THE ROLE OF LAND CONSOLIDATION IN RURAL SPACE DEVELOPMENT

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Abstract
The primary goal of the land consolidation process is to create optimal conditions for agricultural management. Land consolidations spatially and functionally organize land in the public interest, merge or divide it, and provide the accessibility and use of land and the alignment of their borders to create conditions for rational farming. It is defined by law that soil, water and environmental conservation are important and publicly necessary aspects of any complex land consolidation. Hence, land consolidation creates a space for the design and implementation of soil, water and environment conservation measures (e.g., grassing, balks, tree belts, reservoirs, …). Land consolidation plans are supported by the government and EU funds are accessed for the implementation of protective and ecological measures. Using concrete examples, the article shows how built multifunctional measures (incl. tourist rest points) contribute to the improvement of non-production functions of the agricultural landscape, its aesthetics and recreational potential.

Key words: Rural countryside, land consolidation, nature close measures, landscape non-production functions, landscape aesthetic, recreational potential

Introduction

The process of land consolidations has been taking place in the Czech Republic since 2002 and is governed by valid legislation (act no. 139/2002 and decree no. 13/2014). We distinguish between two forms of land consolidations - simple and complex. Simple land consolidation usually solves a smaller area, or a partial specific problem in the area. Complex land consolidation mostly covers the entire cadastral territory of the municipality. Its goal is not only to clarify ownership relationships and to adjust and make the land available so that it meets the requirements of rational agricultural management. As part of the common facilities plan, measures for soil and water protection are proposed in the territory (i.e., measures to limit soil degradation, water and wind erosion, to improve water retention in the landscape, flood control measures, ...). These measures are polyfunctional, nature close and they reflect principles of land use plan. So they contribute not only to the protection of environment, also to improvement of ecological stability and landscape aesthetic.
A significant advantage of land consolidations is the enabling and financial guarantee of the implementation of proposed measures. Municipal authorities are also involved in the implementation, and they can enforce additions that meet the requirements for increasing the tourist attractiveness of the cadastre. This is, for example, a modification of field paths for cyclists, a construction of rest areas, benches, viewing points, an adjustment of reservoirs shores for swimming, etc.

Material and methods

Several examples of successfully designed and implemented complex land consolidations were chosen for purpose of this article. Some of them received the measure of the year award, which is bestowed annually by the State Land Office to the best implemented measures that meet demanding technical requirements for their effectiveness (anti-erosion, anti-flood, …), but also are sensitively set in the agricultural landscape, considering the protection of various environment components and they complement the landscape scenery. The documentation of land improvements and the documentation of the evaluation commission provided by the State Land Office were used.

Results and discussion

The purpose of the **water reservoir Nenkovice** (Fig. 1), built as one of results of local complex land consolidation, was to create a bio-centre with a water area in an intensively agricultural landscape. The construction consists of a water reservoir including all necessary functional objects, landscaping around the reservoir and water pools. In the upper part of the reservoir, there is an extensive littoral zone for amphibians with a shallow water depth complemented by gently sloping banks. As a result of the retention volume, there is a favourable regulation of runoff conditions during floods. At the same time, the reservoir, with its space, ensures the maintenance of the current flow of the existing water course. After the construction and connection of the bio-centre, the development of aquatic and

wetland communities in the reservoir and its surroundings, both animal and plant, can be expected. An increased occurrence of other small animals, game and birds can also be expected. The implementation of the project created a walking area with the possibility of swimming for the residents of the surrounding villages and tourists.

Fig. 1: Water reservoir Nenkovice with a resting point

Project of measures on the Luha stream in **Bělotín** was implemented as a summary of water management, anti-erosion and ecological measures, which arose from the plan of common facilities of the complex land consolidation in the Bělotín. It is a system of wetlands, water reservoirs and ponds, including the planting of a bio-corridor and bio-centre and construction of field roads with accompanying avenues between intensively cultivated soil units. This complex of measures mainly fulfils the function of retaining water in the landscape, supports biodiversity, and has an important aesthetic and landscape-forming function. The place in Fig. 2 has become a frequent destination for outings of residents from the surrounding area.

Fig. 2: Water bio-centre in Bělotín

Thanks to the land consolidation in **Kuřimské Jestřábí**, revitalization of the valley of the occasional stream, including the reconstruction of the dam and supplemented by the construction of a gully was implemented (Fig. 3). By removing the deposits of the muddy bottom from the pond, the volume of retained water increased. A meandering bed of a small stream was created with new bank plantings of

native trees. Access to the locality is provided by the newly modified grassed field road. This complex of measures mainly fulfils the function of retaining water in the landscape, supports biodiversity, and also has an important aesthetic and landscape-forming function. The location has thus become a pleasant quiet zone and it is used by the public for rest and relaxation in a natural environment.

Fig. 3: Pond and resting point in Kuřimské Jestřábí

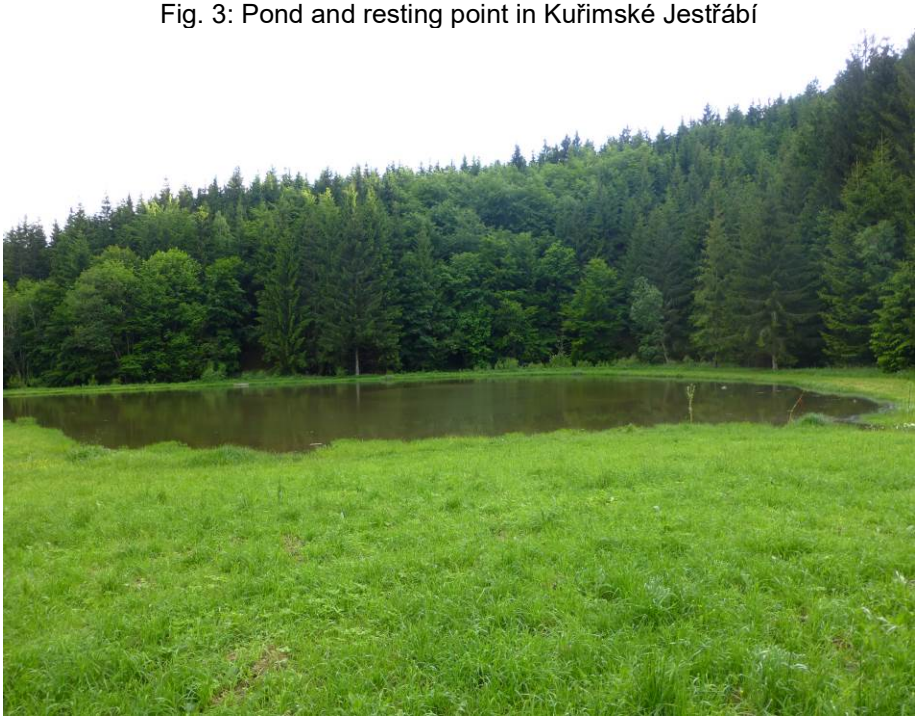

Fig. 4: Retention reservoir in Sloup

As a part of the complex land consolidation of **Sloup** in the Moravian Karst, a bypass water reservoir with a littoral zone and a pool above the reservoir was built (Fig. 4). The purpose of the water reservoir is mainly to retain water in the landscape, slow down runoff, increase ecological stability and strengthen the environmental and aesthetic function of the landscape. Furthermore, a paved road (4 km long) was built to the reservoir, which is currently widely used by hikers, cyclists and, in winter, cross-country skiers. On the bank of the reservoir, the municipality built a fireplace and a shelter.

Fig. 5: One of ponds on Mušalecký stream with a sitting place

The construction of the water reservoir on the Mušalec stream was a part of the implementation of the first phase of the measures based on the plan of common facilities, prepared as a component of complex land consolidation in the cadastral territory of **Třanovice**. The restoration of the historically functional system of Mušalecký ponds represents a comprehensive water management arrangement with an important landscape-forming function, where new conditions were created for the development of plant and animal communities influenced by the water system. The construction created a natural, peaceful, and relaxing zone with a sitting (Fig. 5), presenting itself as a certain counterbalance to negative interventions in the area, evoked mainly by the construction and subsequent use of expressways with connections. No less important is the water management function of the work, which consists in retaining water in the landscape, slowing down surface runoff, possibility of influencing floods and in eliminating subsequent damage. In conclusion, it is a complex element with a high aesthetic value and strong recreational potential.

Perception of land consolidation process has been changing in the time. In the beginning, the main goal was to clarify land ownership and create conditions for the management of new private farms and small farmers. The opportunity to change the face of the agricultural landscape in this way, to improve its ecological characteristics and make it more beautiful for the people, gradually gained importance (Pochop et al. 2016, Konečná et al. 2018). Similarly, for example in Poland (Kupidura et al. 2014), a traditional pattern of a utilitarian approach to the value of land in the consolidation procedure has the potential to change due to a developing awareness that optimally shaped landscape may contribute to attracting visitors and allow recreation activities.

Conclusion

Land consolidations represent an important tool for the implementation of measures for environmental protection and the creation of an agricultural landscape. Currently, the State Land Office registers almost 3 thousand completed complex land consolidations and another 1 thousand in progress. As a result, they bring more greenery and water areas, wider road net and tourist resting points to the rural landscape. In this way land consolidation process and measures implementation increases landscape attractivity, space for sport and relax activities and extend recreational potential of the area.

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Souhrn
Primárním cílem procesu pozemkových úprav (PÚ) je vytvoření optimálních podmínek pro zemědělské hospodaření. PÚ prostorově a funkčně uspořádávají pozemky ve veřejném zájmu, slučují je nebo rozdělují a zajišťují dostupnost a využití pozemků a vyrovnání jejich hranic tak, aby byly vytvořeny podmínky pro racionální hospodaření. Zákon stanoví, že ochrana půdy, vody a životního prostředí jsou důležitými a veřejně nezbytnými aspekty jakékoli komplexní pozemkové úpravy. PÚ tak vytvářejí prostor pro návrh a realizaci opatření na ochranu půdy, vody a životního prostředí (např. zatravnění, pásy stromů, vodní nádrže, …) a ke zlepšení kvality života na venkově. Plány PÚ jsou podporovány vládou a na realizaci ochranných a ekologických opatření jsou využívány fondy EU. Článek na konkrétních příkladech ukazuje, jak realizovaná multifunkční opatření (vč. turistických odpočívadel) přispívají ke zlepšení mimoprodukčních funkcí zem. krajiny, jejího estetického a rekreačního potenciálu.

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