

Nature for Resilience A biosphere network for veteran recovery

- DAAD East West Dialogue Programme 2025 -

Developing a Barrier-Free Environment for Veterans and Disabled Individuals in NNP "Skolivski Beskydy" for Rehabilitation

Learning from the Experience of Müritz National Park, Nationalpark Harz und
Spreewald Biospher Reserve

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Introduction

In 2025, the Nature for Resilience initiative - a network dedicated to supporting veterans - identified the Skolivski Beskydy National Nature Park (NNP) in Ukraine as a key location for developing a more accessible and rehabilitative environment. This initiative recognizes the powerful connection between nature and well-being, as exemplified by the principles of forest therapy (Shinrin-yoku), with its proven benefits for reducing stress, improving immune function, and enhancing mental clarity. Drawing on the valuable experiences and best practices from renowned German protected areas - including Müritz National Park, Harz National Park, and the Spreewald Biosphere Reserve - this project aims to create a truly barrier-free environment within Skolivski Beskydy, ensuring that its natural treasures can be experienced and enjoyed by all, especially those who have served their country.

1. NNP Skolivski Beskydy: Framework Conditions

Location:

Ukraine, in the river basins of the Stryi and Opir rivers.

Area: Sanocko-Turczańskie Mountains and Skolivski Beskydy.

Soil and Flora: Calcareous sandstone flysch.

Borders:

Northwest: mountain ridge with the highest peak, Mount Parashka (1268 m).

Interior: Stryi-Sansk Highland.

Area: 35,261 hectares.

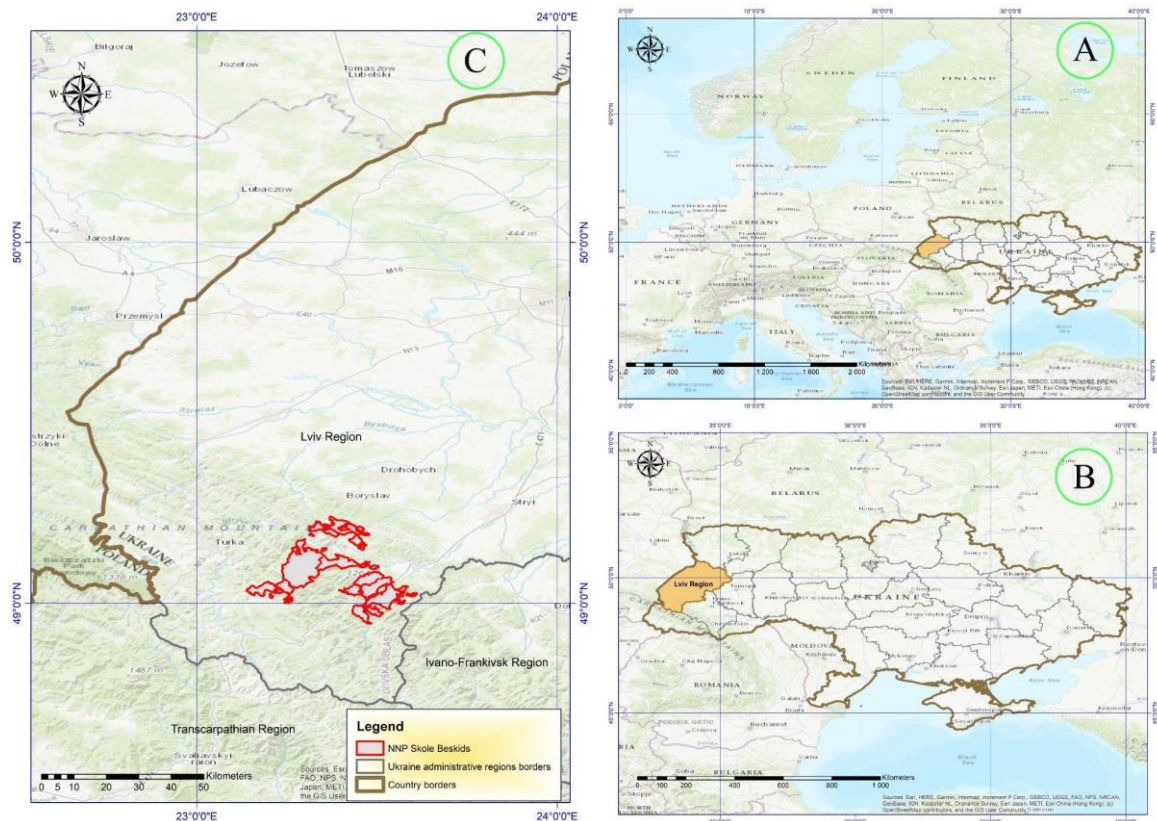


Fig 1. Area of interest: (top right) Ukraine on a map of Europe; (bottom right) administrative divisions of Ukraine; (left) territory of the National Nature Park Skole Beskids.

Climate:

Mild, moderately warm, and humid.

Winter: Frequent thaws, temperature 0°C to +5°C.

Average temperature: January -5°C, July +17°C.

Annual precipitation: 800-1100 mm.

Average snow depth: 39 cm

Main goal of recreation in the park:

NNP focuses on sustainable tourism and highlights the role of the park in ensuring recreation without harming the ecosystem.

Emphasis on the educational aspects of recreation to promote environmental awareness.

Important information for visitors (even if no detailed list is given):

Infrastructure: The park is working to improve tourist infrastructure.

Nature trails and hiking trails: Existence of various routes (without detailed route descriptions).

Rules and regulations: It is emphasized that visitors must adhere to park rules to protect the environment (i.e., making fires, littering, etc., are regulated).

Seasonal restrictions: Information that there are seasonal restrictions at certain times (e.g., during periods of increased fire risk or during animal breeding seasons).

Specific recreational opportunities (which can be deduced from the text):

Hiking: The focus is on the existence of routes.

Nature observation: The emphasis on nature conservation suggests that this is an activity.

Educational activities: Also implied by the goals of the park.

Current Status and Focus:

Big City Lab Ukraine has conducted an expedition to the national park to evaluate opportunities for barrier-free routes.

They examined three tourist routes, including the "Kamjanka River Valley" route, but their focus is on the "Pawliw Brook - Kamjanka Waterfall" route for prioritized development of barrier-free areas.

Workshop results and planned initiatives:

Following discussions with park staff, community officials, veterans, and local residents, seven key areas for barrier-free development were identified:

Improving access to information: Easier availability of information about the national park in general.

Accessible infrastructure: Ensuring that existing infrastructure is designed to be as accessible as possible.

Accessible mobility: Solutions for visitors to move around the park (regardless of their mobility).

Recreation Cluster Pawliw Brook: The creation of a focused recreation area in this area.

Pilot Route Pawliw Brook: Developing a barrier-free pilot route near Pawliw Brook. (This is the focus of current plans).

Accessible guided tours: Offering alternative and accompanied tours that are suitable for people with different needs.

Transport for people with disabilities: Providing transport options..

Next Steps:

Big City Lab is preparing recommendations for the park. These recommendations concern not only physical accessibility but also the barrier-free design of information and communication.

In summary (with a focus on accessibility):

The Skolivski Beskydy National Park is taking steps to improve accessibility. They are initially concentrating on the "Pawliw Brook - Kamjanka Waterfall" route. Currently, the focus is on planning and consultation, and the next steps involve implementing recommendations to improve physical, informative, and communicative accessibility. The Facebook post emphasizes a holistic understanding of barrier-free accessibility.

For Further Research:

To find out the current progress and implementation details, it is best to:

Consult the official website of the national park

Contact the Skolivski Beskydy National Park directly

Follow the progress of Big City Labs and its partners.

2. Model German Protected areas: Barrier-Free Infrastructure

Report on the Morning of the Forest Day on July 10, 2025: Project Presentation "Schöneberger Wildwald"

On the morning of the Forest Day, which took place on July 10, 2025, in the Lower Odertal National Park, the project "Schöneberger Wildwald" was presented. The project, which was initiated in September 2024, aims to observe and study the Schöneberger Forest in the long term, examining how the forest develops in the absence of direct human intervention.

Key points of the project presentation:

Focus of the study: The ability of the forest to regenerate naturally and adapt to the conditions of climate change.

Methods: Continuous documentation of the development of the forest ecosystem using various technical methods.

Special features of the Schöneberger Forest: High small-scale biotop diversity and an insular location within an increasingly warmer agricultural landscape.

Protection status: Special protection status since 1995, which largely excludes human uses.

Inauguration of the information board:

As part of the project presentation, a newly erected information board was inaugurated at the edge of the Schöneberger Forest. The board provides information about the project and the forest area in question. In addition to the local press, other regional stakeholders were also present.

Excursion:

Following the project presentation, an excursion took place through selected areas of the Schöneberger Forest. The methodological approach, initial results from the data collection to date, and an outlook on the next steps in the project were presented. The participants gained a general impression of the area's dynamics and learned about several study areas. The monitoring concept was explained in the field. The excursion offered room for a technical exchange.

Approach NNP Harz:

The Harz National Park extends over the two federal states of Lower Saxony and Saxony-Anhalt and over the three districts of Harz, Goslar, and Göttingen. The Harz area accounts for about 10% (fig. 2).

Topography: The Harz is characterized by considerable differences in altitude (up to 900 meters) and continuous ascents.

Path network: The path network, which covers around 600 kilometers, often consists of narrow paths, which makes accessibility difficult.

Nature conservation: The nature in the Harz is largely untouched, which means that accessibility can only be realized with interventions in sensitive natural areas.

Variety of facilities: The numerous national park facilities are distributed over the entire protected area. This makes comprehensive implementation of accessibility difficult.

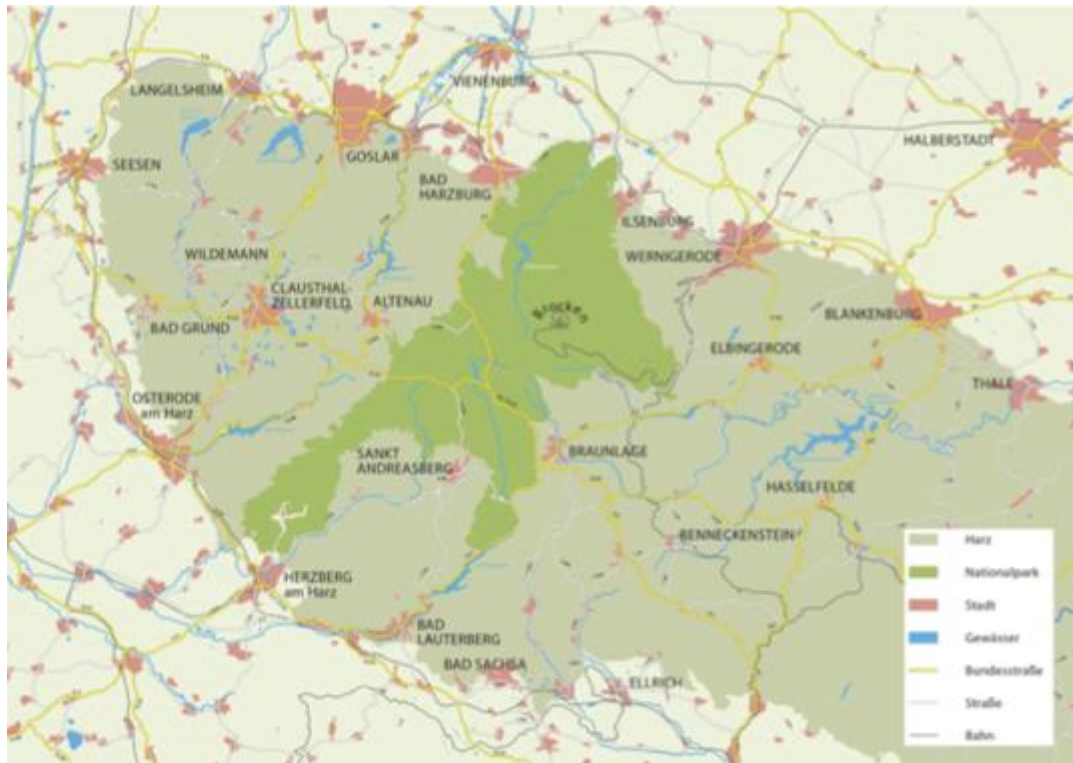


Fig.2. The Nationalpark-Region of Harz.

On August 6, 2025, Mandy Gebara presented challenges and approaches to creating barrier-free offerings in the Harz National Park. The report summarizes the key aspects:

Approaches to creating barrier-free offerings:

Concentration on designable areas: Creating barrier-free offerings in designable areas in order to minimize interventions in nature.

Focus on national park houses and visitor centers: Expanding accessibility in national park houses and visitor centers, as well as offerings with usable infrastructure.

Partial aspects of barrier-free accessibility: Improving partial aspects of barrier-free accessibility, insofar as this is ecologically and financially feasible.

Procedure:

Evaluation of the current state: Conducting evaluations of the current state with external experts and those affected.

Student projects and internship projects: Involving student projects and internship projects in the analysis and development of solutions.

Collaboration with those affected: Close collaboration with those affected to record the current situation and derive improvement measures.

Implementation of barrier-free accessibility:

Structural and content-related barrier-free accessibility: The greatest possible barrier-free accessibility in all new tenders as a mandatory point both structurally and in terms of content in the exhibition concept.

Elements:

- Levelness.
- Free spaces and path widths (Fig. 3).



Fig. 3: Barrier-free path without damage to nature.

- Sanitary facilities.
- Under clearance.
- Seating opportunities.
- Lines of sight.
- Contrasts (Fig. 4)



Fig. 4: Contrast for the visually impaired.

- Multi-sensory principle
- Multilingualism
- Audio/media guides
- Easy language

Information for visitors:

Comprehensive website with information (focus on movement restrictions).

Partial additional information from the houses for special target groups (e.g., visually impaired and blind people).

Cooperation with important partners along the service chain (bus connections, parking spaces, Harz narrow-gauge railways).

Expansion of digital visitor guidance also in the area of information on barrier-free accessibility
-> tour planners, open data for app applications

On August 6, 2025, the Löwenzahn Discovery Trail in the Harz National Park was visited (Fig. 5). This path was created on the occasion of the 25th anniversary of the ZDFtivi series

Löwenzahn and offers a playful approach to nature in the national park, especially for children and families.



Fig. 5: Löwenzahn Discovery Trail.

Entrance Area and Overview:

The entrance to the Löwenzahn Discovery Trail is clearly recognizable by a striking gate with two dandelion blossoms and leaves. A site map provides a first insight into the various stations along the trail. A signpost with the logo "25" accompanies visitors along the entire path.

Stations and Experiences:

The trail offers a varied mix of observations, small tasks, and playful elements:

Life in Deadwood: This station explains the importance of deadwood for the forest and its inhabitants. Children learn which animals need decaying or dead wood to survive.

Animal Tracks: Visitors are encouraged to walk through the forest more attentively and look for animal tracks. Traces can be discovered on trees and stones.

"Forest Station": At this station, children can test their knowledge of the forest by practicing attentive reading and puzzles on rotating columns.

Hearing Owl (Fig. 6): The hearing owl makes it possible to consciously perceive the sounds of the forest. Various sound funnels amplify sounds such as the rustling of the trees, bird songs, or even traffic noise.



Fig. 6: Hearing owl for people with hearing impairments.

Dreamer's Bench: The dreamer's bench invites you to linger and relax. Visitors can look into the canopy and be inspired by nature.

Long Jump: Here, visitors can measure their own abilities by competing in the long jump with the animals of the forest.

Forest Memory: At the end of the tour, visitors can remember what they have seen on their discovery tour and find the matching pairs of pictures again.

Overall Impression:

The Löwenzahn Discovery Trail in the Harz National Park is a successful example of a playful and child-friendly way of teaching about nature. The trail stimulates the imagination, sharpens the senses, and conveys knowledge about the forest and its inhabitants in an entertaining way. It is a rewarding destination for families with children to experience and understand the nature of the Harz National Park.

On August 6, 2025, the Brockenhaus National Park Visitor Center on the Brocken in the Harz National Park was visited. The Brockenhaus is an architecturally striking building and an important point of contact for visitors to the Brocken (Fig. 7).



Fig. 7: Brockenhaus in NNP Harz.

Exhibition and Experiences:

The visitor center offers a multimedia journey through the history and nature of the Brocken on three floors:

Ground floor: Here, visitors immerse themselves in the world of myths and legends and experience the exciting stories of famous Brocken visitors.

1st floor: This floor is dedicated to the valuable biotopes and species in the Harz National Park and, in particular, around the Brocken. Visitors can follow the forest's transformation into wilderness, immerse themselves in the Brocken primeval forest, look into the crevices of a boulder field, and discover the rich life in a deadwood trunk.

2nd floor: This floor deals with the German division, the secret service past of the former Stasi listening center "Urian", and the German radio and television history on the Brocken.

Further Highlights:

Dome: After visiting the exhibition, the dome attracts visitors with imposing listening devices from the GDR era and exciting hands-on stations on the subject of espionage and surveillance.

Viewing Platform: A viewing platform with a 360° panoramic view allows you to let your gaze wander across the land.

Hexenflug Café: In the Hexenflug Café you can enjoy the view through the panorama window with a small refreshment.

Accessibility:

The three exhibition floors, the café, and the sanitary facilities(fig.8). The dome and viewing platform can be reached via a spiral staircase. A barrier-free multimedia guide (fig. 9) enables alternative insights, and there is also a children's tour and the English-language exhibition visit.



Fig. 8 Sanitary Facilities in Brockenhaus



Fig. 9. Media Guide in Brockenhaus.

Opening Hours and Admission Prices:

The Brockenhaus National Park Visitor Center is open year-round (daily from 9:30 a.m. to 5:00 p.m., last admission to the exhibition at 4:30 p.m.). Adults pay €7 admission (reduced prices for children, pensioners, groups, and families), admission is free with the HarzCard.

Overall Impression:

The Brockenhaus National Park Visitor Center offers a comprehensive insight into the history and nature of the Brocken. The multimedia exhibition is informative and entertaining, and barrier-free accessibility makes it possible for all visitors to experience the Brocken.

Report on the excursion on August 7th in Serrahn and Müritz part of the Müritz National Park

On August 7th, a fascinating excursion took place with employee of National Park Frau Thuemerle in the Müritz National Park, which concentrated on the two parts Serrahn and Müritz. This excursion offered the participants the opportunity to experience the impressive nature and the diverse landscapes of Germany's largest national park up close (Fig. 10).

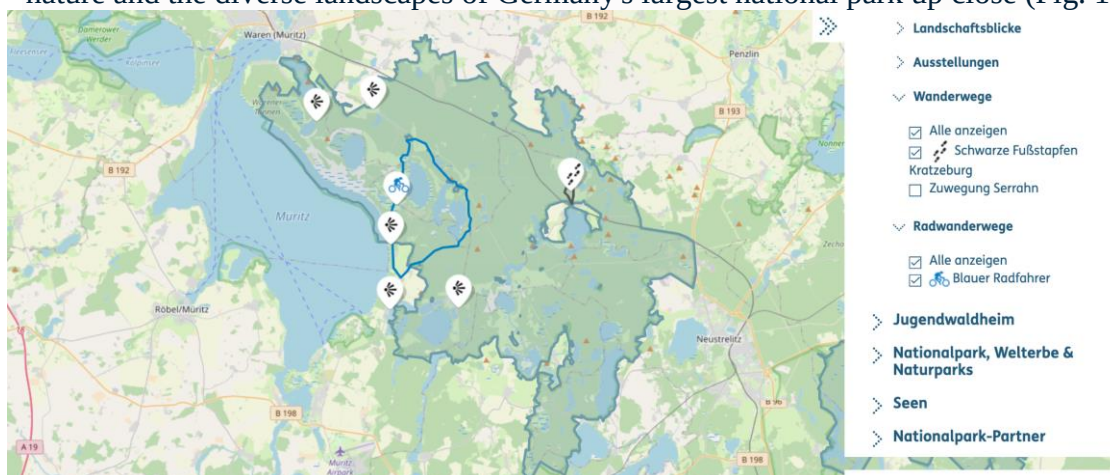


Fig. 10 Territory of the NNP Müritz

The hike started in the Serrahn area (Fig. 11), which is known for its almost untouched beech forests. These forests are a World Heritage Site and are among the oldest beech forests in Germany. Ranger Roland Weber led the group through the primeval forest-like landscapes and vividly conveyed the importance of beech forests for the ecosystem and the biodiversity of the national park.



Fig. 11 The barrier-free facility in Wanderweg Serrah, to see the plants on the moor.

The approximately 9 km long hike offered the participants the chance to spot rare animal species and enjoy the natural beauty of the surroundings. The forest adventure trail in Serrahn is particularly popular and contains informative stations that expand knowledge about the flora and fauna of the region.

During the excursion, the historical aspects of the area were also discussed, including the use of the forests in the course of history and the present-day importance of the national park for nature conservation. The participants learned how nature can develop in this protected area and what measures are taken to preserve the unique habitats.

Overall, the excursion was a rewarding and enriching experience, which not only brought the beauty of the Müritz National Park closer, but also sharpened awareness of nature conservation and the importance of preserving such areas. The excursion ended with many new impressions and a deep respect for nature and its diversity.

The information on the barrier-free infrastructure on the Komoot website makes it clear that there are numerous hiking trails that are suitable for people with limited mobility. Here are some important aspects of the focus of barrier-free design:

Checking accessibility: Students have checked the infrastructure along various routes for wheelchair suitability to ensure that they are accessible to everyone.

Recommended Tours: There are special collections of tours recommended by local handbike enthusiasts. These routes have been specifically selected to provide all para-athletes with a pleasant experience.

Variants for different needs: For each route, 2-3 variants are offered that bypass obstacles and improve accessibility, so that everyone can optimally enjoy nature.

Viewing platforms and stroller-friendly trails: Barrier-free viewing platforms and trails, which are also suitable for strollers, make it easier for families to use and ensure that everyone can enjoy the view.

Barrier-free cross-country ski trails: In certain regions, additional barrier-free cross-country ski trails are available that can be used by wheelchair users in special sleds.

Overall, it is clear that there is a growing awareness of the need for barrier-free infrastructure. This enables people with different needs to actively experience and enjoy nature.

Forest in Transition a fascinating exploration of the Unterspreewald accompanied by experienced rangers of the Naturwacht. The focus was on the species richness and the ecological importance of unused forests, which make an important contribution to humans and nature through deadwood, insects and birds.

The approximately 2.5-hour hike led the group into a "forest of tomorrow", where they were able to experience the dynamics and changes in the forest ecosystems up close.

Route and stations:

The tour began at Lübben train station, from where a shuttle took the participants to Groß Wasserburg.

From there, the group walked to the wooden bridge and on to the Hute oak, a striking tree with historical significance.

A detour led to a comparison between alder forest and succession areas to illustrate the natural development of forest communities.

The return journey was again with the shuttle to Lübben train station.

Thematic focuses during the trip:

Introduction to the Ice Age and its effects on the landscape.

Significance of forests and moors in the context of climate change.

Water problems in the Spreewald and possible solutions.

Other themes related to forest ecology and nature conservation.

Didactic elements:

Collection of terms on the topic of cultural landscape.

History of the place / region using the example of an old tree.

Mirror walk (if mirror available) to promote perspective change.

Comparison between alder forest with discounts and successional areas.

Perception of the difference between the indoor climate in the forest and the microclimate on the meadow.

Materials:

Map of afforestation.

pnV (phytosociological survey).

Scheme of succession.

Mirror for the mirror walk.

Picture of a Hutewald and a complete map.

Conclusion:

The Ranger Tour offered an informative and enriching insight into the diversity and the change of the forests in the Unterspreewald. The combination of expert guidance, practical observations and didactic elements made the tour a successful experience for all participants.

3. Planning barrier-free paths in the Skolivski Beskydy National Nature Park (focus on veterans)

A. Management and infrastructure:

Visitor guidance: Design and implementation of a differentiated visitor guidance concept (similar to the zoning concept of many German national parks) with:

Core zones: Strict protection of unspoilt nature (restricted access).

Development zones: Focus on sustainable use (hiking trails, guided offers).

Recreation zones: Areas with intensive tourist use (infrastructure).

1. Infrastructure development:

Expansion and modernisation of hiking trails: Signposting, marking and, if necessary, near-natural path surfacing.

Construction of information centres and nature experience stations (with interactive elements where appropriate).

Sanitary facilities: Sufficient and clean toilets (also barrier-free).

2. Sustainable mobility:

Promotion of public transport: connection to rail and bus lines.

Expansion of cycle path network and hiking trails, installation of e-bike charging stations.

Car park management: Designation of car parks outside sensitive areas, possibly with a shuttle service.

3. Nature conservation management:

Monitoring biodiversity and ecosystems.

Measures to combat invasive species.

Protective measures for endangered species (e.g. through special protection zones).

Forest management in the interests of nature conservation (promotion of near-natural forests).

4. Education and public relations:

Development of educational programmes for children, young people and adults.

Creation of information materials (brochures, maps, apps).

Cooperation with schools and educational institutions.

Events and guided tours.

Social media presence.

B. Financing and organisation:

Diversification of funding sources: Not only state funds, but also donations, sponsorship, income from tourism.

Involvement of the local population: Participation in planning and decision-making processes.

Cooperation with partners: tourism associations, nature conservation organisations, forestry companies, communities.

Quality management: Introduction of standards for sustainable tourism.

Training programmes: Qualification of employees (rangers, tour guides).

II. Selection of Tourist Routes (Example Pawliw Brook - Kamjanka Waterfall) (Fig. 12)

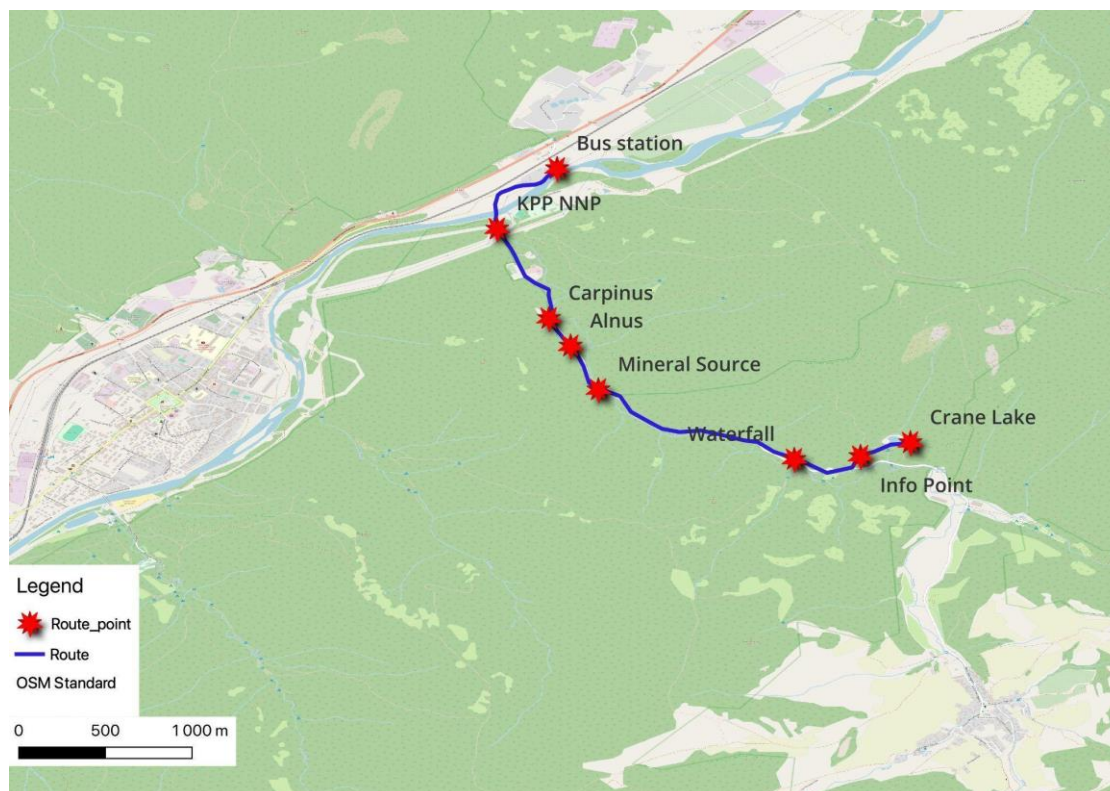


Fig. 12: Project Barrier-Free Path "Pawliw Brook - Kamjanka Waterfall"

These recommendations present a practical, prioritized set of measures to improve infrastructure, visitor management, sustainability, and accessibility in NNP Skolivski Beskydy, balancing visitor experience with nature protection. They are intended as a guide for park managers, planners, and local stakeholders to adapt and implement according to local conditions and applicable standards.

A. Infrastructure: Path construction should use near-natural materials and be consolidated to prevent erosion. Install stairs with a shallow gradient and non-slip coverings where slopes are steep, and erect railings in exposed locations. Create viewing platforms with seating and install information boards about local flora, fauna, and geology. Establish observation stations for wildlife, equipped with binoculars. For barrier-free accessibility, check possibilities for wheelchair-friendly sections (for example, flat, paved paths), design offerings for people with visual impairments (for example, tactile guidance systems and audio guides), and use easy language on information boards.

B. Nature and visitor management: Designate protection zones where certain activities (for example, making fires) are prohibited and guide visitor flows to relieve sensitive areas. Provide waste management through installation of trash cans and regular cleaning. Produce a hiking map with route details, difficulty levels, and nature conservation information, and offer GPS tracks and mobile apps. Provide guided hikes led by rangers or trained nature guides and organize themed hikes (for example, bird watching or botany).

C. Sustainability: Raise awareness by communicating nature conservation ideas. Cooperate with local providers such as catering and accommodation businesses that commit to sustainability. Adapt all measures to the specific conditions of NNP Skolivski Beskydy

(climate, vegetation, topography, and cultural features). Prioritize measures because not all can be implemented at once (for example, start with path construction and signage, then move to nature conservation management). Monitor and regularly review the effectiveness of measures. These steps can help make NNP Skolivski Beskydy an attractive, sustainable tourist destination while protecting its unique nature.

I. Equipment for a barrier-free information center: Furniture and fittings should include a height-adjustable counter for seated and standing visitors, a range of seating options (chairs with and without armrests, stools, benches with backrests) in different seat heights, and height-adjustable tables suitable for wheelchair users and children. Information technology should include computers with height-adjustable monitors, screen reader and speech recognition software, Braille or large-key keyboards, audio guides in multiple languages and volume settings, and an induction loop for hearing-aid users. Information and signage should use large, high-contrast fonts and tactile elements including Braille, tactile floor guidance systems, tactile models of the landscape or animals, brochures in easy language and large print, relief maps, subtitled videos, and audio descriptions.

II. Equipment for a barrier-free bridge in nature: Construction requirements include gentle ramps with a maximum gradient of 6% (DIN 18040-3), a non-slip covering that remains safe when wet, continuous railings on both sides at two heights (90 cm and 70 cm), a minimum width of 150 cm to allow wheelchair users and oncoming traffic, rest areas with seating every 20–30 meters, and visually contrasting design for railings and covering. Additional equipment may include glare-free lighting for safe night use, information boards in large high-contrast fonts with tactile elements, and special waterproof wheelchairs for lake use that are easy to clean and disinfect. General advice: safety is the highest priority, so regular maintenance and inspection are essential. Equipment must comply with applicable accessibility standards (for example, DIN EN 18040). Consult accessibility experts when planning

Conclusions

Significance of the project: Developing barrier-free infrastructure in Skolivski Beskydy National Park is an important initiative to make nature experiences more accessible for veterans and people with disabilities and to support their rehabilitation.

German nature parks as inspiration: The experiences of German nature parks, especially Harz National Park, provide a valuable foundation for planning and implementing accessibility measures.

Need for a holistic approach: A successful project requires a holistic approach that addresses both physical accessibility and the provision of information and communication in accessible formats.

Participation and cooperation as success factors: Involving the local population, collaborating with relevant partners (tourism associations, conservation organizations, municipalities, etc.), and considering site-specific conditions are critical to success.

Pilot route as a starting point: Focusing on the "Pawliw-Bach – Kamjanka Waterfall" route as a pilot project allows for learning and developing best practices that can later be applied to other areas of the park.

Continuous development: Creating accessible offerings is an ongoing process that requires regular evaluation, adjustments, and the development of new services.

References

1. "Reisen für Alle": Barrierefreiheit geprüft - Bericht Erlebnisraum Wilder Kermeter: DSFT Berlin, Charlottenstraße 13, 10969 Berlin, Prüfsystem zur Barrierefreiheit, Version 3.0.0., Bericht PA-97-2018 vom 27.02.2018.
2. Facebook-Post: Bericht über die Expedition des Big City Lab zum Nationalpark Skolivski Beskydy:
<https://www.facebook.com/BigCityLabUkraine/posts/1270250294416224/>
3. "REKREATSIIA" Website Skolivski Beskydy: <https://skolebeskydy-park.in.ua/pro-nas/napriamok-diialnosti/rekreatsiia/>
4. The official DIN (Deutsches Institut für Normung - German Institute for Standardization) website.

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