

## Outdoor recreation activities in nature protection areas – situation in Germany

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**Abstract:** Within a research project of the Federal Nature Conservation Agency, the Institute of Outdoor Sports and Environment points out new developments in outdoor activities in several German landscapes significantly used for sports activities. Therefore two different types of landscape analysis were chosen: First the monitoring of selected sports activities in landscapes with special equipment respectively high frequented by sportsmen (top-spot method) and second the recording of the real utilisation of near-natural landscapes (area method). The results of the scientific analytics were combined with sociological knowledge to describe the development of outdoor recreation in different sport activities (e.g.: canoeing, climbing, paragliding or canyoning). Considering these results the possibilities and the limits of modern concepts of guidance are discussed. Convenience offers, the use of police law or the establishment of a new outdoor culture (depending on Scandinavian standards) will attach great importance to minimize stress and interference in natural landscapes. It is shown that the changes in outdoor activities offer the possibility for a sustainable use of the German countryside for recreation as well as for environment.

### The Significance of Outdoor Sporting Activities

Fun, self-realisation, independence, spontaneity, and individuality combined with nature experience are the key characteristics of modern sports. Most of the outdoor activities satisfy these current demands of society. The growing popularity is reflected by the number of members in sport clubs which offer outdoor sporting activities.

In Germany sports such as climbing, horseback riding and scuba diving are increasing and golf is

even booming. Other sports, like skiing for example, continue to be popular. Apart from the sportsmen and women, who are traditionally organised in clubs, there is a significant number of people who pursue the new outdoor trend sports.

It is very difficult to estimate the number of people who pursue these sports though, as their popularity is often short-lived. It is easier to make assumptions with respect to the development capacity (Table 1).

Table 1. extension, stage and prospect of development of new outdoor activities.

Sport	Extension (in relation to other activities)	Stage of development (Lamprecht & Stamm 1998)	Prospect of development
canyoning	low, only commercial	saturation	continuity, no further increase
carving	very high	diffusion/saturation	no public relevance
ice climbing	very low	innovation	no public relevance,
kitesurfing	medium	innovation/diffusion	well, replace surfing
mountainbiking	extremely high	saturation	no further increase, small decline
nordic-walking	low	innovation	booming, well increase
snowshoeing	low	diffusion	slow increase
snowboarding	very high	saturation	consistent high
wakeboarding	medium	diffusion	limited by sport facilities
Whitewater-rodeo	low	diffusion	Small public relevance

## Methodology

### Spatial Requirements

Outdoor activities and all the new trends have spatial requirements and affect nature and the landscape as much as the constantly changing behaviour of the user groups. Possible consequences are:

- the development of new areas,
- different intensity of utilisation in areas already used for sporting activities
- longer duration of activities
- added up effects of multiple use, which exceed the overall effects of single utilisation
- leaving traditional sport areas
- making other or less use of previously utilised areas
- shorter duration of activities

To evaluate the possible effects of selected sporting activities, which depend on certain landscape structures, areas all over Germany were analysed. Detailed spatial analyses are based on case studies, adopting two different approaches:

The first approach looked at the land use of different selected sports in areas that are particularly suitable and therefore frequently used (the so-called ‘top spot’ approach). ‘Top spots’ are those areas, which offer good or excellent conditions for one or several related outdoor activities. In Germany there are top spots for almost all of the outdoor sporting activities.

The second approach examines the utilisation of nature and the landscape in selected outdoor sporting areas and regions (the so-called ‘model area approach’).

This double approach made it possible to describe the complex land use patterns, especially regarding multiple use, in a relatively easy way. The model areas and top spots were selected according to the following criteria:

- quantity and extent of different outdoor activities
- which sports were pursued
- availability of geographic data, as well as information on nature protection and the sporting activities
- familiarity with the area of the people collecting the data

In the regions Obere Rur and Siegaue, both in the federal state North Rhine–Westphalia, canoeing was examined, to analyse climbing the red sand stone rocks of the Rureifel, North Rhine–Westphalia were looked at (Stumpf 2002). Studies on paragliding were undertaken in Oberallgäu, Bavaria (Olbrich 2002). Water bodies in the Cologne area are top spots for scuba diving (Hoffmann 2001) and the island Norderney, Lower Saxony is most suited for surfing (Lutz 2002). Hiking, mountain biking and snow sports were analysed in the low mountain ranges Black Forest, Baden–Württemberg and Sauerland, North Rhine–Westphalia (Roth & Krämer 2000, Roth et al. 2001).

### Land Use Analysis

The land use analysis of outdoor sporting activities was done in four steps:

1. Analysis of the activity areas and opportunities by using existing data and collecting new data. Among other reasons outdoor activities distinguish themselves from other sporting activities because they do not depend on special facilities. The natural landscape serve as a sporting facility. As a result, the utilised river, rock or the ground itself, as well as the provided infrastructure (paths or clearings) represent opportunities for sporting activities. Increasingly, such opportunities are created for the purpose of outdoor sporting activities.

2. Analysis of existing spatial data relevant to nature protection and landscape management. Protected areas, biotopes, habitats and the overall scenery are important to nature protection and landscape management. Conservation targets regulate which forms of utilisation are permitted or prohibited.

3. Analysis of the actual land use through sporting activities.

Land use can generally be described with the help of information about place and time. This is also true for the use of nature and the landscape, although the essential information is the kind of utilisation. The spatial analysis is based on surveys and mapping. The following factors are included:

- used area
- spatial extent of utilisation
- time and duration
- intensity of utilisation
- peak times

4. Combining all geometric and factual data by employing Geographic Information Systems (GIS).

To illustrate, link up and evaluate all the collected spatial data GIS ArcView 3.2 and ArcMap 8.1 by ESRI are applied. Official topographic maps with the scales of 1:50.000 and 1:25.000, as well as digital orthophotos und digital terrain models form the basis. The data is available from the respective State Surveying Offices or the Federal Office of Nature Protection.

## Results

The research project analysed the outdoor activities canoeing, climbing, paragliding, scuba diving and surfing, as well as hiking, mountain biking and snow sports. For each sporting activity some of the results, which are relevant to future land use development, are presented in the following.

A detailed presentation of all the results found for each sport, as well as an in depth description of the

specific demands placed on the landscape would go beyond the scope of this article. The complete results are published in the research report (Roth et al. 2004).

### Kayaking and Canoeing

Observations indicate an increase of canoeing, especially on weekends, and a big demand for high quality services and attractive offers. Canoeing is easy to learn and canoes can be rented even without prior experience. Furthermore canoeing is supported by politics (cf. Ministerium für Wirtschaft des Landes Brandenburg 2001).

Nevertheless, the targets of the tourist sector do not comply with the efforts of nature protection to reduce the number of people using inland waters. As canoeing makes use of valuable ecosystems, planning, management and environmental education must ensure a sustainable development of the canoeing sector. An example of this is the LEADER II project 'ecologically friendly canoeing', funded by the European Union.

Continuously growing interest in canoeing will lead to a more intensive utilisation of designated waters (cf. Strojec 2002). Depending on the season, there will be intense concentrations of visitors along these waters. Simultaneously, individualists will try to avoid crowded areas and make use of waters in East Germany or neighbouring countries (France, Scandinavia).

Canoe rodeo has developed as a new type of activity. Mostly young paddlers spend a lot of their leisure time practising this sport along designated stretches of water. If this reduces the amount of water stretches available to common canoeing is unknown. Altogether, it can be assumed that more time will be spent on canoeing.

### Climbing

Indoor climbing is booming in Germany. There is a new type of climber who solely does indoor climbing and does not consider climbing as an outdoor activity. The number of rock climbers also increases, but only moderately when compared with indoor climbers.

Due to the better training conditions indoors the performance has improved significantly. Moreover, climbers achieve better performance levels within shorter periods of time. At the same time, performance becomes more important. As a result climbers make use of designated climbing areas or difficult climbing routes more frequently. The development of new routes is desired, but in most northern and central German climbing areas it is prohibited to develop new climbing routes.

The majority of climbers prefer secure climbing routes. Secure climbing facilities attract more people than other climbing areas. Simultaneously, bouldering developed as a sport in its own right. Therefore, it

is very likely that smaller rocks are increasingly used for climbing activities as well.

Many climbers spend the larger part of their vacations climbing and are very mobile. Often, they visit climbing areas abroad. Southern France, north Italy, Switzerland and Sardinia are especially popular. Even journeys to far away places are fairly common (Thailand, USA).

### Paragliding

The development of new materials (e.g. improved canopies) enable more paragliders to stay in the air for longer and use the thermals more efficiently. Even if the conditions are not optimal, altitudes above launch levels are easily gained. At the same time, the number of trips to launching points per day and therefore the number of take-offs and landings is decreasing.

Based on intensive exchange of information with numerous experienced paragliders and own observations it can be concluded that there is a tendency towards growing utilisation of sites in low mountain ranges. The excellent performance of modern canopies makes it possible to start on less steep slopes. In low mountain ranges the thermal conditions are partially good, in some regions (e.g. Mosel valley) even excellent. Nowadays, under the right conditions the use of an efficient canopy makes it possible to launch from almost any hill. This may lessen the impacts on the Alps since long flights are also possible outside of alpine areas. It remains to be seen if the increased choice of paragliding areas leads to higher numbers of paragliders. So far, there are no indicators for such a development.

### Scuba Diving

In proportion to the total number of scuba divers, only a small number of the German divers also go diving within Germany. Nevertheless, there is great interest in scuba diving and every year many people take up diving, especially during vacations.

Potential impacts on the environment, particularly caused by beginners, are therefore exported to other regions of the world. In Germany scuba diving is pursued all year around. Only very few people dive under ice though. Diving at night is common and enables divers to observe nocturnal fish. An impact assessment is needed to determine what effects the increased diving activities have. Different cases may have to be looked at individually.

### Surfing

In Germany the wind surfing boom is over and the number of wind surfers is currently declining. In contrast, kite surfing is becoming more popular. As kite surfing does not require strong winds it may prove to be an attractive alternative to windsurfing in the future. But, kite surfing will hardly become as popular as wind surfing used to be, because it involves bigger risks (cf. Kirsch 2002).

Another obstacle to a wider spread of kite surfing is that it requires a lot of space due to the difficult steering and the long flying lines. For these reasons this sport is prohibited on many small or medium sized inland waters. Best conditions for this sport are found along the north German Baltic sea coast. It is very likely that kite surfers will look for new suitable beaches that they can make use of.

Depending on the length of the flying lines, a kite can be up to 50m high in the sky. Therefore, kites are much higher than the dunes or dykes. It has not been analysed yet what impacts this may have on e.g. the beach bird populations.

### Hiking

Traditionally, enjoying nature and a feeling of well-being are of importance to hikers. Diverse paths along ridges and at high altitudes are preferred, whereas hiking through dense forests is not very popular. German hikers generally expect perfect signposting and path networks, guiding them through the landscape. Moreover, hikers prefer natural paths and oppose paved roads (Naturpark Südschwarzwald 2003a).

As a result of the recent health and fitness boom, nature based endurance sports such as hiking are rediscovered. The feeling of well-being achieved through the relaxing and health supporting aspects of hiking, as well as nature experience play a crucial role. Apart from traditional hiking, new variations, like Nordic walking for instance, are developed and marketed. Furthermore, there are attempts to market hiking as a year around sporting activity as winter-time hiking, Nordic wintertime walking or snowshoe walking (Naturpark Südschwarzwald 2003b, c).

Consequently, the aim is to develop well organised services of high quality that are offered throughout the year. Due to the landscape dynamics, hiking path network must be modernised continuously. In the coming years the amount of hiking paths will rather be reduced and only in a few cases new paths will be constructed. A hiking path system which complies with the needs of nature protection is an important tool of visitor flow management, especially in ecologically sensitive areas.

### Mountain Biking

Mountain biking offers good possibilities to extend services and address a new target group, particularly in low mountain ranges. Individual regions increasingly advertise their mountain bike path networks. Guided tours are offered as part of a package, including accommodation and other services. Land use planning, which considers the requirements of sporting activities as much as the demands of nature protection, may help to avoid conflicts. At the same, management measures may make the area more attractive as more services are offered (cf. Naturpark Südschwarzwald 2003d).

For those mountain bikers who are interested in modern technologies, the Global Positioning System

(GPS) opens up new possibilities of orientating themselves without using a map. At the moment, the failure of the system inside forests and in narrow valleys still hinders the wider use of this technology. Once GPS can be successfully applied though, digitised routes could provide additional information to maps and route descriptions and contribute to visitor flow management. Mountain bikers are a suitable target group for this as they are open to new technology.

Traditional events organised for mountain bikers (marathon, down hill or cross country races) will rather decrease in Germany. Many of the larger events will concentrate less on competitions, but offer more opportunities for everybody to participate (cf. Jakob et al. 2001).

So called bike parks, also known as fun parks or bike courses, represent a relatively new development in Germany. Generally, various disciplines are offered on several tracks in designated areas (e.g. ski slopes with lifts). Additional services such as equipment rental, courses and special events complete the offered services.

In many German forests hunters are particularly opposed to permanent mountain bike path networks similar to the hiking path system, because they fear restrictions on hunting, especially with regard to hoofed game in the forest. In this context the German hunting rights and the custom of leasing hunting grounds must be pointed out. Contracts issuing permissions or the reduction of the lease value are chiefly discussed in the red deer preserves of the low mountain ranges.

### Snow Sports

The guarantee of snow in skiing resorts is not only a key issue of discussions about the future of snow sports in Germany, but also in other countries. In order to compensate for the lack of snow, many areas have invested in snow machines. But it must be kept in mind that these machines are only profitable and ecologically acceptable under specific conditions. According to legal regulations, impact assessment must ensure that certain requirements are met, before a snow machine can be utilised. The decrease of the number of winter sport areas will lead to a concentration of snow sports in areas which can guarantee snow with the aid of snow machines and offer other services of high quality (cf. Scheiber & Klenkhart 2000).

The visitor demands placed upon alpine skiing areas have changed with overall societal change. So called mountain worlds, which extend over vast skiing areas, are popular. Therefore, suitable areas offer extensive services aimed at the various target groups. Visitors can choose from the variety of services according to their own preferences, without having to organise anything themselves. Nowadays, events, fun parks and service centres are part of the basic facilities skiing resorts offer (cf. Roth 2002).

Another recent development as a result of the lack of snow is indoor skiing and snowboarding. In Germany altogether three indoor skiing facilities are

already in use and more facilities are planned. The market economy promotes snow sports in order to attract more people. Nearby skiing areas in low mountain ranges, which can guarantee snow, are supposed to serve as training areas, wakening the skiers' interest, so that they will then proceed to spend their winter holidays in the Alps (cf. Türk 2004).

## Outdoor Activities and Land Use

Sports and nature protection look at land use from clearly distinct perspectives. Whereas environmentalists rather look at the potential and actual protection categories of an area, outdoor sporting activities evaluate that same area according to its suitability for the various activities and recreation. Different subjective perceptions of the same area could not be more distinct.

But from a neutral point of view, there is one major commonality: often the same parameters are used to analyse the qualities of a biotope and a sport area. For example, in Germany the biotope or geo-type 'inland rock formation' is a habitat of indicator species such as the eagle owl (*Bubo bubo*). At the same time, these rocks are important vertical climbing routes. Consequently, the overlapping interests continuously cause conflicts

### Land Use

Outdoor activities is only one of many land uses. Therefore, impact assessment of outdoor sports must take into consideration other utilisations and the general conditions of nature and the landscape. Outdoor activities concentrate on water (2% of the total national area), forests (29%) and extensively used agricultural area (cf. Bundesamt für Naturschutz 2002). The larger part of German territory is not suitable for these activities.

Increasing sealed surface because of settlements, industrial constructions and traffic infrastructure have an impact on almost all types of biotopes. This habitat loss is one of the major causes for endangering many animal and plant species. According to the Federal Office for Nature Protection (Bundesamt für Naturschutz 2002), 33% of all biotope types are highly endangered, another 15% are in danger of extinction. The effects of the different causes, which do not lead to complete destruction of an area, depend on how sensitive each biotope is.

### Outdoor Activities

To evaluate the land use of outdoor sporting activities different categories must be formed, according to the used area, the preferred time of the year or equipment. As a result, different terms will be used, e.g. snow sport, summer sport, mountain sport, water sport, flying sport and so on. For each utilised area a systematic categorisation of the outdoor sporting activities should be developed, taking into account the joint requirements of various sports.

It can be useful in many ways to subdivide activities according to the type of utilisation of nature and

the landscape. Table 2 presents a possible subdivision with examples.

Table 2. Outdoor activities according to the type of land use.

sport	type of utilisation
<b>activities, using directly the natural resources</b>	
hunting	removal of game, wildlife management
fishing	removal of fish, stocking up
gathering	removal of berries or mushrooms
<b>activities interfere natural landscape by constructions</b>	
skiing	pists, lifts or artificial snowmakers
golf	golf course
<b>activities using the existing infrastructure in landscape</b>	
canoeing	utilisation of existing watercourse
hiking	utilisation of existing paths and trails
mountainbiking	utilisation of existing paths and streets

This subdivision does not provide very much information about the environmental impacts of each activity. To do an impact assessment it is necessary to look at each case individually and analyse the removal of animals or plants with respect to sustainability, the extent of interference, as well as the degree of disturbance.

Additionally, it must be borne in mind that the intensity of utilisation greatly depends on the type of activity and the environmental behaviour of the visitors.

### Development through outdoor activities

Many outdoor activities require specific landscape structures. Frequently, alterations of certain landscape elements are necessary. Typical examples are boathouses, landing stages, lifts, as well as car parks and access roads. Generally, such developments are only possible if those sports are of economic importance. Often they induce further development.

In Germany the cultural landscape usually offers sufficient infrastructure, which was originally developed for other purposes, but can also be used for outdoor activities. This form of development grants sportsmen and women access to close to nature landscapes, which they would not have otherwise. An example for this is the utilisation of forest roads and paths for hiking or mountain biking. In theory both activities could do without these roads, but in practice they depend on such an infrastructure. On top of that, even in well developed cultural landscapes there is room for further development, if it suits the interests of sport tourism (construction of special paths, widening of paths etc.).

A categorisation of outdoor activities according to their degree of influence on further development seems to be difficult. Sporting activities undergo changes. Moreover, for one and the same activity the existing structures may be sufficient or require further development, depending on the demands of the people. The current situation is illustrated graphically in Figure 1. In this context it is to be noted that not every development for sporting purposes leads to the

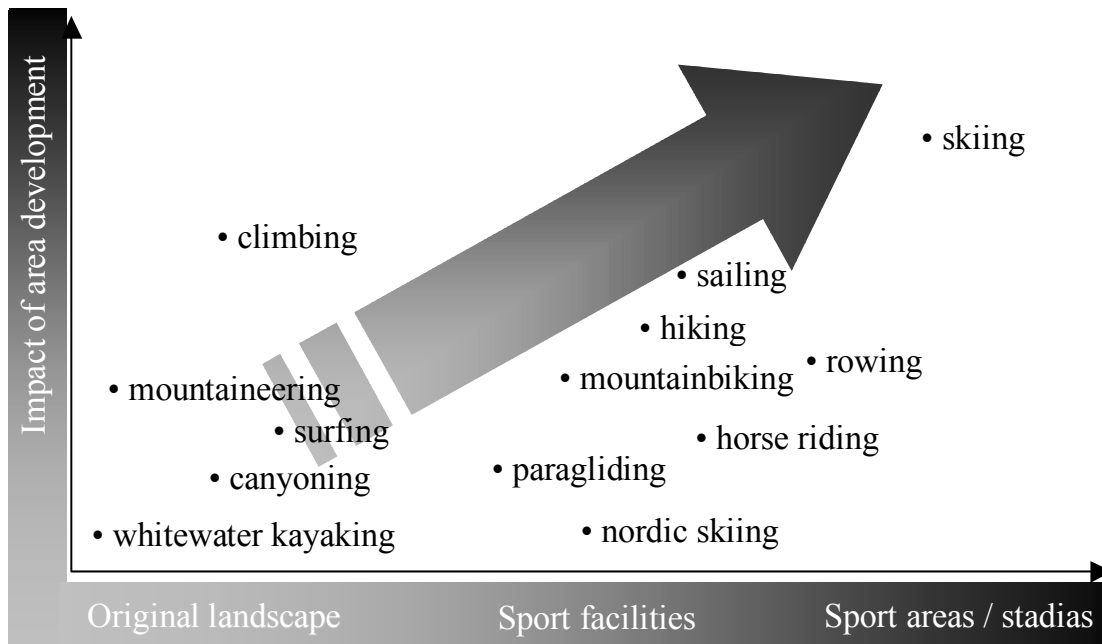


Figure 1. Correlation between the impact of area development and the use of sport facilities by outdoor activities.

construction of extensive facilities. Many developments proceed very slowly, e.g. through repeated use of a certain path, a place for swimming or a slope. Changes can only be noticed after observations over a long time.

Only very few sporting activities do not require any development of the landscape. These sports do not alter the used landscape. Therefore, they could be considered to be the ‘true’ nature sports. Originally, white water rafting, for instance, was a sport that made us of undeveloped landscapes. In Germany, suitable areas for these types of sport are almost impossible to find though. The few areas that would be adequate are mostly rare areas of very high ecological value. This leads to an almost schizophrenic situation, as outdoor activities which require the least space are criticised most.

### Provisions for and through Sports

Areas suitable for outdoor activities are often areas of high ecological value. They serve as habitats for specialised animal species and are sites of diverse plant associations. Factors that promote human health, such as clean air or relaxing nature experience, are also evident. Exercise in these surroundings contributes to healthiness for different physiological and psychological reasons.

There is a demand for enjoying nature and active as well as restful recreation. Also, the duties of the legislature regarding provisions for recreation, also in terms of outdoor sporting activities, are clearly defined (cf. Federal Law of Nature Protection). But, in Germany there are not enough areas to meet the demands of sporting activities in natural landscape and to ban sports from protected areas at the same

time. Consequently, outdoor activities will largely continue to be pursued in protected areas.

Nature protection laws require that sports make use of the landscape in a sustainable manner and respect the intrinsic value of nature. Especially in priority nature protection areas sporting activities must not interfere with the conservation targets, requiring very strict regulations. Spatial and temporal restriction of use must be accepted and the maximum capacity must not be exceeded. In exceptional cases a total prohibition of sports must be accepted, if sporting activities are absolutely not compatible with conservation targets (cf. DAV 2003). Furthermore, nature protection and sports must cooperate to ensure that voluntary agreements are kept.

The incorporation of sports into the nature protection legislation and the associated duty of providing for recreation require that the management of protected areas takes into account the needs of outdoor sporting activities and recreation. In Germany new management approaches must be developed to avoid future conflicts and to solve existing problems.

Integrative models for the combination of nature protection interests and recreation provisions, as we know them from the USA for example, do not exist yet. The development of a *Sport Area Management System* (Krämer et al. 2004, Krämer in prep.) as part of the sport tourism concept for the Southern Black Forest Nature Park is a promising step forward, however.

If instead of modern management repeated calls for the banning of outdoor sporting activities in order to provide sites for nature conservation purposes (e.g. national parks, biosphere reserves, nature protection areas or FFH areas) were to be acted upon, it would mean the end of numerous outdoor activities in Ger-

many, or a catastrophe for the remaining sites, which would not be able to withstand the resulting over utilisation without being subject to grave damage. The concentration of activities on a small remainder of sites would result in a loss of the quality of recreation. The great demand for suitable facilities also means increases in the numbers travelling abroad, as is already happening in the case of certain sporting activities (climbing, whitewater kayaking, alpine snow sports). Many of the consequences are already known. Ultimately the problems described are not solved, merely shifted.

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