Mendel University in Brno
Czech Society of Landscape Engineers – ČSSI, z.s.

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MENDEL UNIVERSITY IN BRNO

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and

Department of Landscape Management
Faculty of Forestry and Wood Technology
Mendel University in Brno

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of prof. Dr. Ing. Libor Jankovský, the Dean of the Faculty of Forestry and Wood Technology, Mendel University in Brno,
of doc. Ing. Tomáš Vrška, Dr., the Director of Training Forest Enterprise Masaryk Forest Křtiny, Mendel University in Brno,
of Ing. Dalibor Šafařík, Ph.D., the Chief Executive Office, Forests of the Czech Republic,

of JUDr. Markéta Vaňková, the Mayor of the City of Brno,

and of Mgr. Jan Grolich, the Governor of South Moravia,

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Contents

CHANGE OF THE WAY THAT LANDSCAPE IS USED AND IT IS EFFECT ON THE RECREATIONAL AND TOURIST POTENTIAL

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Abstract
Dirt roads and footpaths together with landscape elements form a landscape mosaic. As the density of the dirt road network increases, the fragmentation of the landscape increases. The landscape is becoming more varied and, above all, more accessible, whether for the management of agricultural land or free tourism and recreation. This article deals with the analysis of the historical development of transport infrastructure on the example of the Vilémovice u Macochy model area - part of the Moravian Karst protected area. The Moravian Karst belongs to the most important karst areas in the Czech Republic and also in central Europe. The Macocha gorge, which is frequently visited by tourists is located in the area of interest. The territory is also crossed by the *Moravskoslezská svatojakubská* tourist Route and *Srdcem jižní Moravy* cycle Route. It is a popular tourist and recreational area. The density of the road network and its quality indicate the degree of recreational and tourist development of the region. The network of dirt roads in the open countryside has undergone significant changes in the last century. Unfortunately, the roads got in the way of this trend. This resulted in an inaccessible and impenetrable landscape. Recently, this trend is reversing and new dirt roads are being designed and implemented. These are mainly implemented as part of the land consolidation process. The newly realized roads serve to make land available for land owners, for agricultural production, transport and to make the landscape more accessible. Harmonious integration of existing and newly implemented dirt roads into the landscape is important, including the selection of appropriate

Key words: dirt road, landscape fragmentation; land consolidation, land ownership; tourism; recreation

Introduction

The development of the transport network has both positive and negative effects on the environment and tourism. The transport network consists of motorways, roads, local roads, dirt roads, forest roads and cycle paths. The construction of the transport network is subject to the Czech state standards that specify their technical parameters (ŘSD, 2023). In the historical context, roads have been and are being transformed. The route, surface, use and density have changed. The road network is designed according to the need and intensity of use. The newly constructed road network increases the potential for tourism, and new roads are created to increase connectivity, land connectivity and accessibility (Boston, 2016).
When planning new paths in agricultural landscapes, nature and landscape protection aspects must be considered. Safe passage through the landscape for wildlife can be ensured by building territorial systems of ecological stability (Yemshanov, 2022). The creation of new paths in accordance with the territorial system of ecological stability can be implemented in the process of land consolidation (Karásek, 2017). The recreational and touristic significance of the area is influenced by the natural conditions, the cultural and historical significance of the site and, last but not least, the accessibility and permeability of the landscape. Accessibility and attractiveness of the area are linked to visit ability (Monz, 2021). However, in tourist-rich sites there are also negative impacts of human behaviour towards the landscape. These phenomena are often compounded by the effects of climate change leading to ecosystem disruption. The newly constructed road network with planting of trees, connecting important destinations in the landscape is attractive for tourists, allowing their better movement in the territory for both walking and cycling (Palatková, 2014). It also allows to increase the recreational potential of the territory by implementing accompanying eco-stabilization elements (windbreaks, alleys, small landscape elements), rest areas (rest stops, benches) in connection with the economic and ecological requirements for the development of the territory. The presented article highlights the possibilities of using the land consolidation process to positively influence the tourism potential of small rural communities.

Materials and methods

For the purpose of this article, the tourist attractive locality of Vilémovice u Macochy was selected, where the density of the road network from the 1950s to the present day was analysed, including the newly proposed state of the road network, which was created within the framework of the ongoing land consolidation. Land consolidation is essential for the creation of a network of dirt roads that make the area more accessible, increase the ecological value of the area and the recreational potential of the village.

The village is located in the Czech Republic in the South Moravian Region, in the Blansko district to the west of the town of Blansko in the Moravian Karst Protected Landscape Area (Fig.1).

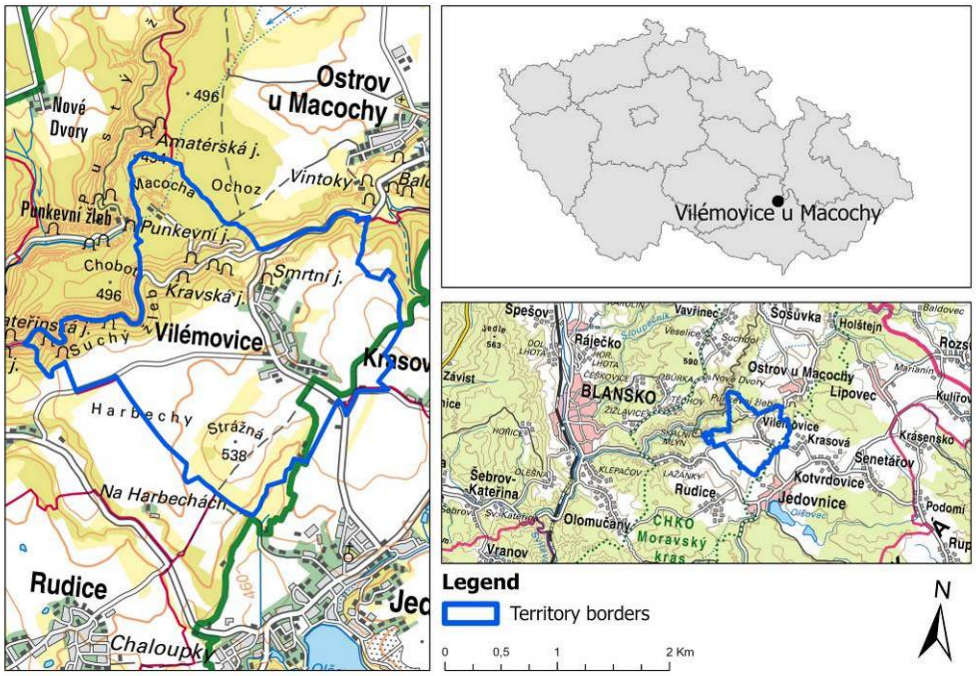

Fig. 1: The study area Vilémovice u Macochy

This article was prepared on the basis of available data provided by the Czech Office of Surveying and Cadastre (territorial boundaries, historical and current map images), on the basis of which the digitization and calculation of the road network density was carried out. In addition, data borrowed from the State Land Office were used to analyse the density of the road network corresponding to the newly proposed and discussed state of the road network in the area under consideration. All analyses were prepared with using ArcGIS Pro tools.

Results and Discussion

Analyses found that the density of the road network was around 6.88 km/km^2 in the 1950s. This relatively high density is due to the high number of roads that were in the area, this was the state before the collectivisation of agriculture. In the following periods, this situation was considerably disturbed by the ongoing land consolidation and the dismantling of natural boundaries. Furthermore, the density of the road network was calculated for the situation in 2000 and 2010, which showed a rapid decrease in the density of the road network, almost by half, see Fig.2. This very unfavourable situation has continued up to the present day, where the total length of the road network in the study area is around 19.52 km (density 3.75 km/km2). And it is the result of large-scale farming accompanied by the removal of most of the existing dirt roads. At the turn of 2022 and 2023, a proposal for a new road network in the area was made, which was gradually discussed with local experts and representatives of the state administration and subsequently approved by the municipal council. The design and addition of the road network will now increase the total length of roads to 27.52 km, a number close to the original situation before the collectivization of agriculture (see Fig.2).

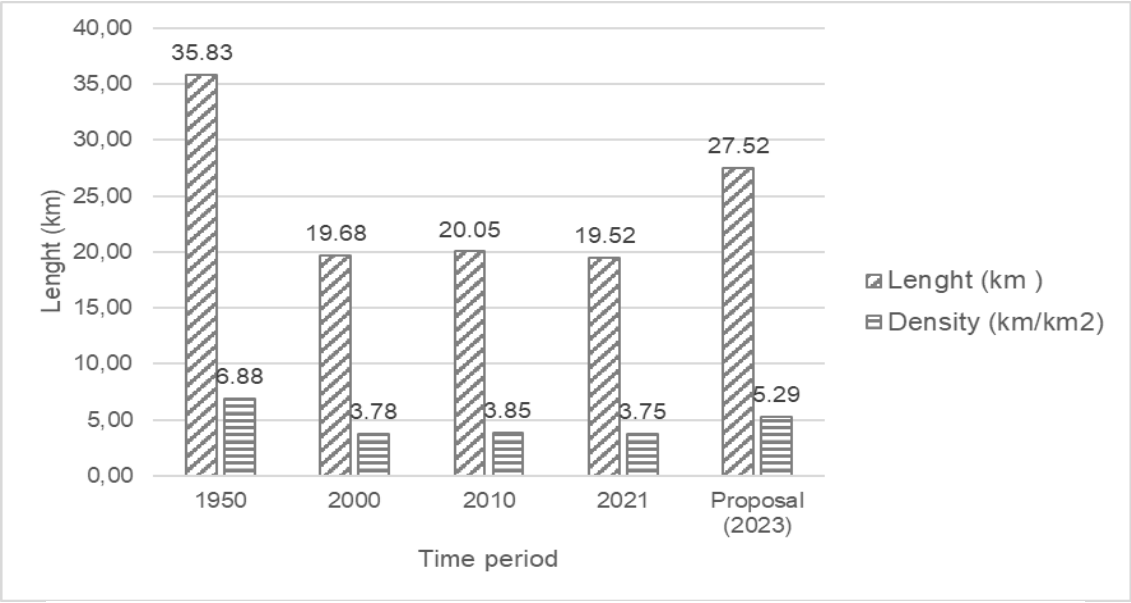

Fig. 2: Change in density and length of the road network in the area of interest over time

In the process of land consolidation, which is in progress in this municipality, a new road network has been proposed, complementing the existing dirt roads. The current state of the transport infrastructure in the area does not correspond to the current conditions of farming and landscape permeability. The design of the new roads will make the land more accessible, connect the area and increase its recreational potential. The existing marked hiking and cycling trails are supplemented by newly created trails through the proposed dirt road system. The whole area is located in the Moravian Karst Protected Landscape Area, so it can be stated that the process of land consolidation in such attractive locations can increase the recreational potential of rural villages. The development of the road network during 1950-2023 is shown in Fig.3.

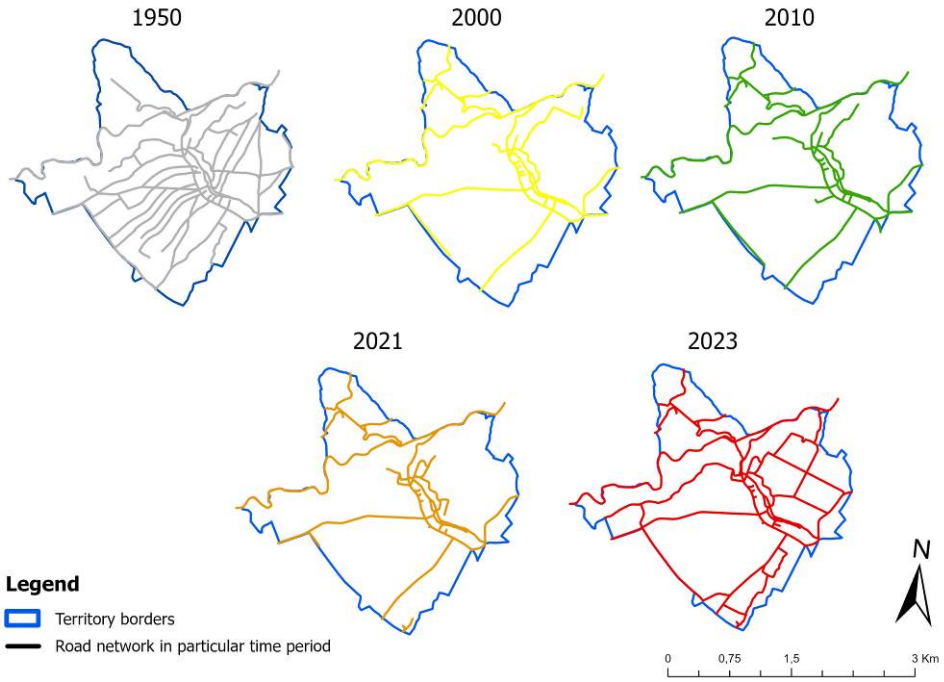

Fig. 3. The development of the road network during 1950-2023

All roads will be transferred to the ownership of the municipality, will connect a wider area and can diversify the movement of tourists. Paved and unpaved dirt roads can be used for recreation, both for normal hiking and cycling. The current road network consisted of a total length of 19.52 km; the

proposed length of the road network is now 27.52 km, an increase of 8 km. The following Fig. 4 shows the original road network in 1950 compared to the newly proposed road network (2023).

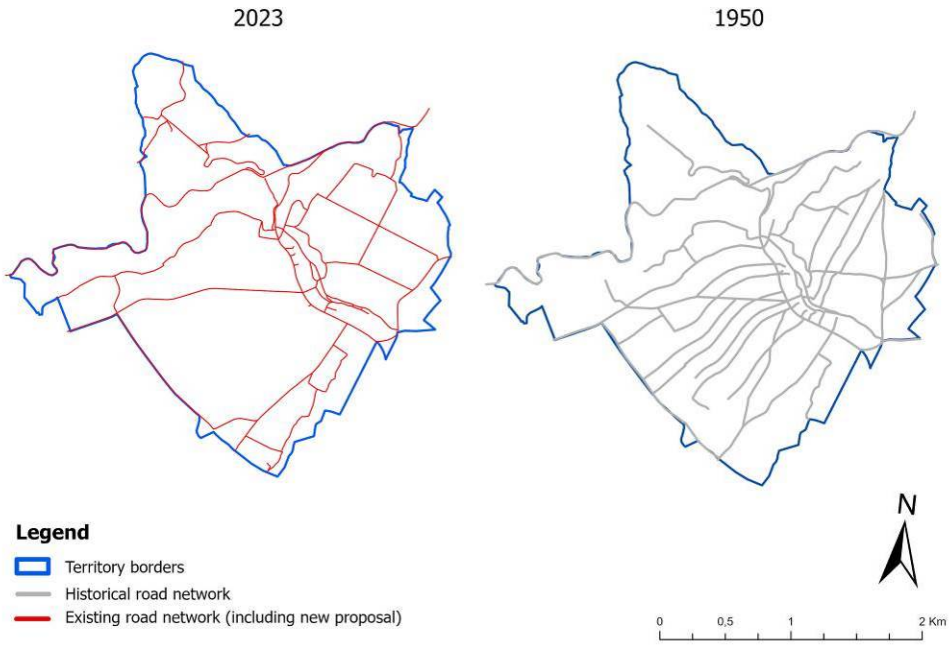

Fig. 4: Comparison of the original 1950 road network and the newly proposed 2023 road network

Conclusion

In the article, the possibilities of linking the objectives of land improvements with the increase of recreational potential of the village and its surroundings were shown by using the example of land improvements in a recreational and tourist attractive area. The new road network will have a positive impact on regional tourism development in the area of interest. Greater choice of destinations for walking and cycling trips and access to attractive sites will help to disperse visitor density over a wider area. Each visitor can choose different route according to their own criteria (e.g.: length of the journey, surface of the path, etc.). Planting of natural tree species is planned around some of the paths. These plantations will reduce the surface temperature of the paths and the surrounding air. The positive effect of the newly built paths with vegetation is also the protection of the land and the increase of biodiversity in the area. Roads used for agricultural machinery have a positive effect in reducing the passage of these large agricultural vehicles through the village.

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Souhrn
V příspěvku bylo na příkladu řešení pozemkové úpravy v rekreačně a turisticky atraktivním území poukázáno na možnosti propojení cílů pozemkových úprav se zvýšením rekreačního potenciálu obce a jejího okolí. Nová cestní síť bude mít pozitivní vliv na regionální rozvoj cestovního ruchu v zájmovém území. Větší možnost výběru cílů pěších i cyklistických výletů a zpřístupnění atraktivních lokalit přispěje k rozptýlení hustoty návštěvníků ve větším prostoru. Každý návštěvník si může zvolit libovolnou trasu dle svých kritérií (např.: délka cesty, povrch cesty atd.). V okolí některých cest se plánuje výsadba původních druhů dřevin. Tyto porosty budou snižovat teplotu povrchu cest a okolního vzduchu. Pozitivním efektem nově vybudovaných cest s vegetací je i ochrana zemědělského půdního fondu (ZPF) a zvýšení biodiverzity v území. Cesty, sloužící pro zemědělskou techniku, mají pozitivní efekt ve snížení průjezdu velké zemědělské techniky obcí.

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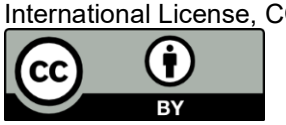

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