

HISTORICAL WATER MANAGEMENT STRUCTURES AND THEIR CURRENT POTENTIAL (THE EXAMPLE OF THE BESKIDS AND OTHER AREAS)

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<https://doi.org/10.11118/978-80-7701-087-0-0189>

Abstract

A number of water structures have been preserved in Czechia, whose existence was linked to the transport of timber. In the Beskids, where structures used for floating timber can still be found today, the need for timber was primarily related to the processing of iron ore. New water structures—channels and reservoirs (splash dams)—have appeared in the landscape. Later, lower wood consumption caused the decline of the purpose-built water network. Some structures disappeared, while others retained their water management function, albeit in a modified form. Aesthetic value has given many structures a "second life" and turned them into tourist destinations. Information boards and nature trails now present them as part of the cultural heritage. The decline in water in the landscape has raised the question of restoring some of the structures. The potential of water structures is also being explored in the Šumava Mountains / Bavarian Forest, the Gratzen Mountains, etc.

Key words: water channels; reservoirs; timber floating; cultural heritage; tourism

Introduction

Water management structures and systems—an integral part of the development of civilization—now constitute a significant component of cultural and industrial heritage, which has been the subject of research, interpretation, and preservation since the 1970s (Charta 2013). Part of the effort to preserve the vanishing world of (not only) the industrial centuries involves a very intense interest among experts not only in identifying and documenting individual structures, but also in sparking a discussion about their preservation and presentation to the general public. This general effort has recently also extended to water management structures (Vyskočil and Dzuráková, 2022; Ryšková and Dzuráková et al., 2022). One segment of historical water management structures consists of facilities and systems that served, often for centuries, as an absolutely essential means of transport for ensuring a sufficient supply of firewood and lumber. Humans gradually integrated water management elements into the landscape that overcame distances and terrain challenges and connected populated and peripheral areas. However, most of these ingenious engineering projects have disappeared for various reasons. In fact, only those that found new uses had a chance of being preserved in the landscape. Yet their original purpose gradually faded from collective memory. It is important to recall it in order to cultivate cultural awareness and strengthen respect for the work of our ancestors. The following text is the result of a project focused on the historical, technical, and cultural-heritage context of water management systems consisting of splash dams and the associated distribution network (water channels). The study summarizes some of the findings to date by a research team of water management experts and historians regarding systems operating in various regions of the Czech lands. It attempts to compare their current state and highlights their tourism potential.

Materials and methods

The methods used to identify and interpret structures are based on the working methods of an interdisciplinary project team. The foundation upon which both groups operate is field research combined with thorough research of historical sources. Data collected in the field (on-foot surveys, geodetic surveying of structures, and the use of drones) is entered into electronic databases and further processed using specialized SW tools, e.g. GIS. The information obtained is cross-referenced with archival sources in the following steps: 1) detailed research, analysis, and interpretation of available archival fonds (manor farm estates, water cooperatives, state administration offices, and local governments); 2) analysis of contemporary cartographic materials; 3) digitization of selected archival (map, project, and other) materials and their interpretation using SW tools (GIS). Consultations with local experts from various memory and specialized institutions, as well as research into specialized literature—not limited to regional studies—played a significant role in the final interpretation and description of history.

Regions of interest

Beskids. A comprehensive water management system developed gradually from the 17th century onward in connection with iron ore processing. It reached its peak in the 19th century, during the heyday of the local ironworks. Timber was floated down the *Ostravice*, *Morávka*, and *Oiše* river basins. From the last quarter of the 19th century, the industry began to decline due to the transition from charcoal to coal coke, and during World War II, timber floating ceased entirely. The most conspicuous remnants of this activity are the reservoirs, built on mountain streams with steep gradients. Their state of preservation varies. The situation is more favorable in the *Ostravice* River basin, particularly thanks to seven reservoirs that have undergone reconstruction over the past approximately 30 years. These are the *Friedrich (Bedřich)*, *Lučovecký (Kocián)*, *Čurabka*, *Max*, *Černá Ostravice*, *Studenčanka (Kyčerov or Klínská)*, and *Panský* reservoirs (Polášek 2006). The restoration of these reservoirs is linked to their new purpose, in which they serve as retention basins for sediment. All are easily accessible, and their aesthetic value makes them attractive tourist destinations. This also led the Odra River Basin Authority to install informational signs that provide tourists with basic information about the history and current use of these water structures. Only fragments of the water channels remain, leveled in the agricultural landscape and covered by later construction within urban agglomerations. A notable exception is the relic canal on the right bank of the *Morávka* River in the area between *Dobrá* and *Staré Město u Frýdku*.

Giant Mountains. The situation here is completely different from that in the Beskids. In the past, this region had the densest network of splash dams of any Czech mountain range, but none have survived in working condition. The largest number of reservoirs was built in the *Úpa* and *Malá Úpa* river basins, from where timber was floated for the needs of the *Kutná Hora* mines for only a few decades at the turn of the 16th and 17th centuries. The depletion of the forests was followed by the demise of the water management systems. Other reservoirs associated with timber floating for local ironworks have survived in the terrain only as ruins, as iron ore mining and processing in the Giant Mountains ended during the first half of the 19th century, and the unused structures found no further use. One source of hope for the future, which could revive long-gone times, is the reservoir on *Luční potok*, where, due to its easy accessibility and the good condition of the right bank of the dam, reconstruction for tourist purposes is being considered. The site is part of the *Vičí jáma* nature trail (Pilous 2015, 2017).

Gratzen Mountains. It was here, starting in the last quarter of the 18th century, that the story of a water transport system began—one that is truly unique within the Czech lands. A network of natural watercourses (the *Černá* River and its tributaries) and reservoirs made it possible to float logs and rafts from the high mountain regions to the interior. The system operated until the end of World War II; since then, it has fallen into disrepair. The most prominent remnants are (similar to those in the Beskids) reservoirs, known here as ponds. In addition, mostly inconspicuous remnants of structural modifications to the stream channels have survived. An exception is the remains of a timber-lined channel (slides) on the *Pohořský potok* below a place called *Baronův Most* (Vyskočil, 2024).

Šumava Mountains. One of the most famous historical waterworks in the country is the Schwarzenberg Floating Canal, built at the turn of the 18th and 19th centuries and initially used to float timber from forest areas to the Danube basin, and later in the opposite direction to the Czech interior. It remained in use in certain sections until 1961. It is an extensive complex that no longer serves its original or any other water management function, but has become a major tourist attraction in both the Czech and Austrian border regions. Selected sections of the canal have undergone reconstruction since the end of the last century. Several hiking and cycling trails run along the channel, featuring a number of informational stops. Its tourist potential is further enhanced by the presence of related structures, such as the tunnel or the so-called *Jelení smyk* in *Jelení Vrchy*, where the Schwarzenberg Floating Canal Exhibition is also located. The situation is similar in the case of the second channel, the Vchynice-Tetov Floating Canal, where timber was last floated in 1958 (Hladík 2021). Both canals have been part of the Šumava Floating Canals national cultural monument since 2014. Only a limited number of related reservoirs (ponds) have survived. For example, the *Jelení* and *Žďárecké* ponds have been restored and are open to tourists. Others that are clearly visible in the terrain, such as the *Rosenauer* Reservoir at the very beginning of the Schwarzenberg Floating Canal, or the *Luzenské*, *Roklanské*, *Ptačí*, and many other ponds, have not, however, been restored.

The Bavarian Forest. Timber was also floated on the German side of the Šumava Mountains, in the *Ilz* and *Regen* river basins. As in the Czech lands, timber floating ceased here around the mid-20th century. As part of the extensive waterway systems in both river basins, a network of reservoirs was built in the 18th and 19th centuries; most of these have survived to the present day, and many were restored in the postwar period and are now maintained as cultural monuments.

Discussion

Awareness of these historical water management systems varies across the Czech lands. This is largely related to the extent to which they have been preserved and presented in public spaces. A lack of knowledge is particularly evident in areas where only barely identifiable remnants of channels and reservoirs remain in the terrain (Giant Mountains). In contrast, in the Beskids, on both the Czech and Bavarian sides of the Šumava Mountains, and in the Grätzen Mountains, there are structures that are often of exceptional value. However, even these do not demonstrate a continuous history or functional use. Timber floating ceased during World War II, with the exception of the Giant Mountains and the Šumava Mountains. This was due to technological advances and changes in the transportation network. However, the subsequent deterioration of individual structures and the decision not to repurpose them were clearly influenced by the political and social context. These systems were located in the so-called Sudetenland, an area severely affected by the population exchange after 1945, the devastation of local spiritual and material values, and the creation of a border zone with a specific character. The existence of the current structures is thus linked to the reconstructions carried out over the past three decades. This applies to the Šumava canals, which were partially restored with the aim of creating tourist attractions, rather than as structures serving a water management function. By contrast, the splash dams in the Beskids have retained this function; they were reconstructed as erosion-control features in the landscape, which, incidentally, is a prerequisite for their continued existence in the future. In contrast, the Šumava reservoirs, with few exceptions, have not been restored, and it remains to be seen to what extent the National Park Administration's policy will be inclined to implement the general concept of returning water features to the landscape—a concept that would not only enhance biodiversity but, in our case, also raise awareness of our technical heritage. An exemplary approach to the heritage of our ancestors, unburdened by the historical discontinuity, can be observed on the Bavarian Forest, where a number of revitalized water reservoirs are part of tourist and nature trails, accompanied by visually uniform and attractive tourist information boards. This information system is created and maintained by the Bavarian Forest National Park and the Bavarian State Forests in cooperation with local municipalities. While a shift in the approach to preserving cultural heritage can be observed in the aforementioned mountain regions—whether in the form of historic preservation of buildings or the visual representation of historical themes in public spaces—the Grätzen Mountains remain neglected to this day. Yet the uniqueness of the local waterway system and the preserved reservoirs directly invites efforts to highlight the significance of these activities, which have the potential to become a rediscovered identity for this region.

Conclusion

It is clear today that the original purpose of these waterway systems has disappeared, and their function can now only be demonstrated to the public through exhibits, such as those found on the Šumava canals. However, the preservation, restoration, and protection of historic water management structures embody the hope of reconciling the sustainable use of the landscape with the legacy of our ancestors' technical ingenuity. Popularizing this topic through nature trails, interpretation panels, or educational materials in tourist information centers contributes to a deeper understanding of the landscape. This is also because floating systems are often located in former Sudetenland affected by „historical blindness“. The question always remains as to which water features should be preserved or reconstructed, and why. As a rule, they were part of more complex systems that cannot be fully restored. The location of individual structures also plays an important role, as they are quite often situated in protected areas with specific landscape regimes. Any implementation must proceed in cooperation with various stakeholders who often have conflicting interests—water managers, conservationists, administrative authorities, heritage preservationists, and tourism entrepreneurs.

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Acknowledgement

The work has been supported by the research project DH23P03OVV007 NAKI III, Ministry of Culture of the Czech Republic, “Complex approaches to the identification, protection and maintenance of historical water retention and distribution systems in mountain areas of the Czech Republic with regard to heritage conservation”.

Souhrn

V horských oblastech Česka se dochovala řada vodních objektů, jejichž existence souvisela s průmyslovým rozvojem, resp. transportem dřeva. Jednou z oblastí, kde je možno dodnes objekty sloužící ke splavování dřeva nalézt, jsou Beskydy. V povodí Ostravice, Morávky a Olše potřeba dřeva primárně souvisela se zpracováním železné rudy. V jejím důsledku se přirozená vodní síť zásadně proměnila. Koryta byla upravována a do krajiny vstoupily nové vodní prvky – kanály a tzv. klauzy. S odklonem od využívání dřevní hmoty souvisí úpadek účelově vytvořené vodní sítě. Nastal její „druhý život“. Některé objekty odvál čas, jiné si uchovaly svoji vodohospodářskou, byť pozměněnou funkci. Jejich estetická hodnota v členité krajině učinila z mnohých turistické lákadlo. Přebýly informační tabule a naučné stezky odkazující na dávno ztracené souvislosti. Staly se součástí kulturního dědictví. Úbytek vody v krajině nastolil otázku, zdali některé z prvků neobnovit. Otázku umělých vodních prvků a jejich potenciálu řeší také na Šumavě / v Bavorském lese, v Novohradských horách i jinde.

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