schluchsee		Oberer Hotzenwald			
SCI in the biosphere reserve	Black forest high-lands around the Feldberg and Bernauer Hochtal	Black forest high-lands around Hinterzarten	Kandelwald, Roßkopf, and Zartener Becken	Schauinsland	Röttler Wald und Dinkelberg	Pastures near Gersbach and on the Wehra	Präg glacial cirques and pastures im Oberen Wiesental	Belchen	Blasiwald and Unterkrummen	Valleys of Schwarza, Mettma, Schlücht, Steina	Alb zum Hohenstein	Oberer Hotzenwald	
SCI Annex II species reported	8114311	8114341	8013342	8013341	8312341	8313341	8213311	8113341	8214341	8315341	8314341	8214343	
				MaP 2008		MaP 2015	MaP 2015		MaP 2010			MaP 2010	
1037 Green club-tailed dragonfly <i>Ophiogomphus cecilia</i>													
1044 Southern damselfly <i>Coenagrion mercuriale</i>													
1078* Scarlet tiger moth <i>Callimorpha quadripunctaria</i>													
1083 Stag beetle <i>Lucanus cervus</i>													
1092 River crayfish <i>Austropotamobius pallipes</i>													
1093* Stone crayfish <i>Austropotamobius torrentium</i>													
1096 Western brook lamprey <i>Lampetra planeri</i>													
1163 Bullhead <i>Cottus gobio</i>													
1166 Warty newt <i>Triturus cristatus</i>													
1193 Yellow-bellied toad <i>Bombina variegata</i>													
1308 Barbastelle <i>Barbastella barbastellus</i>													
1321 Notch-eared bat <i>Myotis emarginatus</i>													
1323 Bechstein's bat <i>Myotis bechsteinii</i>													
1324 Greater mouse-eared bat <i>Myotis</i>													
1337 Beaver <i>Castor fiber</i>													
1361 Lynx <i>Lynx lynx</i>													

Species in Annex II of the SCI directive in the SCI regions of the biosphere reserve														
	Dreisamtal Wiesental Alb and Schluch- see	Dreisamtal			Kleines Wiesental	Wiesental			Alb and Schluchsee		Oberer Hotzenwald			
SCI in the biosphere reserve	Black forest high- lands around the Feldberg and Ber- nauer Hochtal	Black forest high- lands around Hinterzarten	Kandelwald, Roßkopf, and Zartener Be- cken	Schauins- land	Röttler Wald und Dinkel- berg	Pastures near Gers- bach and on the Wehra	Präg glacial cirques and pastures im Oberen Wie- sental	Belchen	Blasiwald and Unter- krummen	Valleys of Schwarza, Mettma, Schlücht, Steina	Alb zum Hochr- hein	Oberer Hotzen- wald		
SCI Annex II species reported	8114311	8114341	8013342	8013341	8312341	8313341	8213311	8113341	8214341	8315341	8314341	8214343		
				MaP 2008		MaP 2015	MaP 2015		MaP 2010			MaP 2010		
1381	Green broom moss <i>Dicranum viride</i>													
1386	Buxbaumia moss <i>Buxbaumia viridis</i>													
1387	Rogers' gold hair moss <i>Orthotrichum rogeri</i>													
1393	Slender green feather-moss <i>Drepanocladus vernicosus</i>													
1421	Killamey fern <i>Trichomanes speciosa</i>													
1902	Lady's slipper <i>Cypripedium calceolus</i>													

If no management plans have been created, the information has been taken from the registered areas and relate to the entire SCI.



## 19.8 Legally protected biotopes in accordance with §30 of the BNatSchG and §30a of the LWaldG

Legally protected biotope types the Biosphere Reserve Black Forest			
Legally protected biotope types		Area [ha]	
<b>Forests</b>	Feldhecken, Feldgehölze	6.0	3474.4
	Oxbow lakes, natural and semi-natural areas of standing inland waters including their banks (including Lake Constance), moor waters	0.3	
	Rock formations, scree, caves, sink holes, island dunes, loam and loess walls	345.8	
	Bushes and natural forests of dry and warm locations each including their perennial borders	128.1	
	Ravines, dry walls, rock bolt	1.4	
	Moors, bogs, reed beds, vineyards, aquatic vegetation	186.3	
	Natural streams, marshes, riparian forests	123.9	
	Near-natural ravine, scree, and talus forests; regional rarely near-natural forest communities	1607.6	
	Headwaters, natural and semi-natural areas flowing inland waters including their banks, regularly flooded areas	583.0	
	Wetland meadows, wet meadows rich in sedge and rush	34.6	
	Structurally rich forest edges	2.6	
	Ravines and gullies in the forest, cirques and kettle holes in the forest with near-natural understorey vegetation	231.0	
	Dry and neglected grasslands, juniper, dwarf, and gorse heaths, each including their edges	148.6	
	Forests as remnants of historical farming with near-natural understorey vegetation	75.1	
<b>Open land</b>	Oxbow lakes, natural and semi-natural areas of standing inland waters including their banks (including Lake Constance), moor waters	3.2	4785.6
	Feldhecken, Feldgehölze	199.0	
	Rock formations, scree, caves, sink holes, island dunes, loam and loess walls	6.1	
	Ravines, dry walls, rock bolt	18.8	
	Moors, bogs, reed beds, vineyards, aquatic vegetation	264.7	
	Natural streams, marshes, riparian forests	57.7	
	Headwaters, natural and semi-natural areas flowing inland waters including their banks, regularly flooded areas	133.6	
	Wetland meadows, wet meadows rich in sedge and rush	339.5	
	Dry and neglected grasslands, juniper, dwarf, and gorse heaths, each including their edges	3762.9	
<b>total</b>			<b>8260.0</b>

## 19.9 Bibliography

### Chapter 9

Bieling, C. (2003): Naturnahe Waldbewirtschaftung durch private Eigentümer. Akzeptanz und Umsetzung naturnaher Bewirtschaftungsformen im Kleinprivatwald des Southern black forestes. Dissertation. Universität Freiburg.

Bode, F., Mangold, M. (2007): Landschaftsgeschichte um Hinterzarten und Menzenschwand in den letzten 100 Jahren. *Mitt. Bad. Landesver. Naturk. u. Natursch. Freiburg i.Br.* (1), S. 105-128.

Bode, F., Müller, M. (2003): Der historische Landnutzungswandel im Menzenschwander Tal und sein Einfluss auf Vegetation und Wärmehaushalt. *Freiburger Universitätsblätter* (2), S. 137-151.

Buhlmann, M. (2007): Geschichte des Schwarzwaldes. *Vertex Alemanniae. Schriftenreihe des Vereins für Heimatgeschichte St. Georgen* (34/1-2).

Goldenberg, G. (1993): Frühe Blei-, Silber- und Kupfergewinnung im Southern black forest. Hüttenplätze und Bergschmieden. In: H.Steuer/U.Zimmermann (Hrsg.), *Montanarchäologie in Europa. Archäologie und Geschichte*

Kohlhammer, K., Konold, W. (2013): Fallstudie "Häg-Ehrsberg und Fröhnd (Schwarzwald)". In: Heinl, T., Stadelbauer, J. (Hg.): *Die Kulturlandschaft des ländlichen Raums in Baden-Württemberg*. Hanover: ARL, S. 85–102.

Ludemann, T. (2001): Das Waldbild des hohen Schwarzwaldes im Mittelalter. Ergebnisse neuer holzkohleanalytischer und vegetationskundlicher Untersuchungen. *Alemannisches Jahrbuch* 1999/2000, S. 43–64.

Ludemann, T. (2002): Historische Holznutzung und Waldstandorte im Southern black forest. *Freiburger Forstl. Forschung* (18), S. 194-207.

Ludemann, T. (2005): Räumuster historischer Energieholznutzung am Beispiel der Holzkohleherstellung im Southern black forest. *Palyno-Bulletin* (1 (3/4)), S. 30.

Ludemann, T. (2010): Fuel wood economy of historical mining in the Black Forest (Germany). In: Anreiter, P. et al. (Hg.): *Mining in European history and its impact on environment and human societies*, S. 183–186.

Ludemann, T. (2015): Kohlplätze. Landschaftsarchive der historischen Energieholznutzung (Waldköhlerei), einzigartige Informationsquelle zur regionalen Vegetations- und Wirtschaftsgeschichte. *Jahrbuch für Regionalgeschichte* (32), S. 87–108.

Ludemann, T., Nelle, O. (2002): Die Wälder am Schauinsland und ihre Nutzung durch Bergbau und Köhlerei. *Ber. Freiburger Forstl. Forschung* (15).

Luick, R. (1997): Preservation, maintenance and development of species-rich grassland habitats through extensive grazing with gentle cattle breeds. Abschlußbericht des gleichlautenden Forschungsvorhabens (1994-1997) im Auftrag der Stiftung Naturschutzfonds am Ministerium Ländlicher Raum Bad.-Württ.

Markl, G., Lorenz, S. (2004): Silber Kupfer Kobalt. Bergbau im Schwarzwald, Schriftenr. des Mineralienmuseums Oberwolfach, Bd. I

Metz, R., (1962): Der frühere Bergbau im Suggental und der Urgraben am Kandel im Schwarzwald.- *Alemann. Jb.*, 1961, 7 Abb., Lahr 1962, 281-316

Metz, R., Richter, M., Schürenberg, H. (1957): Die Blei-Zink-Erzgänge des Schwarzwaldes, *Beih. Geol. Jb.*, 29, Hannover 1957

Nelle, O., Guggenbichler, E., Robin, V., Jansen, D., Ludemann, T. (2014): K 653 im Galgendobel. ein Kohle- meilerplatz im südlichen Schwarzwald. *Archäolog. Ausgrabungen in Bad.-Württ.* 2013, S. 320–322.

Priesner, P. (1982): Der Bergbau im Schauinsland von 1340 - 1954. 1. Aufl, Die Geschichte der Gemeinde Hofgrund (Schauinsland), ; Bd. 1, Schillinger. Freiburg i.Br.

Rauschkolb, M. (2006): Zwischen persönlicher Freiheit und Elend – Betrachtungen zum sozialen Status von Sulzburger Bergleuten um 1200, *Markgräflerland* 2/2006, 56-67.

Reif, A., Katzmeier, R. (1999): Zur Landnutzungsgeschichte der Allmendweiden von Ibach und Witten- schwand, Southern black forest. *Ber. Naturf. Ges. Freiburg i.Br.*, S. 86–87.

- Schneider, K. (1995): Bergbauspuren. In Das Glottertal. Geschichte und Erinnerungen. Beitrag zur 25-Jahr-Feier der Gesamtgemeinde Glottertal, Hoch, B. et al. (Hrsg.), 1995, 176-181
- Sprandel, R. (1971): Bergbau und Verhüttung im frühmittelalterlichen Europa. *Sett. di Studio del Centro Italiano di Studi sull'alto Medioevo* 18 (Kongreß Spoleto 1970), 583-601
- Steen, H. (2004): Geschichte des modernen Bergbaus im Schwarzwald. 485 S., zahlr. Abb., Norderstedt (Books on Demand GmbH)
- Steen, H., (1995): Bergbau und Mineralien aus dem Suggental bei Waldkirch im mittleren Schwarzwald, Der Erzgräber, 2, 7 Abb., 1 Tab., Oberwolfach 1995, 104-117
- Steuer, H., Zettler, A. (1996): Der Bergbau und seine Bedeutung für Freiburg. In Haumann, H., Schadeck, H., Geschichte der Stadt Freiburg im Breisgau, Bd. 1: Von den Anfängen bis zum „Neuen Stadtrecht“ von 1529, Stuttgart 1996
- Steuer, H., (1991): Erzbergbau im Schwarzwald zur Salierzeit
- Straßburger, M. (2015): Montanarchäologie und Wirtschaftsgeschichte des Bergbaus im Schauinsland vom 13. Jahrhundert bis um 1800. Hg. v. Bernd Päffgen. Bonn, Habelt, Universitätsforschungen zur prähistorischen Archäologie, 275.
- Werner, W., Dennert, V. (2004): mit Beiträgen v. Meyerdirks, U., Tegel, W.; Lagerstätten und Bergbau im Schwarzwald. Ein Führer unter besonderer Berücksichtigung der für die Öffentlichkeit zugänglichen Bergwerke, 271 Abb., Freiburg (Landesamt f. Geol. Rohst. Bergb. Baden-Württ.) 2004, 334 S.
- Werner, W., Franzke, H. J. (1994): Tektonik und Mineralisation der Hydrothermalgänge am Schwarzwaldrand im Bergbaurevier Freiamt-Sexau, Abh. geol. Landesamt Baden-Württemberg., 14, 22 Abb., 1 Tab., 3 Taf., Freiburg 1994, 27-98
- Werner, W., Franzke, H. J., Wirsing, G., Jochum, J., Lüders, V., Wittenbrink, J. (2002): mit einem Beitrag v. Steiber, B., Die Erzlagerstätte Schauinsland bei Freiburg im Breisgau – Bergbau, Geologie, Hydrogeologie, Mineralogie, Geochemie, Tektonik und Lagerstättenentstehung, Ber. Naturforsch. Ges. Freiburg i. Br., 92/1, 110 S., 26 Abb., 10 Tab., 16 Taf., Freiburg 2002
- Zimmermann, U. (1993): Untersuchungen zum frühen Bergbau im Southern black forest. In: Steuer H. / Zimmermann U.(Hrsg.), Montanarchäologie in Europa. Archäologie und Geschichte 4. Sigmaringen, 201-230. Englisch in: R. Francovich (Ed.), Archeologia delle Attività Estrattive e Metallurgiche. Siena 1993, 453-484

## Chapter 10

Available online at <http://de.statista.com>.

Statistical Office of Baden-Württemberg. Available online at <http://www.statistik.baden-wuerttemberg.de/>.

## Chapter 11

Badischer Landesverein für Naturkunde und Naturschutz (BLNN) (Hg.) (2002): Der Hotzenwald. Beiträge zur Natur und Kultur einer Landschaft im Southern black forest, Mitteilungen des Badischen Landesvereins für Naturkunde und Naturschutz, Heft 1.

Dierssen, B., Dierßen, K. (1984): Vegetation und Flora der Schwarzwaldmoore, Veröffentlichungen für Naturschutz und Landschaftspflege in Baden-Württemberg Beiheft, 39, Landesanst. für Umweltschutz Baden-Württemberg Inst. für Ökologie und Naturschutz. Karlsruhe.

Eggers, H. (1957): Die Weidewirtschaft im südlichen Schwarzwald. Dissertation. University of Freiburg.

Friedmann, A. (1998): Pollenanalytische Untersuchungen zur holozänen Vegetations- und Landschaftsgeschichte des westlichen Black forest highlands. *Ber. Naturf. Ges. Freiburg i.Br.*, S. 57-84.

Habbe, K. (2001): Die Entwicklung des Flurbildes in den Gemeinden am Nordabhang des Feldberg-Massivs. *Alemannisches Jahrbuch*.

Heisner, U. (2003): Die Rolle des Bodenskeletts bei der nachhaltigen Sicherung von Speicher- und Regelfunktionen der Waldböden im Southern black forest. Dissertation. University of Freiburg.

- Henschel, K., Konold, W. (2008): Geschichte der Allmendflächen und Ackerterrassen in der Gemeinde Hög-Ehrsberg (Southern black forest). *Berichte der Naturforschenden Gesellschaft zu Freiburg i. Br.* (98), S. 143-180.
- Landesanstalt für Umweltschutz [State Institute for Environmental Protection] Baden-Württemberg. (ed.) (1989): The Belchen. Geschichtlich-naturkundliche Monographie des schönsten Schwarzwaldberges. Institute for Ecology and Nature Conservation. Karlsruhe, Inst. für Ökologie u. Naturschutz, Die Natur- und Landschaftsschutzgebiete Baden-Württembergs, Bd. 13.
- Landesanstalt für Umweltschutz [State Institute for Environmental Protection] Baden-Württemberg (2004): Wälder, Weiden, Moore. Naturschutz und Landnutzung im Oberen Hotzenwald. 1. Aufl, Naturschutz-Spectrum Themen, 94, Verl. Regionalkultur. Ubstadt-Weiher. Online verfügbar unter <http://www.gbv.de/dms/faz-rez/FNUW20060712737120.pdf>.
- Landesarchivdirektion Baden-Württemberg (Hrsg.) (Hg.) (1994): The District of Lörrach. Staatsarchiv; Baden-Württemberg; Landkreis Lörrach. Sigmaringen, Thorbecke, Kreisbeschreibungen des Landes Baden-Württemberg.
- Liehl, E., Sick, W. D. (1989): Der Schwarzwald für den, der mehr erfahren möchte, Konkordia Verlag. Bühl.
- Ludemann, T., Röske, W., Krug, M. (2007): Atlas zur Vegetation des Southern black forestes - Feldberg, Belchen, Oberes Wiesental, Verein für forstliche Standortkunde und Forstpflanzenzüchtung [Atlas of vegetation of Southern black forest - Feldberg, Belchen, Upper Wiesental, Association of Forest Site Science and Forest Tree Breeding]. Freiburg.
- Metz, R. (1980): Geologische Landeskunde des Hotzenwaldes, M. Schauenburg. Lahr.
- Müller, K. (Hg.) (1948): Der Feldberg im Schwarzwald. Naturwissenschaftliche, landwirtschaftliche, forstwirtschaftliche, geschichtliche und siedlungsgeschichtliche Studien. Badischer Landesverein für Naturkunde und Naturschutz. Freiburg i. Br., Bielefeld.
- Regierungspräsidium Freiburg (2012): Der Feldberg. Subalpine Insel im Schwarzwald, Thorbecke. Ostfildern.
- Reichelt, G. (1964): Die naturräumlichen Einheiten auf Blatt 185 Freiburg im Brsg. Bad Godesberg.
- Rümmele, E. (1977): Der Hinterhag. Zur Geschichte der Gemeinde Hög-Ehrsberg., Gemeinde Hög-Ehrsberg (Hrsg.).
- Schnitzer, U., Meckes, F. (1989): Schwarzwaldhäuser von gestern für die Landwirtschaft von morgen, Arbeitsheft / Landesdenkmalamt Baden-Württemberg, 2, Theiss. Stuttgart.
- Schwabe, A., Kratochwil, A. (1987): Weidbuchen im Schwarzwald und ihre Entstehung durch Verbiß des Wälderviehs. Verbreitung Geschichte und Möglichkeiten der Verjüngung, Veröffentlichungen für Naturschutz und Landschaftspflege in Baden-Württemberg : Supplement, 49, Landesanstalt für Umweltschutz [State Institute for Environmental Protection] Baden-Württemberg. Karlsruhe.
- Seitz, B.-J., Meineke, S., Schwineköper, K., Röske, W., Schach, P. (2015): Das Naturschutzgroßprojekt „Feldberg – Belchen – Oberes Wiesental“ im Southern black forest von 2002-2012 – Aufbruch zur Biosphäre? *Natur und Landschaft* (90): (12), S. 542-549.
- Thinnes, M. (2004): Bestockte Weiden im Schweizer Jura und im Southern black forest: eine vergleichende Untersuchung. *Culterra* (39), S. 145–196.
- Weber, K.-H. (1966): Morphologische Untersuchungen an Karen im Feldberg-Schauinsland-Gebiet des südlichen Schwarzwaldes. (Gekürzte Fassg.). Naturwiss. F., Diss. v. 19. Jan. 1966--Mainz, 19. Mainz.
- Westermann, K., Knoch, D., Westermann, E. (2013): Die Moore im Oberen Hotzenwald. Weitläufiges bedrohtes Netz von nationaler Bedeutung. Ein Restitutionsprogramm von NABU und Schwarzwaldverein, Naturschutz am südlichen Oberrhein, Bd. 7.1, Fachschaft für Ornithologie Südlicher Oberrhein. Rheinhautsen.
- Wilmanns, O. (2001): Exkursionsführer Schwarzwald. Eine Einführung in Landschaft und Vegetation ; mit 45 Wanderwegen, UTB für Wissenschaft, 2180, Ulmer. Stuttgart.
- Yasui, A. (2004): Spuren historischer Wald- und Weidenutzung in Landschaft und Vegetation am Beispiel der Gemeinde Fröhnd. *Culterra* (39), S. 93-144.

Zweckverband Naturschutzgroßprojekt Feldberg - Belchen - Oberes Wiesental (2012): Feldberg – Belchen – Oberes Wiesental. Naturschutzgroßprojekt im Southern black forest, verlag regionalkultur. Ubstadt-Weiher.

## Chapter 12

Available online at [www.hinterwaelder.com](http://www.hinterwaelder.com).

Kowatsch, A., Hampicke, U., Kruse-Graumann, L., Plachter, H. (2011): Indikatoren für ein integratives Monitoring in deutschen Großschutzgebieten. Endbericht des gleichnamigen F+E-Vorhabens, BfN Skripten 302. Bonn.

Millennium Ecosystem Assessment (2005): Ecosystems and human well-being: Synthesis, Millennium ecosystem assessment series, Island Press. Washington, DC.

Plieninger, T. (2010): Ökosystemleistungen in Kulturlandschaften Konzept und Anwendung am Beispiel der Biosphärenreservate Oberlausitz und Schwäbische Alp. *Natur und Landschaft : Zeitschrift für Naturschutz und Landschaftspflege* 85 (5), S. 187–192.

## Chapter 13

RITTER, M. (2015): DIE GROßE TRANSFORMATION IM ENTSTEHENDEN BIOSPHÄRENGEBIET SOUTHERN BLACK FOREST GESTALTBAR MACHEN. MASTER'S THESIS CARL VON OSSIEZKY UNIVERSITÄT, OLDENBURG.

## Chapter 14

Abel, U., Riedel, P. (2002): Bannwald "Scheibenfelsen". Forstbezirk Kirchzarten forstliches Wuchsgebiet Schwarzwald Einzelwuchsbezirk 310 "Westlicher Southern black forest"; Erläuterungen zur forstlichen Grundaufnahme 1998, Freiburger forstliche Forschung : Report 36, Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg [Forest Research Institute of Baden-Württemberg] Freiburg.

Bogenrieder, A., Sengbusch, P. v. (2002): Untersuchungen zur Ökologie von *Pinus rotundata* LINK im Southern black forest. *Forschungsbericht FZKA-BWPlus*.

Detzel, P., Röske, W., Ludemann, T. (2007): Pflege- und Entwicklungsplan für das Naturschutzgroßprojekt Feldberg-Belchen-Oberes Wiesental. Vorgaben, Methoden und Planungsabläufe. *Natur und Landschaft* (82 (4)), S. 143–151.

Ernst, Andreas M., Eisentranti, R., Bender, A., Kiigi, W., Mohr, E., Seitz, S. (1998): Stabilisierung der Kooperation im Allmende-Dilemma durch institutionelle und kulturelle Rahmenbedingungen. *GAIA-Ecological Perspectives for Science and Society* (7 (4)), S. 271–278.

Fürst, D. (2006): Kulturlandschaft–von Placemaking zu Governance-Arrangement. *Manuskript zur Tagung: „Kulturlandschaft-Neue Steuerungsformen in Planung und Politik“*.

Hanke, U. (1998): Vegetation und Bestandesstruktur im Bannwald Napf, Southern black forest. Ergebnisse der Aufnahmen 1995/96, Mitteilungen der Forstlichen Versuchs- und Forschungsanstalt Baden-Württemberg, Abteilung Botanik und Standortkunde, [N.F.] 6 = 202 [d. Gesamtw.], Forstl. Testing and Research Institute Baden-Württemberg. Freiburg im Breisgau.

Kersting, G. (1991): Allmendweiden im Southern black forest. Eine vergleichende Vegetationskartierung nach 30 Jahren. Stuttgart.

Kochaniewicz, G. (2006): Epiphytische Moose und Flechten auf Buche, Tanne und Fichte im Southern black forest unter dem Einfluss von Klima und Bewirtschaftung. Dissertation. University of Freiburg.

Körner, H., Reichelt, G. (Hg.) (2003): Der Hotzenwald. Beiträge zur Natur und Kultur einer Landschaft im Southern black forest. Freiburg im Breisgau, Lavori, Mitteilungen des Badischen Landesvereins für Naturkunde und Naturschutz, 18.

Kratochwil, A., Schwabe, A. (1987): Weidbuchen im Schwarzwald als Zeugen extensiver Wirtschaftsweisen: Rekonstruktion von Jugend- und Altersstadien durch aktualistischen Vergleich und Analysen von Stammquerschnitten. *Forstwiss. Centralbl.* (106 (6)), S. 300–311.

- Krause, W. (1964): Großräumige Auswertung einer Vegetationskarte der Allmendweiden des Black forest highlands. *Das wirtschaftseigene Futter* (2), S. 101–111.
- Krause, W., Frei, J. (1965): Die Verbesserung der Allmendweiden im Southern black forest, dargestellt an der Gemeinde Schönenberg (Kreis Lörrach). *Das wirtschaftseigene Futter* (11), S. 191–200.
- Lamparski, F. (1985): Der Einfluß der Regenwurmart *Lumbricus badensis* auf Waldböden im Southern black forest, Freiburger bodenkundliche Abhandlungen, 15, Institut für Bodenkunde u. Waldernährungslehre. Freiburg i. Br.
- López, J. A. (1985): Analyse der Struktur und Dynamik eines naturnahen Fichten-Tannen-Buchenwaldes im Black forest highlands (Bannwald Napf im Naturschutzgebiet Feldberg). Dissertation. University of Freiburg.
- Ludemann, T. (2004): Montanarchäologie im Southern black forest. Ergebnisse aus 15 Jahren gemeinsamer Forschung : Arbeitsgruppe Wald : History: Anthrakologie. *Zeitschrift für Archäologie des Mittelalters : ZAM* 31 (2004), S. 188–192.
- Ludemann, T. (2006): Großmaßstäbliche Vegetationskartierung im Southern black forest – mit einer Neubewertung des natürlichen Vorkommens der Fichte. *Mitt. Ver. Forstl. Standortkunde u. Forstpflanzenzüchtung* (44), S. 47–61.
- Ludemann, T. (2007): Das Abbild der natürlichen Vegetation in der historischen Holznutzung. Synthese anthrakologischer Studien im Mittelgebirgsraum Zentraleuropas. *Berichte der Reinhold-Tüxen-Gesellschaft* (19), S. 7–22.
- Ludemann, T., Betting, D. (2009): Jahrringanalytische Untersuchungen an Weidbuchen im Southern black forest. *Mitt. Ver. Forstl. Standortkunde u. Forstpflanzenzüchtung* (46), S. 83–107.
- Ludemann, T., Schottmüller, E. (2000): Zur Vegetation und Geschichte des Feldseewaldes. *Ber. Freiburger Forstl. Forschung* (24), S. 1–24.
- Ludemann, T., Schottmüller, E., Labudda, V., Ahrens, W. (2000): Bannwald "Feldseewald" im Schwarzwald. Im Forstbezirk Kirchzarten (vorher Schluchsee); Forstliches Wuchsgebiet Schwarzwald Einzelwuchsbezirk 313 "Östlicher Southern black forest", Freiburger forstliche Forschung : Berichte, 24, Forstliche Versuchs- und Forschungsanst. Baden-Württemberg. Freiburg.
- Lüth, M. (1990): Moosgesellschaften und Gesellschaftskomplexe auf Blockhalden im Southern black forest in der Umgebung Freiburgs, Veröffentlichungen für Naturschutz und Landschaftspflege in Baden-Württemberg : Supplement, 58, Landesanstalt für Umweltschutz [State Institute for Environmental Protection] Baden-Württemberg. Karlsruhe.
- Manegold, M. (2007): Standörtliche und floristische Unterschiede zwischen Wäldern unterschiedlicher Bestandeskontinuität im Southern black forest (Gemarkung Hinterzarten). Dissertation. University of Freiburg.
- Manegold, M., Ludemann, T. (2007): Spuren der historischen Landnutzung in der aktuellen Vegetation der Wälder Hinterzartens im Southern black forest. *Freiburger Universitätsblätter* (175), S. 25–38.
- Nowak, B., Schulz, B. (Hg.) (2002): Meadows Nutzung, Vegetation, Biologie und Naturschutz am Beispiel der Wiesen des Southern black forestes und Hochrheingebietes. Landesanstalt für Umweltschutz [State Institute for Environmental Protection] Baden-Württemberg. 1. Aufl. Heidelberg, Verl. Regionalkultur, Naturschutz-Spectrum Themen, 93.
- Paulus, G., Ludemann, T. (2015): Edellaubbaumwälder im Southern black forest. Pflanzensoziologische Charakterisierung, Gliederung und Abgrenzung. *standort.wald* (49), S. 51–83.
- Pontuali, S., Burzlaff, T., Schröter, H. (2008): Der Buchdrucker (*Ips typographus* [L.]) im "Bannwald Napf". Rekonstruktion der Populationsdynamik in den Jahren 1990 bis 2006, Berichte Freiburger Forstliche Forschung, 77, Forstliche Versuchs- und Forschungsanst. Baden-Württemberg Abt. Waldschutz; Albert-Ludwigs-Univ. Forstzoolog. Inst. Freiburg, Freiburg.
- Reichelt, G., Körner, H. (2003): Der Hotzenwald. Beiträge zur Natur und Kultur einer Landschaft im Southern black forest, Lavori. Freiburg im Breisgau.
- Reinbolz, A. (2003): Der Schwarzwald als Kulturlandschaft. Integrierte Landschaftsanalyse als Grundlage für ein differenziertes Nutzungsmanagement. Dissertation. University of Freiburg, Freiburg.



- Schwabe, A. (1979): Sigma-Soziologie von Weidfeldern im Schwarzwald: Methodik, Interpretation und Bedeutung für den Naturschutz. *Phytocoenologia (Festband R. Tüxen)* (6), S. 21–31.
- Schwabe, A. (1979): Werden und Vergehen von Borstgrasrasen im Schwarzwald. In: Wilmanns, O., Tüxen, R. (Hg.): Werden und Vergehen von Pflanzengesellschaften. (Rinteln, 20.-23. März 1978). Vaduz: Cramer (Berichte der Internationalen Symposien der Internationalen Vereinigung für Vegetationskunde, 22), S. 387–405.
- Schwabe, A. (1980): Wirtschaftsbedingte Vegetationstypen auf Extensivweiden im Schwarzwald. *Ber.Naturforsch.Ges. Freiburg i.Br.* (70), S. 57–95.
- Schwabe, A. (1990): Syndynamische Prozesse in Borstgrasrasen: Reaktionsmuster von Brachen nach erneuter Rinderbeweidung und Lebensrhythmus von *Arnica montana* L. *Carolinea* 48.
- Schwabe, A. (1990): Veränderungen in montanen Borstgrasrasen durch Düngung und Brachlegung: *Antennaria dioica* und *Vaccinium vitis-idaea* als Indikatoren. *Tuexenia* (10), S. 295–310.
- Schwabe, A., Kratochwil, A. (2015): Pflanzensoziologische Dauerflächen-Untersuchungen im Bannwald "Flüh" (Southern black forest) unter besonderer Berücksichtigung der Weidfeld-Sukzession. *standort.wald* (49), S. 5–49.
- Schwabe, A., Kratochwil, A. (1986): Zur Verbreitung und Individualgeschichte von Weidbuchen im Schwarzwald. *Abhandl. Lan-desmus. Naturk. Münster* (48 (2/3)), S. 21–54.
- Schwabe, A., Mann, P. (1990): Montane Kahl Schlagrasen (*Calamagrostis arundinacea*-*Senecio fuchsii*-Ges.) als Elemente von Zippammer (*Emberiza cia*)-Habitaten im Southern black forest. *Mitt. Bad. Landesver. Naturk. u. Natursch. Freiburg i.Br.* (15), S. 39–50.
- Schwabe-Braun, A. (1979): Der Bannwald "Flüh", Waldschutzgebiete, 1, Forstl. Testing and Research Institute Baden-Württemberg. Freiburg i. Br.
- Schwabe-Braun, A. (1980): Eine pflanzensoziologische Modelluntersuchung als Grundlage für Naturschutz und Planung. Weidfeld-Vegetation im Schwarzwald; Geschichte der Nutzung Gesellschaften und ihre Komplexe Bewertung für den Naturschutz. Dissertation. University of Freiburg.
- Schwendemann, E., Müller, K., Miltenberger, K. (1980): 50 Jahre Weideinspektion Schönau Schwarzwald. Entstehung-Entwicklung-Wirken, Regierungspräsidium. Freiburg.
- Sengbusch, P. v. (2004): Untersuchungen zur Ökologie von *Pinus rotundata* LINK (Moor-Kiefer) im Southern black forest, Dissertationes botanicae, 388. Freiburg.
- Sengbusch, P. v., Bogenrieder, A. (2001): Rückgang der Moor-Kiefer im südlichen Schwarzwald. *Naturschutz und Landschaftsplanung*, S. 249–254.
- Vögtle, K. (2014): Floristische Charakterisierung von montanen Buchen-Tannen- und Fichten-Beständen im Southern black forest. Freiburg, Univ., Masterarb., 2014.
- Wirth, V. (1975): Vegetation des Naturschutzgebietes Utzenfluh (SüdSchwarzwald), besonders in lichenologischer Sicht. *Beiträge zur naturkundlichen Forschung in Südwestdeutschland*.

## Chapter 15

- Almehasneh, A. (2008): Virtuelle Waldlandschaften - Instrument für forstliche partizipative Planung? Managementtheorien - Fallstudie Belchen. Dissertation. Universität Freiburg.
- Goldenberg, G. (2003): (Ur- und) frühgeschichtlicher Bergbau im südlichen Schwarzwald und in der südlichen Oberrheinregion. *Freiburger Universitätsblätter* (159), S. 181–198.
- Heck, B. (2006): „Hart an der Grenze“. Die Textilherstellung als Leitindustrie am Hochrhein. In: Kaufmann U.R. (Hrsg.) (2006): Die Schweiz und der deutsche Südwesten. Wahrnehmung, Nähe und Distanz im 19. und 20. century. Ostfildern: Thorbecke.
- Heucheled, L., Nothacker, K., Renner, C., Konold, W., Lupp, G. (2014): Die Bedeutung des Wintersports für den Tourismus im Southern black forest und Überlegungen zu potentiellen schneeunabhängigen Alternativen—Eine Analyse von Wahrnehmungen. *Zeitschrift für Tourismuswissenschaften* (6 (1)), S. 5–20.

Job, H.; Kraus, F.; Merlin, C., Woltering, M. (2013): Wirtschaftliche Effekte des Tourismus in Biosphärenreservaten Deutschlands. Naturschutz und Biologische Vielfalt, Heft 134. Bonn-Bad Godesberg: Bundesamt für Naturschutz [Federal Agency for Nature Conservation]

Korff, C. (2008): Die Kulturlandschaft des Southern black forestes in der Wahrnehmung durch Urlaubsgäste. *Alemannisches Jahrbuch*.

Mohr, B. (2001): Die Erhaltung der Hofsiedlungslandschaft im Hohen Schwarzwald unter den Bedingungen der Strukturveränderungen des 19. und 20. century. *Alemannisches Jahrbuch*.

Statistical Office of Baden-Württemberg. Available online at <http://www.statistik.baden-wuerttemberg.de/>.

Ministerium Ländlicher Raum (Hrsg.) (2010): Clusterstudie Forst und Holz Baden-Württemberg

Seitz, B.-J.; Meineke, S.; Schweineköpers, K.; Röske, W.; Schach, P. (2015): Das Naturschutzgroßprojekt Feldberg-Belchen-Oberes Wiesental" im Southern black forest von 2002 bis 2012 – Aufbruch zur Biosphäre? In: *Natur und Landschaft*, 12/2015, S. 542 - 549

Vöggtlin, J., Wippel, B. (2003): Ökonomische Tragfähigkeit extensiver Weidesysteme im Southern black forest. *Naturschutz und Landschaftsplanung* (35), S. 297–301.

Wanke, D. (2009): On-farm-Management als Konzept zur In-situ-Erhaltung der Vielfalt landwirtschaftlicher Nutztierassen am Beispiel des Hinterwälder Rindes im Southern black forest. Univ., Diss--Kassel, 2008, Kassel Univ. Press. Kassel.

## Chapter 16

Reinbolz, A., Plieninger, T., Konold, W. (2003): Wald oder Weidfeld? Einfache Methoden für Feld und Archiv zur Analyse der Landschaftsgeschichte des Southern black forests. *Natur und Landschaft* (78), pg 463–467.

Ulsamer, B. (2013): Bildung für nachhaltige Entwicklung – Potenziale im geplanten Biosphärengebiet Southern black forest. Master's thesis Universität Rostock, Rostock.

## Chapter 19

Ludemann, T., Röske, W., Krug, M. (2007): Atlas zur Vegetation des Southern black forestes - Feldberg, Belchen, Oberes Wiesental, Verein für forstliche Standortkunde und Forstpflanzenzüchtung [Atlas of vegetation of Southern black forest - Feldberg, Belchen, Upper Wiesental, Association of Forest Site Science and Forest Tree Breeding]. Freiburg.

Schwabe, A., Kratochwil, A. (2015): Pflanzensoziologische Dauerflächen-Untersuchungen im Bannwald "Flüh" (Southern black forest) unter besonderer Berücksichtigung der Weidfeld-Sukzession. *standort.wald* (49), S. 5-49.

## 19.10 Additional supporting documents

### Tourism

#### Section 15.2.1.

Tourist attractions in the municipalities of the propose biosphere reserve. Source: Black Forest Tourismus GmbH, own survey

MUNICIPALITY	Tourist attraction	Explanation
<b>Aitern</b>	Belchen cableway	Former Expo 2000 Railway from Hannover
<b>Albbruck</b>	Hiking paths around the Albtal ravine	Marketing of regional hiking path
	Climing rocks in the Albtal	
	Studinger Steg	Pedestrian connection from Hohenfels to Schachen
	Main path of the Black Forest Association	Hochrhein elevated path, Hotzenwald lateral path

	Estelberg themed trail	Cultural hiking path
	Trail riding in Brunnmattenhof	
	Albsteig Black Forest (from May 2017)	New premium hiking path
<b>Bernau</b>	Zauberwald themed trail	Themed hiking trail
	Herzogenhorn nature adventure trail	Themed hiking trail
	Forum experience: wood - exhibit	Modern Black Forest architecture
	Resenhof homeland museum	Historical workshops on topic "working with wood"
	Striking mountains	Herzogenhorn (1,415 m), Spießhorn (1,349 m), Blößling (1,309 m)
	Hans Thoma Art Museum	Art museum
<b>Dachsberg (Southern black forest)</b>	Traditional charcoal burning	Traditional manufacture of charcoal
	Friedrich-August-Grube Nature Experience Place	Playground equipment and nature adventure part with museum quality
	Horbacher Moor Nature Reserve	Black Forest highland moor with display boards
<b>Freiburg im Breisgau</b>	Freiburg - Schauinsland railway	Longest cable railway in Germany
	Freiburg cathedral	Natural cultural monument
	Museums	Augustine museum, Schauinsland mining museums, Archeological museum, museum for humans and nature
	Keidel mineral spa	Thermal water from own source
<b>Fröhnd</b>	Fröhnd - historical pit saw	Last original pit saw in Southern black forest that is still functional
<b>Häg-Ehrsberg</b>	Waterfall in Häg	
<b>Hausen im Wiesental</b>	Hebelhaus	Literature museum
	To the poets on pedal	Literary bike path
	Hebel hiking path	Literary hiking path
<b>Häusern</b>	Schwarzabruck power plant	Hydropower
	Barefoot trail	
<b>Hinterzarten</b>	Adler ski stadium	3 ski jumps
	Black Forest ski museum	
	Themed cycle path	Dreiseen cycle path, summit trail
	Highland moor	Has been under protection for 60 years
<b>Höchenschwand</b>	Healing climate hiking path around Höchenschwand	
	Nature sport centre in Höchenschwand	
	Central path of the Black Forest Association	Long-distance hiking path
	Themed trail	Schinken path, 11 villages path, church and chapel path
<b>Ibach</b>	Steffi-Böhler cross-country ski run	named after cross-country skier Steffi Böhler
	Kirschspielwald - Ibacher Moos Nature Reserve	Highland moor with display boards
<b>Oberried</b>	Steinwasen Park	Recreational park, known for the longest adventure bridge in the world
	Climbing rocks	Gfällfelsen and Scheibenfelsen
	Professional summer and winter biathlon complex	On Notschrei-Höhenpass

<b>St Blasien</b>	Radon Vital thermal springs	Thermal springs
	St Blasius cathedral	Largest domed church in Europe
	Menzenschwander waterfalls	
	"Le Petit Salon" Museum in Winterhalter	Art museum
	Lake tours on the Schluchsee	
	Staumauer Schluchsee	
	Tower in Schluchsee	Hiking lookout tower
	Climbing in Schluchsee-Blasiwald	Climbing rocks
<b>Schönau im Schwarzwald</b>	The Belchen	Second highest panoramic mountain of the Black Forest
	Jogi Löw stadium	Named after the German national football coach
	Nature trail	Primeval forest trail, adventure trail, glacier trail, pasture beech trail
	Klösterle homeland museum	Life and work of former residents of Schönau
<b>Schönenberg</b>	Nature trail	Belchen trail
<b>Schopfheim</b>	Old town	Historical old town
	Gersbacher Baroque entrenchment	Defence system of the 17th and 18th century
	Hiking theme path	Hebel path, embankment path, cattle educational path
	Thematic cycle path	Literary bike path
	Tour bike path	Rhine cycle path, Wiesental cycle path
	Hohe Möhr observation tower	Hiking lookout tower
<b>Todtnau</b>	Todtnau bike part	Down hill par cour with ascent device
	Climbing rocks	
	Hasenhorn Coaster	Toboggan run can be used all year round
	Children's hiking path	
	Pleasure trail	Tower path, waterfall path
	Todtnauer water falls	
	Longest "Bankliege" in the world	
	Nature trail	Path to the Palaeozoic
<b>Ühlingen-Birkendorf</b>	Ühlingen Vintage Car Museum	Utensils of the 50s
	Naturena swimming lake in Birkendorf	
	Kloster Riedern am Wald	
<b>Utzenfeld</b>	Faller jam manufacturing	Demonstrations
	Ice climbing at Höll	Winter ice climbing par cour
<b>Wehr</b>	Wehra-Delta Nature Reserve	Over 128 types of birds to be observed
	Wehraschlucht	Natural ravine, ravine trail
<b>Wieden</b>	Wieden - natural toboggan run at Ortsrand	Winter toboggan run
	Nature trail	Earthworm trail
	Finstergrund visitor's mind	
	Wieden spa gardens	
<b>Zell im Wiesental</b>	Game preserve	
	Themed trail	Alemanni path, Hebel cycling and hiking path

Source: Black Forest Tourismus GmbH, own illustration

## Section 15.2.2.

## c) Developmental trend

Arrivals in the municipalities of the biosphere reserve (2010-2014) with % change

No.	Biosphere municipalities	Arrivals 2010	Arrivals 2011	% change from previous year	Arrivals 2012	% change from previous year	Arrivals 2013	% change from previous year	Arrivals 2014	% change from previous year	% Change 2010-2014
1	Aitern	6,291	6,864	9.1%	7,747	12.9%	6,941	-10.4%	7,514	8.3%	19.4%
2	Albbruck	.	3,589	.	.	.	.	.	.	.	.
3	Bernau im Schw.	20,277	22,676	11.8%	25,182	11.1%	26,685	6.0%	28,565	7.0%	40.9%
4	Böllen	.	.	.	.	.	.	.	.	.	.
5	Dachsberg	4,518	4,479	-0.9%	4,957	10.7%	4,754	-4.1%	5,467	15.0%	21.0%
6	Freiburg	657,604	699,920	6.4%	702,477	0.4%	717,428	2.1%	712,053	-0.7%	8.3%
7	Fröhnd	1,773	1,473	-16.9%	2,537	72.2%	3,032	19.5%	3,503	15.5%	97.6%
8	Häg-Ehrsberg	.	.	.	.	.	.	.	.	.	.
9	Hausen im Wiesental	.	.	.	.	.	.	.	.	.	.
10	Häusern	14,735	16,603	12.7%	19,608	18.1%	19,523	-0.4%	20,754	6.3%	40.8%
11	Hinterzarten	102,199	112,091	9.7%	114,711	2.3%	118,300	3.1%	113,944	-3.7%	11.5%
12	Höchen-schwand	26,250	26,305	0.2%	27,904	6.1%	29,256	4.8%	29,969	2.4%	14.2%
13	Horben	4,727	879	-81.4%	.	.	.	.	.	.	.
14	Ibach	2,400	1,655	-31.0%	2,451	48.1%	2,216	-9.6%	.	.	.
15	Oberried	21,842	25,069	14.8%	25,095	0.1%	25,637	2.2%	27,434	7.0%	25.6%
16	Schluchsee	97,550	107,564	10.3%	111,085	3.3%	109,081	-1.8%	109,604	0.5%	12.4%
17	Schönau/Belchenland	5,023	5,405	7.6%	7,278	34.7%	8,409	15.5%	9,097	8.2%	81.1%
18	Schönenberg	.	.	.	.	.	.	.	.	.	.
19	Schopfheim	25,461	26,910	5.7%	24,161	-10.2%	23,414	-3.1%	23,599	0.8%	-7.3%
20	St Blasien	19,364	20,281	4.7%	20,000	-1.4%	22,011	10.1%	22,048	0.2%	13.9%
21	Tegernau/kl. Wiesental	10,080	10,818	7.3%	9,699	-10.3%	10,551	8.8%	10,454	-0.9%	3.7%
22	Todtnau	63,438	65,011	2.5%	65,450	0.7%	62,872	-3.9%	66,574	5.9%	4.9%
23	Tunau	.	.	.	.	.	.	.	.	.	.
24	Ühlingen-Birkendorf	8,238	9,382	13.9%	11,089	18.2%	14,116	27.3%	13,439	-4.8%	63.1%
25	Utzenfeld	.	.	.	.	.	.	.	.	.	.

26	Wehr	.	4,470	.	.	.	.	.	.	.	.
27	Wembach	.	.	.	.	.	.	.	.	.	.
28	Wieden	10,097	11,005	9.0%	10,819	-1.7%	9,426	-	6,474	-31.3%	-35.9%
							12.9%				
29	Zell im Wiesental	5,780	5,543	-4.1%	6,636	19.7%	6,631	-0.1%	7,372	11.2%	27.5%
	Sums	1,109,981	1,190,299	7.2%	1,201,383	0.9%	1,222,526	1.8%	1,220,290	-0.2%	9.9%

Source: Statistical Office of Baden Württemberg, own representation STG

. = municipalities are subject to statistical confidentiality

. = municipalities are not listed with the statistical office (no operation with at least 10 beds)

Overnight stays in the municipalities of the biosphere reserve (2010-2014) with % change

No.	30 Municipalities	Over-night stays in 2010	Over-night stays in 2011	% change from previous year	Over-night stays in 2012	% change from previous year	Over-night stays in 2013	% change from previous year	Over-night stays in 2014	% change from previous year	% Change 2010-2014
1	Aitern	21,286	22,809	7.2%	25,696	12.7%	23,086	-10.2%	22,321	-3.3%	4.9%
2	Albbruck	.	6,727	.	.	.	.	.	.	.	.
3	Bernau im Schw.	72,301	76,742	6.1%	85,714	11.7%	88,248	3.0%	90,446	2.5%	25.1%
4	Böllen	.	.	.	.	.	.	.	.	.	.
5	Dachsberg	17,356	17,521	1.0%	20,224	15.4%	18,297	-9.5%	19,664	7.5%	13.3%
6	Freiburg	1,288,954	1,380,658	7.1%	1,404,784	1.7%	1,387,635	-1.2%	1,357,965	-2.1%	5.4%
7	Fröhnd	3,087	3,365	9.0%	5,633	67.4%	7,432	31.9%	7,492	0.8%	142.7%
8	Häg-Ehrsberg	.	.	.	.	.	.	.	.	.	.
9	Hausen im Wiesental	.	.	.	.	.	.	.	.	.	.
10	Häusern	40,772	44,666	9.6%	51,681	15.7%	51,250	-0.8%	52,950	3.3%	29.9%
11	Hinterzarten	441,660	469,193	6.2%	475,709	1.4%	463,336	-2.6%	452,026	-2.4%	2.3%
12	Höchenschwand	166,970	170,460	2.1%	177,198	4.0%	178,059	0.5%	177,571	-0.3%	6.3%
13	Horben	11,153	2,717	-75.6%	1,936	-28.7%	.	.	.	.	.
14	Ibach	9,055	7,441	-17.8%	9,112	22.5%	8,079	-11.3%	.	.	.
15	Oberried	67,497	74,239	10.0%	69,661	-6.2%	75,128	7.8%	81,406	8.4%	20.6%
16	Schluchsee	340,969	328,352	-3.7%	338,548	3.1%	336,338	-0.7%	330,832	-1.6%	-3.0%
17	Schönau/Belchenland	16,282	18,154	11.5%	21,915	20.7%	22,675	3.5%	21,641	-4.6%	32.9%
18	Schönenberg	.	.	.	.	.	.	.	.	.	.
19	Schopfheim	47,180	52,840	12.0%	47,723	-9.7%	45,848	-3.9%	44,479	-3.0%	-5.7%
20	St Blasien	171,771	167,183	-2.7%	176,271	5.4%	172,858	-1.9%	163,982	-5.1%	-4.5%



<b>21</b>	Tegernau/ kl. Wiesental	25,273	29,067	15.0%	25,048	-13.8%	25,721	2.7%	25,281	-1.7%	0.0%
<b>22</b>	Todtnau	288,194	282,622	-1.9%	293,435	3.8%	281,774	-4.0%	287,831	2.1%	-0.1%
<b>23</b>	Tunau	.	.	.	.	.	.	.	.	.	.
<b>24</b>	Ühlingen- Birkendorf	25,405	29,149	14.7%	34,803	19.4%	40,350	15.9%	40,288	-0.2%	58.6%
<b>25</b>	Utzenfeld	.	.	.	.	.	.	.	.	.	.
<b>26</b>	Wehr	.	9,173	.	.	.	.	.	.	.	.
<b>27</b>	Wembach	.	.	.	.	.	.	.	.	.	.
<b>28</b>	Wieden	27,360	25,720	-6.0%	25,491	-0.9%	20,402	-20.0%	17,753	-13.0%	-35.1%
<b>29</b>	Zell im Wiesental	15,999	12,403	-22.5%	14,440	16.4%	15,512	7.4%	16,537	6.6%	3.4%
Sums		3,105,664	3,238,211	4.3%	3,314,086	2.3%	3,269,156	-1.4%	3,219,073	-1.5%	3.7%

Source: Statistical Office of Baden Württemberg, own representation STG

. = municipalities are subject to statistical confidentiality

. = municipalities are not listed with the statistical office (no operation with at least 10 beds)

## d) Collective accommodation establishments

Business types of the overnight stays of the municipalities of the Biosphere Reserve Black Forest

Business type	open business*	Sleeping facilities offered*	Arrivals total	Overnight stays total	Utilisation of the sleeping facilities offered
	Number				%
<b>Hotel</b>	106	7 479	620 200	1 368 044	52.0
<b>Bed and breakfast</b>	61	2 273	215 052	413 947	50.7
<b>Guest houses</b>	72	1 752	91 858	202 433	33.9
<b>Inns</b>	33	787	38 695	110 375	40.9
<b>Recreation centres and holiday homes</b>	19	1 345	35 711	139 636	30.3
<b>Cottages, holiday apartments, and holiday centres</b>	83	1 647	32 843	174 519	29.6
<b>Hostels and shelters</b>	29	1 922	83 353	205 878	30.2
<b>Camping sites</b>	17	6 036	90 406	254 821	14.7
<b>Preventive care and rehabilitation clinics</b>	8	.	.	.	.
<b>Training centres</b>	6	.	.	.	.
<b>Business types together</b>	435	24 772	1 242 896	3 261 173	39.1

Source: Statistisches Landesamt [Statistical Office] of Baden-Württemberg /own representation of Black Forest Tourismus GmbH

## e) Economic importance

Overnight stays including private stays and day trips in the municipalities of the Biosphere Reserve Black Forest in 2014

DATA ENTRY	
<i>Number of overnight stays</i>	
<b>Hotels</b>	1,368,044
<b>Bed and breakfast</b>	413,947
<b>Guest houses</b>	202,433
<b>Inns</b>	110,375
<b>Shelters, hostels</b>	205,878
<b>Campsites/caravan parking spaces</b>	254,821
<b>Recreation centres and holiday homes</b>	139,636
<b>Cottages, holiday apartments, and holiday centres</b>	174,519
<b>Preventive care and rehabilitation clinics</b>	261,013
<b>Training centres</b>	130,507
Overnight stays of commercial establishments, total, according to the statistical office	<b>3,261,173</b>
<b>Private businesses (rooms and holiday apartments, up to nine beds)</b>	570,617

<b>Permanent camping - families</b>	170,790
<b>Permanent camping - friends and acquaintances</b>	12,658
<b>Second homes</b>	205,402
<b>Overnight stays - friends and acquaintances</b>	880,545
<b>Total overnight stays</b>	<b>5,101,185</b>
<b>Population</b>	309,952
<i>Number of day trips</i>	
<b>Day trip traffic</b>	13,452,339
<b>Day trip business travel traffic</b>	2,853,526
<b>Total day trips</b>	<b>16,305,865</b>

© Source: own representation of Black Forest Tourismus GmbH, data from statistical office, and own survey

Economic factor and job effect through tourism in the Biosphere Reserve Black Forest 2014

REVENUE CALCULATION		
<b>Gross revenues</b>	885,919,104	€
<b>Net revenues</b>	779,723,545	€
<b>VAT share</b>	106,195,559	€
<b>Tax revenues from municipalities</b>	19,493,089	€

VALUE CREATION		
<b>Use of goods/services</b>	512,370,092	€
<b>Value creation for 1st revenue stage</b>	267,353,453	€
<b>Value creation for 2nd revenue stage</b>	153,711,028	€
<b>Total net value added</b>	<b>421,064,481</b>	€

WORKPLACE EFFECT	
<b>direct full-time positions</b>	19,031
<b>indirect full-time positions</b>	57,093
<b>Total</b>	<b>76,125</b>

SHARE OF AGGREGATE INCOME		
Share of aggregate income	<b>6.14</b>	%
<b>Tourism intensity (with respect to overnight stays according to statistical office)</b>	<b>10,522</b>	

© Source: own representation of Black Forest Tourismus GmbH, information from statistical office and DWiF, and own calculations

## Measures and guidelines

### Section 17.4.5.

The following measures were worked during the founding of the biosphere reserve. They will be addressed and operationalised as part of the conceptual framework. In the conceptual framework, "biosphere" is understood as a constantly ongoing process. In this respect, the measures will be prioritised in accordance with the goals of the biosphere reserve. In addition, new ideas will be incorporated and checked for feasibility. Especially in the nature reserve, there are extensive action packages, which have proven themselves in the "Feldberg-Belchen-Oberes Wiesental" Nature Conservation Project and the "Oberer Hotzenwald" LIFE project.

#### MOBILITY AND PUBLIC TRANSPORT

- Comprehensive bus service, E-bus, BSG taxi, demography!
- Major expansion of public transport, biosphere bus
- Public transport, more (hiking/small) buses (example of Switzerland), reactivate Wiesental railway (Todtnauerli) reaktivieren, Dreiseen railway to the High Rhine, car sharing (especially for seniors) (App/Internet)
- Improvement of public transport, especially ski bus around the Feldberg
- Biosphere bus "Konus for locals" Improve mobility, among other things with cable cars e.g. Stollenbach, Feldberg
- Biosphere express, regular intervals, individual, new ways
- Interconnection of the individual localities via cable car
- Mobility for seniors/youths, organisation of promotional offers specific to target groups
- Biosphere mobility app
- BSG cycle network

#### CLIMATE PROTECTION

- Vision of the future: 100% energy self sufficiency

- Climate protection villages (European Energy Award)
- Climate neutral ski area
- Regional commitment to energy, regional energy agency, consultation on renewable energy, energy saving programme for companies and private households
- Regional energy generation and use management
- Innovative local energy generation through the use of differences in height (e.g. pressure reducing valves in water pipes)

#### NATURE CONSERVATION

- Keeping the landscape open through new cooperation models
- Neophytes control (on site and through information and education)

#### TOURISM:

- Innovative tourism and product offers, Gersbacher cheese, menu, hotel wilderness camp, Black Forest "Kobe" beef
- Innovative forms of accommodation: Hay hostel, wilderness camp
- Development concept: Black Forest hostels (international, younger Black Forest, modern)
- Teasing out biospheres, original ideas such as historical buildings, localities (mining, selection forests), historical forms of use, landscape elements (ravines, moors, energy spots)
- identification and signposting of E-mountain biking routes
- Promoting overnight stays at farmyards, creating incentives, development themed farmyards/themed rooms
- Adventure holidays on farms, agricultural participation
- Southern black forest cross-country ski run ticket
- Develop Southern black forest as an environmentally friendly ski region
- Establish decentralised visitor's information centre, possibly coupled with the marketing of regional products
- Accessible biosphere reserve
- E-Bike tours
- Bicycle touring without luggage
- Cable car project
- Continue to promote existing facilities

#### Cultural promotion and EDUCATION FOR SUSTAINABLE DEVELOPMENT

- Open pasture landscape, support of pasture warden
- Strengthening of landscape gardening
- Preservation of old animal breeds (e.g. cattle, goats, and pigs)
- Reactivation of old grazing forms (pastoral forest)
- Concept of keeping the landscape open through reactivation of old pasture concepts (Allmend), funding advice and business concepts for landscape gardening, strengthening through education, expense allowances, exchange, networking
- Agricultural working exhibit as a building block of education for sustainable development
- Education project Sustainability in schools, "Shaping the future" agricultural school farmyard for municipal school project
- Landscape maintenance: Use of landscaping material for energy recovery (JFBB technology)
- Educational work, cooperation with schools/day care centres/landscape maintenance, customs and future
- Natural education offers for schools and day care centres
- Biosphere day care centres as mobile (?) non-governmental institutes
- Agricultural working exhibit in the biosphere reserve
- Museum network

## COMMUNICATION

- Communication, broadband/LTE supply
- Promote the formation of networks; platforms for those committed to the environment, rural women, freelancers, creative professionals, and traditional craftsmen
- Network of entrepreneurs
- Agriculture, nature conservation, bringing together culture and business in a regional network
- Preserving school sites and developing a sustainable education system

## INFRASTRUCTURE AND COHESION

- Promotion of a social network i.e. professionally organised neighbourhood assistance
- Social network, village centre, social meeting point
- Intergenerational project "Village habitat" Pensioners helping each other, neighbourhood assistance, organising reliable help
- Project support with revival of village infrastructure (e.g. cooperatively managed village guest house)
- Objective: "A village shop for each village", cooperative business to ensure basic services
- Bringing (and keeping) people together e.g. through lectures on the landscape and history, "Citizens for citizens", social living environment
- Voluntary social year for agriculture, job exchange for young people, voluntary helpers
- Biosphere service centre, provision and delivery of goods and services (rides to doctors, general transport services)
- Volunteering and networking centre (several municipalities)
- Preserving/imparting old traditions (e.g. craftsmanship)
- Improvement of medical care
- Enhanced quality of life
- Creating a community in the biosphere reserve with common goals and networks
- Activating people and bringing them together (e.g. common bake houses and gardens)
- Regionally currency promotes the regional economy and the feeling of cohesion
- Networking office voluntary position

## REGIONAL PRODUCTS AND REGIONAL VALUE CREATION

- Create infrastructures in order to be able to provide the population with regional products (e.g. maintenance and networking of slaughterhouses)
- Strengthen economic power in the region, artisan academy, entrepreneurial network, strengthen training
- Marketing of agricultural products
- Creating brand labels
- Production/processing, marketing, currency (regional)
- Networking of local providers (promoting regional markets)
- Central marketing of local produce, Hinterwälder, Vorderwälder, Black Forest goat, venison, cheese, juice, beer
- Urban-rural encounters, tourism
- Wood academy as an example for the support of domestic, commercial and industrial establishments
- Innovative products exclusively from white fir for small sawmills
- Concept for regional craftsmanship
- Establish forest cooperatives
- Promoting set-up measures in agricultures (pasture fences, troughs)
- Project that relieves small farms from bureaucracy.



## 20 ADDRESSES

### 20.1 Contact address of the proposed biosphere reserve:

[Authority acting as a central contact point, organisation, or other legal entity to which all correspondence within the world network of the biosphere reserve is to be addressed]

Name: Office of the Biosphere Reserve Black Forest  
Straße Brand 24  
City with postal code: 79677 Schönau im Schwarzwald  
Federal state: Germany  
Telephone: 07673-889402-4383  
Email: biosphaerengebiet-schwarzwald@rpf.bwl.de  
Web address: www.biosphaerengebiet-schwarzwald.de

### 20.2 Administrative offices of the core area(s):

Name: Office of the Biosphere Reserve Black Forest  
Straße Brand 24  
City with postal code: 79677 Schönau im Schwarzwald  
Federal state: Germany  
Telephone: 07673-889402-4383  
Email: biosphaerengebiet-schwarzwald@rpf.bwl.de  
Web address: www.biosphaerengebiet-schwarzwald.de

Name: Regional Authority of Freiburg  
Straße Kaiser-Joseph-Straße 167  
City with postal code: 79098 Freiburg  
Federal state: Germany  
Telephone: 0761-208-1001  
Email: poststelle@rpf.bwl.de

**20.3 Administrative offices of the buffer zone(s):**

Name: Office of the Biosphere Reserve Black Forest  
Straße Brand 24  
City with postal code: 79677 Schönau im Schwarzwald  
Federal state: Germany  
Telephone: 07673-889402-4383  
Email: biosphaerengebiet-schwarzwald@rpf.bwl.de  
Web address: www.biosphaerengebiet-schwarzwald.de

Name: Regional Authority of Freiburg  
Straße Kaiser-Joseph-Straße 167  
City with postal code: 79098 Freiburg  
Federal state: Germany  
Telephone: 0761-208-1001  
Email: poststelle@rpf.bwl.de

**20.4 Administrative offices of the transition area(s):**

Name: Office of the Biosphere Reserve Black Forest  
Straße Brand 24  
City with postal code: 79677 Schönau im Schwarzwald  
Federal state: Germany  
Telephone: 07673-889402-4383  
Email: biosphaerengebiet-schwarzwald@rpf.bwl.de  
Web address: www.biosphaerengebiet-schwarzwald.de

## Annex I

Annex I to the application form for biosphere reserves, January 2013

# MABnet directory of the biosphere reserve

Description of the region

### Administrative tasks

Federal state:	Federal Republic of Germany
Name of the biosphere reserve:	Biosphere Reserve Black Forest
Year of designation	(to be filled in by the MAB office)
Administrative bodies:	Office of the Biosphere Reserve Black Forest
Name of contact person:	Walter Kemkes
Contact address:	Brand 24, 79677 Schönau im Schwarzwald 07673-889402-4383; biosphaerengebiet-schwarzwald@rpf.bwl.de
Additional links:	<a href="http://www.biosphaerengebiet-schwarzwald.de">www.biosphaerengebiet-schwarzwald.de</a>
Social networks:	to be established

### Description

General description:

For 1000 years, the Biosphere Reserve Black Forest has been a populated cultural landscape with an Atlantic climate. It is one of the most diverse low mountain ranges of Central Europe and is designated as a "grassland rich forest landscape" landscape type.

The area has an exceptionally large vertical extent of over 1000 m (from 310 to 1400 metres above sea level). This corresponds to a climatic range that extends from sub-alpine a snowy mountain climate to a warm fruit growing climate.

Around 70% of the area is forested. Around 25% is extensively used for agriculture (mainly grazing). This traditional use of the landscape has created a mosaic of open and forested areas, which has resulted in an ecosystemic biodiversity. The area, which has largely been shaped by glaciers, also features many special locations such as block slopes or valley walls, which have partially been left in their natural form.

The area is sparsely populated. However, it borders on the agglomerations of the High Rhine and Oberrhein, which has led to close economic and cultural urban-rural interrelationships.

An above-average proportion of the 38,000 inhabitants of the biosphere reserve is active in part-time farming. This is only ensured because they can also pursue professional activities in the secondary and tertiary sector.

Because of the traditional seclusion of the region, the population has developed its own cultural identity, which is linked with numerous customs and handicrafts. This cultural identity is an important vehicle for advancing sustainable development in the region.

The Biosphere Reserve Black Forest is located in a region that is highly attractive for tourists.

There are already various models and approaches for the sustainable development of the region at the ecological, economic, energetic, and socio-cultural level. This can be used as a foundation for the Biosphere Reserve Black Forest.

Most important type of ecosystem: Forest ecosystems of temperate deciduous forests, grassland ecosystem, ecosystems of the moors and waters

Most important habitats and area usage types: montane deciduous forests, silviculturally shaped forests with a high proportion of spruce, extensively used rough pastures, lowland and mountain hay meadows, high and lowland moors, and residential areas

Bioclimatic zone: subhumid moist to perhumid climate

Location of the centre

(latitude and longitude) (WGS 84): 47°47' 21" N; 7° 57' 27" E

Total area (ha): 63,235.8 ha

Core area(s): 1,904.8 ha

Buffer zone(s): 18,522.7 ha

Transition area(s): 42,808.3 ha

Other existing zoning: not present

Height range

(metres above sea level): 310 to 1.420 metres above sea level

Zoning map(s) (6.2)

### **Main objective of the biosphere reserve**

Short description

1. Protection and conservation of the diverse and characteristic ecosystems, which are important for biodiversity
2. Development of adaptive strategies with respect to climate change
3. Economic, social, and demographic stabilisation and development of the rural area
4. Promotion of sustainable tourism
5. Strengthening the equal participation of all people (those with an immigration background, men and women, individuals with disabilities)
6. Maintenance and development of the characteristic areas of common economic activity (historically: common land) as the most important element of the cultural landscape
7. Maintenance and development of competitive **agriculture and forestry**, taking into account the special significance of nature and landscape.
8. Development and strengthening of a **cultural identity**
9. Continuation and intensification of education for sustainable development
10. Support and promotion of a **research network**
11. Integration into the international **network** of biosphere reserves

**Research**

## Short description

- Baseline ecosystemic surveys (species inventory, ecosystem)
- Exploration of human-environment relationships in grassland rich forest landscapes
- Effects of demographic change in rural areas with effects on the use structure of the biosphere reserve
- Effects of climate change on the ecosystemic interactions including adaptation strategies

**Monitoring**

## Short description

There is already an extensive permanent monitoring programme in the region of the biosphere reserve. Based on this, changes to the ecosystems or their foundations can be permanently documented..

However, there is currently no differentiated indicator system for monitoring comprehensive sustainable development. It is therefore an important task of the biosphere reserve to develop an indicator system to monitor and optimise the management for sustainable development.

The biosphere reserve implements the integrated monitoring in protected areas and works closely together with the Federal Coordination Office.

**Special variables**

Abiotic		Biological diversity	
Abiotic factors	X	Forestation/reforestation	X
Acid deposition/atmospheric factors	X	Algae	
Air quality	X	Non-native and/or invasive species	X
Air temperature	X	Amphibians	X
Climate, climatology	X	Arid and semi-arid systems	
Pollutants	X	Autecology	X
Drought		Beach/soft soil systems	
Erosion		Benthos	
Geology	X	Biodiversity aspects	X
Geomorphology	X	Biogeography	X
Geophysics		Biology	X
Glaciology	X	Biotechnology	
Global change	X	Birds	X
Groundwater	X	Forest systems of the boreal zone	
Habitat-related issues	X	Procreation	X
Heavy metals		Coastal/marine systems	
Hydrology	X	Biocenosis investigations	X
Indicators		Protection	X
Meteorology	X	Coral reefs	
Modelling	X	Degraded areas	X
Monitoring/methodology	X	Desertification	
Nutrients	X	Dune systems	
Physical oceanography		Ecology	X
Pollution, pollutants	X	Ecosystem assessments	
Siltation/sedimentation		Ecosystem function/structure	X
Soil	X	Ecosystem services	X
Speleology		Ecotones	X
Topography	X	Entemic species	X
Toxicology	X	Ethnology	
UV radiation		Evapotranspiration	X
		Evolution studies/paleo-ecology	X
		Fauna	X
		Fire/fire ecology	
		Fish	X
		Flora	X
		Forest systems	X
		Fresh water systems	X
		Fungi	X
		Genetic resources	X
		Genetically modified organisms	
		Domestic and family gardens	X
		Indicators	
		Invertebrates	X
		Island systems/studies	
		Lagoon systems	
		Lichens	X
		Mammals	X



		Mangrove systems	
		Mediterranean systems	
		Micro-organisms	X
		Migrant populations	
		Modelling	
		Environmental observation/methodology	X
		Mountainous and highland systems	X
		Natural and other resources	X
		Natural medicines	X
		Disorders and elasticity	X
		Pests/diseases	X
		Phenology	X
		Phytosociology/succession	X
		Plankton	
		Plants	X
		Polar systems	
		Pollination	
		Population genetics/dynamics	X
		Productivity	X
		Rare/endangered species	X
		Reptiles	X
		Recovery/restoration	X
		(Re) introduction of species	
		Species inventory	X
		Subtropical and temperate rainforest	
		Taxonomy	
		Temperate forest systems	X
		Temperate grassland systems	X
		Tropical dry forest systems	
		Tropical grassland and savannah systems	
		Tropical humid forest systems	
		Tundra systems	
		Vegetation studies	X
		Volcanic geothermic systems	
		Wetlands systems	X
		Wild plants and animals	X
<b>Socio-economic</b>		<b>Integrative monitoring</b>	
Landscape/other production systems	X	Biog-geochemical investigations	X
Agroforestry		Ecological sustainability	X
Anthropological studies	X	Climate change	X
Aquaculture		Conflict analysis/conflict resolution	
Archaeology	X	Ecosystem approach	
Bio-prospecting		Education and sensitisation	X
Capacity building		Environmental changes	X
Cottage industry	X	Geographic information system (GIS)	X
Cultural aspects	X	Impact and risk studies	X
Demography	X	Indicators	
Economic studies	X	Indicators of environmental quality	
Economically important species	X	Development of infrastructure	X

Energy generation systems	X	Institutional and legal aspects	X
Ethology/traditional procedures/knowledge	X	Integrated studies	X
Cutting down firewood	X	Interdisciplinary studies	X
Fishery		Land ownership structure	X
Forestry:	X	Soil/area use	X
Human health	X	Landscape inventory/monitoring	X
Human migration	X	Management issues	X
Hunting	X	Mapping	X
Indicators		Modelling	
Sustainability indicators		Monitoring/methodology	
Indigenous issues		Planning and zoning measures	X
Industry	X	Conceptual issues	X
Existence assurance measures		Remote sensing	X
Livestock and related issues	X	Rural systems	X
Local participations	X	Sustainable development/use	X
Micro-credit		Trans-boundary issues/actions	X
Mining	X	Urban systems	X
Modelling		Research/monitoring of watersheds	X
Monitoring/methodology			
Natural phenomena	X		
Non-timber products	X		
Pastoralism	X		
Relationships between humans and nature	X		
Poverty			
Quality benefits/marketing	X		
Recreation	X		
Resource use	X		
Role of women	X		
Sacred sites	X		
Initiatives for small business			
Social/socio-economic issues	X		
Interest groups	X		
Tourism	X		
Transportation	X		

## Annex II