

Natural areas for everyone – What infrastructure do people with disabilities require?

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Recreational activities in the outdoors have increased remarkably. Being in nature is ever more popular in society as a whole. This also includes disabled people for whom the positive impact of outdoor recreation on well-being and quality of life is even more important than for not handicapped people. But, what kind of infrastructure is needed by disabled people to allow them accessing natural areas? How should elements be designed to be in line with disabled people's demands? These questions are investigated in the senTour project.

Introduction and Research Question

Outdoor recreation activities, and in particular recreation in natural areas, have greatly increased over the last decades. This is well received since recreation in the outdoors has many positive effects on people's physical health and mental well-being (Immoos and Hunziker 2015). This is even more true for the disabled for whom being in nature has an even stronger impact on quality of life than for the non-disabled (CA 2005). Although the number of disabled people is still under-represented in the outdoors, the topic of accessibility of natural areas is steadily gaining interest.

People with disabilities include all persons that, due to physical, sensory, or cognitive impairment are challenged by barriers and obstacles that prevent them from fully participating in the world. At that, disabilities may be present from birth, occur during persons' lifetime because of accidents or sicknesses, or it might be due to age-related deficits and alterations (Atkinson and Castro 2008). Besides disabled equality acts, which guarantee the right to non-discrimination in employment, education, access to goods and services, buying and renting property, the fact that our society is ageing (and older people have a higher risk of disability) triggers the need to investigate how to improve accessibility of natural areas for disabled people. Here, accessibility is defined as the ability to access the functionality and possible benefits of products, devices, services, or environments for people with disabilities. It describes the degree to which a building, outdoor area or other facility is accessible, i.e. can be entered and used by everyone – independently, without the need for special arrangements (EC 2004).

Like for not handicapped people infrastructure such as parkings, trails, signposts, information centers, resting areas, viewing points, natural attractions, and staff are central prerequisites in order to perform recreational activities in the outdoors. But, what kind of infrastructure is required by disabled people to allow them accessing natural areas? How should relevant elements be designed? These questions are investigated in the senTour project (funded by the Austrian BMVIT under the FFG Program Benefit; duration 2014-2016), which aimed at developing a web-based informa-

tion portal for the Austrian Gesäuse National Park. Since the objective of this portal is to deliver information on recreational infrastructure relevant for disabled people in order to allow them visiting this protected area, the first step was to gain profound understanding which infrastructure is needed by older and in particular disabled people.

Methods

To yield insight into infrastructure needed by disabled people, in senTOUR project several methods were applied: An extensive literature review was undertaken. Reports and documents prepared by natural i.e. protected areas managers, experts, stakeholder groups and umbrella organizations as well as scientific publications on recreation and tourism, accessibility and barrier free products were searched. The results of the literature review served as basis for the preparation of two questionnaires. One survey was conducted among large protected areas in Germany, Austria and Switzerland (autumn 2014). The questionnaire, which was prepared using the online questionnaire design tool Survey Monkey, contained of 17 mostly open questions. The questionnaire was distributed using email. From 197 large protected areas the questionnaire was sent to, 68 responded. A second questionnaire with 23 mostly closed questions (using also SurveyMonkey) was prepared and sent by email to target group members by help of Gesäuse National Park and ÖAR (spring 2015). Here, 129 valid questionnaires were returned. The data collected through the two questionnaires was pre-processed and analysis using MS Excel and IBM SPSS.

Results

Disabled people require a variety of infrastructure. However, elements needed do not in all cases vary from the ones demanded by not handicapped people, but disabled people request infrastructure to have specific characteristics. Insight in demand on infrastructure and their characteristics is given in the table below.

Table 1. Selection of recreational infrastructure and their characteristics required by disabled people (based on Hennig 2015)

Infrastructure	Characteristics
arrival: parkings, public transportation means	close to entrance or attraction; sufficient number of disabled parking places; suitable size and orientation; marked as such; signage; possibility to call for help; shelter; flat terrain; no cobblestones or lawn stones etc.
trails	trail head close to parkings, public transportations; wayside and crossings clearly recognizable; path width at least 120 cm; no steps, barriers, or path narrowing etc.; not too steep (best flat terrain) if e.g. slope between 4 – 6% ever 100 m a resting place should be provided; path surface no stones, mud, or roots etc.; availability of shadow and shelters; on-site information regarding the remaining distance; possibility to shorten the tour; no bicycles or cars on the trail; provision of benches and resting places; access to toilets, possibility to get help (emergency calls); possibility to use assistive technology
guiding systems	gapless; clearly and good to recognize; easy to capture, to read and to understand; use of two-sense principle (hear and see, see and feel, feel and hear); using symbols, colors and text, large letters, high contrast, being tactile (e.g. Braille); pointing to all accessible infrastructures (toilets, natural attractions, viewing points, exhibitions etc.)

Infrastructure	Characteristics
on-site information: information boards, overview maps etc.	use of two-sense principle (hear and see, see and feel, feel and hear); use of colors, images, large letters, high contrast, easy language, being tactile (e.g. Braille), providing information also by other means (paper map, accessible homepage, mobile app etc.); no steps; usable/ reachable by wheelchair drivers (position, height); marked as such (guiding system); availability of benches
resting: seating and benches, picnic areas, resting places	easy to reach (without any steps etc.); marked as such (guiding system); benches with backrest, grips, in different height (46 – 50cm, 45 – 50 cm, 32 – 44 cm, 70-80 cm), tables can be used by wheelchair drivers (different heights etc.); access to toilets; close to parkings, public transportation means
on-site nature experience: viewing points, wildlife observation points, information pavilions etc.	close to parkings, public transportation means; marked as such (guiding system); no steps; not slippery; hedges and railings; enough place for staying and moving (wheelchair turn area); flat terrain; shelter and shadow; accessible information provision (see on-site information); exhibition pieces and windows for observation in different height or adjustable height (usable by wheelchair drivers); see also recommendations on accessible exhibitions and museums: http://nullbarriere.de/ausstellung-barrierefrei.htm , http://www.lmb.museum/de/fach-und-arbeitsgruppen/ag-barrierefreiheit-ausstellungen/barrierefreiheit/
on-site environmental education: educational trails	headset close to parking, public transportation means; length: 2-4 km/ 2 - 3 hours; marked as such (guiding system); accessible trails and stations; not located next to the trail but in particularly designed "bays"; accessible information provision (number of stations „less is more"); use of easy language and images; tactile information; easy to read (large letters, high contrast); suitable position of installations (to read, to use) also for wheelchair drivers; possibility for assistance (staff, assistive technology etc.; accessible toilets, accessible resting places being close etc.
indoor environmental education; information centers etc.	close to parkings, public transportation means; marked as such (guiding system); overview map and guiding system inside the building; use of two-sense principle (hear and see, see and feel, feel and hear); accessible toilets; possibility to take a rest (benches etc.); accessible outdoor terrain; following criteria for accessible exhibitions and museums (e.g. http://nullbarriere.de/ausstellung-barrierefrei.htm , http://www.lmb.museum/de/fach-und-arbeitsgruppen/ag-barrierefreiheit-ausstellungen/barrierefreiheit/)
staff	particularly trained/ skilled staff
excursions	use of two-sense principle; use of easy language; accessible trails, particularly trained/ skilled staff; possibility to get detailed information on it and to book it in advance
service & facilities: toilets	following criteria for accessible toilets (e.g. http://www.oear.or.at/barrierefrei-gestalten/barrierefrei-planen-und-bauen/informationsblatter/informationsblatter-des-netzwerkes/Infoblatt_1%20-%20202005-5.pdf)
service & facilities: chances to stop for a bite to eat	following criteria for accessible restaurants and hotels (e.g. http://www.dehoga-bundesverband.de/branchenthemen/barrierefreiheit/handbuch-barrierefreiheit-in-hotellerie-und-gastronomie/)
(service) information	pollen warning service; weather forecast; emergency numbers; mobile network availability; indicating if assistant dogs are welcome; possibilities regarding assistance (e.g. sign language interpreters); offers to rent (e.g. swiss track); possibility to charge electric wheelchairs etc.

In addition, results of the literature review and the two surveys show that for the target group it is of pivotal interest that infrastructure is available building a complete tourism service chain (providing infrastructure in terms of planning, arrival, orientation, moving around, on-site experience, departure, and memory-sharing). All elements along the service chain must be barrier free. Here, if only one element is missing or not accessible, this does not just mean discomfort or inconvenience for the visitor, but - in the worst case – that “the chain breaks” and that people will not be able to visit a destination at all.

For disabled people the decision to visit a site strongly relies on having accurate information available. Lack of information is one of the most outstanding problems limiting the use of the outdoors by disabled people. Information provided must mirror all aspects of the tourism service chain. Infrastructure and relevant characteristics have to be described in detail.

Conclusion and Outlook

Accessibility is a topic of increasing interest for natural areas. On the whole disabled people do not require different infrastructure elements compared to not handicapped people, but they require infrastructure to be designed and implemented in a way suitable to them.

Concerning the description and classification of accessible infrastructure it is problematic, that literature outlines a lack of standards on accessibility of the outdoors. Further, there are no commonly accepted levels of accessibility like provided by WCAG 2.0 regarding the accessibility of web content (with three conformance levels). So, there is urgent need for elaborating accessibility standards and accessibility categories regarding recreational infrastructure in natural areas – considering different types and degrees of impairments.



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