

The classification of Nitra's town contact area and selected villages in its hinterland

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Abstract. Nitra town development tendency is tented on its hinterland at present. The research area consists of two parts. The first is the settlement part formed by city parts Zobor, Chrenová, Klokočina, Diely, Čermáň and Staré Mesto and hinterland part with villages neighbouring with town Nitra. The contact area is determined as 600 meters wide strip extending along the borderline between settlement part and its enclosed hinterland. The secondary landscape structure and selected criteria are the bases for contact area classification. We distinguish 4 types of contact area: submontane forest (type A), plane field (type B), upland with arable crops (type C) and waved plain with settlement (type D). Two villages neighbouring the town Nitra (Nitrianske Hrnčiarovce and Štitáre) give the possibility to specify the influence of town neighbourhood on the landscape structure formation.

Key words: urban landscape, contact area

Introduction

The contact area is a territory where the consequences of present urbanization process are most visible. The dynamic changes together with some conflicts resulting from them are very high. Permanent urbanization pressure is manifested by settlement's influence on its hinterland. The contact area as temporary landscape type is not possible to characterize without describing its landscape structure.

The dynamic development of town Nitra is specified on dwelling, service and employment of citizens. These developing activities are realizing on free areas inside the town or they press out of town into the hinterland. The settlement structure two villages Nitrianske Hrnčiarovce and Štitáre is influenced by the of town Nitra. The object of landscape ecological research is to recognize town – hinterland relations. The comparison of landscape structure in villages make possible to determine the way of their structure influence.

Materials and methods

The research area is town of Nitra and its hinterland (fig. 1), in total 3 201,05 ha. The whole town consist of 13 city parts (10 979 ha) and counts 87 533 inhabitants (01.01. 2005). The town is an administrative centre of Nitra's County and its economy, church and cultural centre at present. The town of Nitra extends on territory between Zobor moutain (587 m u.s.), Kalvária hills and Šibeničný vrch hill witch are regarded a part of Tribeč mountain. The town is situated on the border of two natural complexes – plane landscape of Panonian Basin and Carpathian basin landscape (Gajdoš et al., 1990).

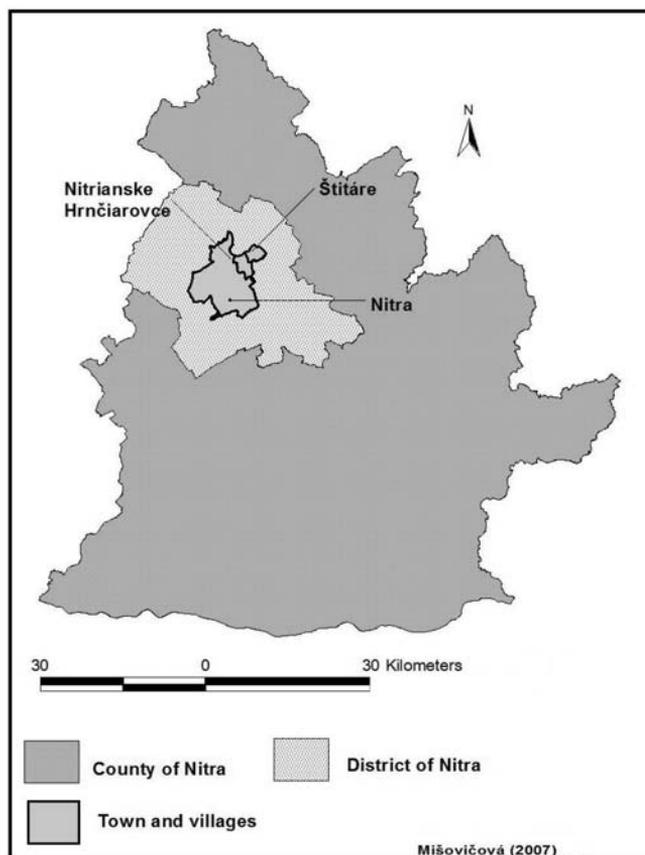


Fig. 1 The research area – Nitra and its hinterland

Research area consists of two parts: settlements part and hinterland. The hinterland named contact area has been defined by Gažová (1984). Whole contact area is 1 500,54 ha and is formed as 600 meters wide strip extending along of city parts border.

The villages within contact area are situated northeastern from Nitra. Nitrianske Hrnčiarovce village (994,57 ha) neighbours with city part of Zobor, Štitáre village (749,42 ha) is situated about 10 km from centre of Nitra by air line.

Landscape structure of town Nitra analyzed by field research in 2005 confirmed the characteristics of contact area. These features are possible to be used as criteria for contact area classification:

- The course of river Nitra forms the natural barrier of settlement development to surrounding agricultural landscape, which is marked in northwestern part of research area;
- The relief character differs by altitude separating the research area on plane, waved upland and hill-country;
- The past satellite settlement occurs in Nitra's cadastre;

On the basis of mentioned factors it is possible to indicate four types of contact area:

- a) contact area in foot hill of Zobor's group; Zobor hill upon the town represents different relief's character – Zobor hill is hill-country except surroundings landscape situated in plane relief;
- b) contact area situated in the undulated plane with fields;
- c) contact area situated in the undulated plane followed by upland relief with permanent (arable) crops (vineyards, gardens) and forest;
- d) contact area with fluent transition of city parts in past satellite settlements (Janíkovce, Mlynárce, Horné Krškany) at present.

Mapping of secondary landscape structure elements occurrence by LANDEP methodology (Ružička, Miklós

1982) was applied by evaluation of town Nitra's influence on its hinterland – villages in contact area. Landscape structure elements identified in field research in 2003 are grouped in eight groups: forest and non-forest vegetation, grassland vegetation, fields and agricultural soils, soils and raw soil, water courses and planes, technical objects). Depending on a level of study, its aims and utilised measures these basic groups could be further divided. The eight functional groups of elements were created – group of traffic, technical zones, built-up and recreation areas. For determination of town's influence on its hinterland the comparison of landscape groups' percentage in contact area villages (Nitrianske Hrnčiarovce and Štitáre) with villages in hinterland (Koliňany, Pohranice, Host'ová) was used.

Results

THE CONTACT AREA is transitional landscape type closely connected to settlement landscape and following open landscape. The structure of contact area continues to regions of settlement part of research area. By the selected criteria and analysis of functional landscape elements of settlement part four contact area types of total area 1 500,54 ha were distinguished (fig. 2):

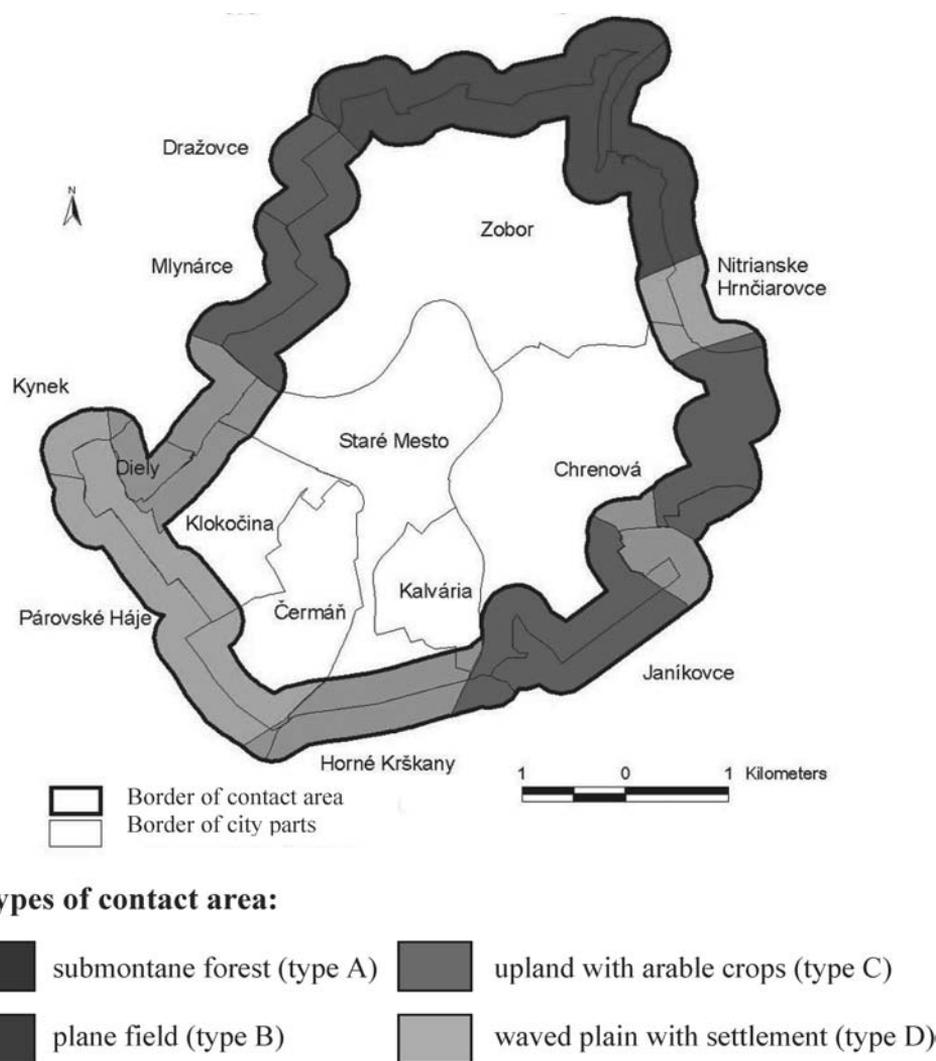


Fig. 2. The town of Nitra contact area classification

The contact area submontane forest (Type A) is situated on hill-country of Zobor. It is separated from other parts of research area by riverbed of Nitra. Two land use forms dominate – hardwood forest and individual dwelling with gardens. Whole area of this contact area is 365,99 ha (24%). The contact area **plane field** (Type B) is situated in three different parts of contact area – northwestern, southeastern and eastern part. Common feature for sharing this type was its plane relief with large fields as dominant landscape elements. Whole area of this type is 521,37 ha (35%). The contact area **upland with arable crops** (Type C) characterised itself with gradual relief following from waved plane to an upland. This type is located in south-western and north-eastern part with total area of 310,17 ha (21%) and its dominant land use types are forests and vineyards or mosaics of vineyards with gardens. The contact area **waved plain with settlement** (Type D) with total area of 303,02 ha (20%) is specific by its connection on past satellite settlements – city parts at present, situated in Nitra's cadastre (Horné Krškany, Janíkovce and Mlynárce). These city parts determine the character of this type of contact area. Near Janíkovce large fields and farms are dominant elements, individual dwelling and recreational areas are developing landscape elements. Nearby Mlynárce the dominant functional elements are vineyards, gardens and large fields witch area is declined by building of dwelling and technical objects. The contact area near Horné Krškany in southern part consists of industry build-up areas with fields and individual dwelling in surrounding.

NITRA TOWN STRUCTURE expressed by regions with relevant function determines the functional character of settlement part of the research area and at the same time influences and forms following contact area (fig. 3).

Region 1 (Staré Mesto) in the centre of the town with its historical, cultural and recreational elements realizes the function of basic citizens equipment. Its influence on neighbouring regions does not appear at present.

The influence of others regions is visible in the surrounding landscape.

Region 2 (Zoborský) in northern part with dominant dwelling function influences places inside of region and the contact area too by its development activities. The increase of vineyards and orchards change into build-up areas is observed. The build-up influences the submontane forest (Type A) of contact area by the increase of hardwood forest places. In northeastern part an upland with arable crops (Type C) with traditional producing function exists. This type interferes with Nitrianske Hrnčiarovce village.

The function of Region 3 (Chrenovský) is dwelling with relevant citizen's equipment. On this region follows two contact area types – large field (Type B) and waved plain with settlement (Type D). The region's development is realised in both contact area types, there is planned build-up dwelling and recreation objects by taking the agricultural land resources.

Region 4 (Čermánsky) situated on city parts Kalvária and Čermáň realizes productive and dwelling function. Region gradually follows on city part Horné Krškany belongs to Type D of contact area (waved plain with settlement). The pressure of region on contact area is significant; in this part of town the build-up of technical and producing objects is realised by taking the grassland vegetation or fields. The productive zone of town Nitra is extending in hinterland and surrounding landscape.

Region 5 (Klokočinský) with dwelling and producing function is situated in city parts Klokočina and Diely. On this region follows two contact area types – upland with arable crops (Type C) and waved plain with settlement (Type D). The region's pressure appears in both contact area types as an increase of an area of functional elements as fields, vineyards and gardens changed on builded grounds and dwelling objects.

Region 6 (Párovský) is located in Zobor with majority of large fields and producing function. Its development is realised inside of the region at present, the pressure on neighbouring regions or contact area does not appear. In future (until 2020), this region and its contact area (Type B) will be used as territorial reserve of town Nitra.

IN THE HINTERLAND of town Nitra two villages interfering with contact area are situated. Nitrianske Hrnčiarovce village (994,57 ha) neighbours with city part Zobor, the eastern neighbour is village Štitáre with cadastre area of 794,42 ha.

Within the landscape elements that occurs in village Nitrianske Hrnčiarovce (tab. 1, fig. 4) forest and non-forest vegetation's group (50,57% of cadastre) with hardwood forest and group of fields and agricultural soils (27,44% of cadastre) dominate, followed by plane fields, vineyards in and heterogeneous mosaic structures of vineyards, orchards and gardens. The group of built-up and recreational areas (7,11%) consists of country houses with gardens, the administrative buildings, services and retail. Recreation objects represent the cottages

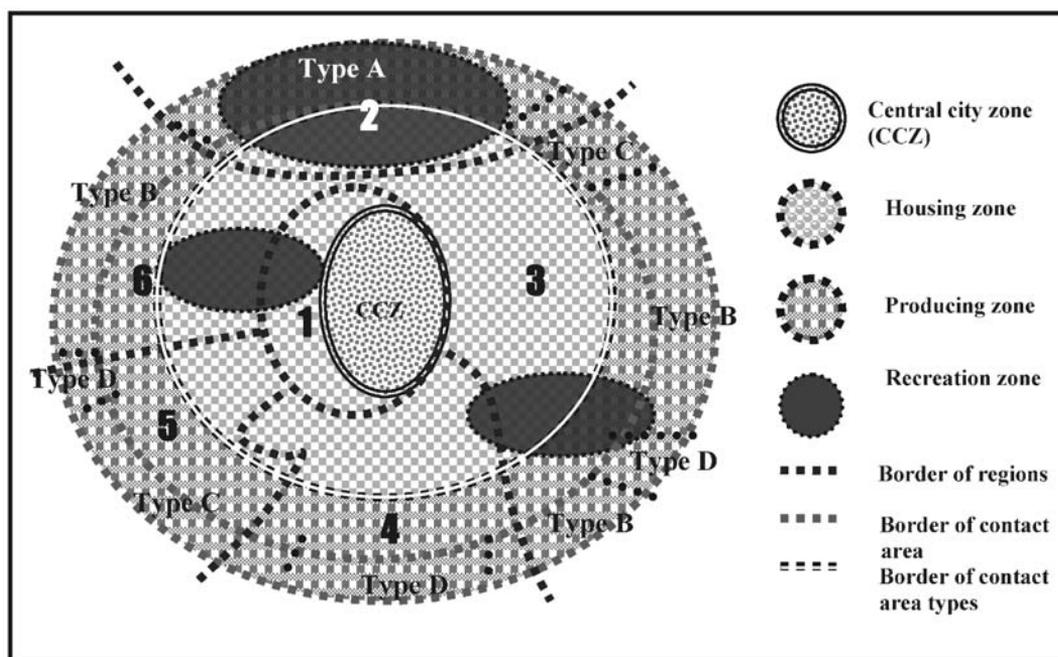


Fig. 3. Schematic layout of functional zones composition in city regions with contact area differentiation Notes: Regions 1 - 6, contact areas types: Type A – submontane forest, Type B – plane field, Type C – upland with arable crops, Type D – waved plain with settlement

Table 1. Landscape elements groups occurrence in villages of wider hinterland of town Nitra (year 2003)

The groups of secondary landscape elements		Nitra	Nitrianske Hrnčiarovce	Štitáre	Kolíňany	Host'ová	Pohranice
		%	%	%	%	%	%
1	forest and non-forest vegetation	9,00	50,53	34,57	11,89	4,28	10,56
2	grassland vegetation	6,00	6,76	2,07	3,85	10,34	5,32
3	fields and agricultural soils	26,00	27,44	42,08	71,42	73,48	69,87
4	soils and raw soil	2,00	0,00	0,23	0,18	0,00	1,51
5	water courses and planes	1,00	0,19	0,52	1,35	0,34	0,50
6	built-up and recreation areas	42,00	7,11	10,79	6,58	8,08	5,46
7	technical zones	10,00	3,70	4,57	1,61	0,82	2,46
8	traffic	4,00	4,27	5,17	3,12	2,66	4,32
Whole area (ha)		3 201,05	994,57	749,42	1 250,06	478,44	1 307,02

with gardens. Infrastructure is completed with elements from group of traffic (4,27%) and technical zones (3,7% of cadastre).

In the secondary landscape structure of Štitáre village (table 1, fig. 4) the forest and non-forest vegetation's group (34,57% of cadastre) with continuous hardwood forest dominates. Significant part in the landscape structure belongs to group of fields and agricultural areas (42% of cadastre) with continuous large fields in periphery. To the group of built-up and recreational areas (7,11% of cadastre) belong the country houses with gardens, in the centre of village the forest park with spring of Kadaň brook is situated. In this part of the village the service and administrative center is situated, that is completed with elements of technical zones (4,57% of cadastre) and traffic (5,17% of cadastre).

THE TOWN'S NITRA INFLUENCE ON LANDSCAPE STRUCTURE of villages in its wider hinterland expresses itself in direct

and indirect way. In Nitrianske Hrnčiarovce and Štitáre villages, there are increased dwelling areas. The stroke of large fields by building is significant in both villages. The number of inhabitants of both villages increases. In Nitrianske Hrnčiarovce 1 753 inhabitants lived in 2001 (to date 26.5.2001), 1818 inhabitants in 2005 (to date 1.1.2005) were registered. In Štitáre there lived 565 inhabitants in 2001 (to date 26.5.2001), 619 inhabitants in 2005 (to date 1.1.2005). The observed growth of inhabitants number is connected with purchase of building grounds, construction of dwelling objects and then moving of Nitra's citizens here. The villages release the parcels of land which are not used on agricultural purpose progressively. The technical areas also change their functions. For instance the area of once army shooting range in Nitrianske Hrnčiarovce is partially built up with the villas settlements. The growth of the number of inhabitants is expressed in landscape structure of the analyzed villages directly and as an indirect factor within the town Nitra. The factor is connected with development activities of Nitra that are concentrated on building of dwelling, industrial and infrastructure objects. This trend is based on a change of traditional agricultural production and following building on free grounds. On the other side, there is an interest in wider hinterland use for recreation. Recreation potential is offered by the protected landscape area Ponitrie straightly that stretches within the research area and its hinterland. Hardwood forest is used for tourism and recreation in nature. On the slopes of Tribeč Mountain traditional cottages with gardens and vine cellars are situated. In this area the number of new cottages serving for relaxes and weekend recreation increases.

The outlying villages in hinterland of town Nitra keep their original producing and dwelling function oriented on agriculture. The town Nitra's influence on secondary landscape structure does not appear here. The villages have small part of built-up and recreational areas, technical zones and traffic. In the landscape structure of these villages forests elements, grassland vegetation, fields and agricultural soils dominate.

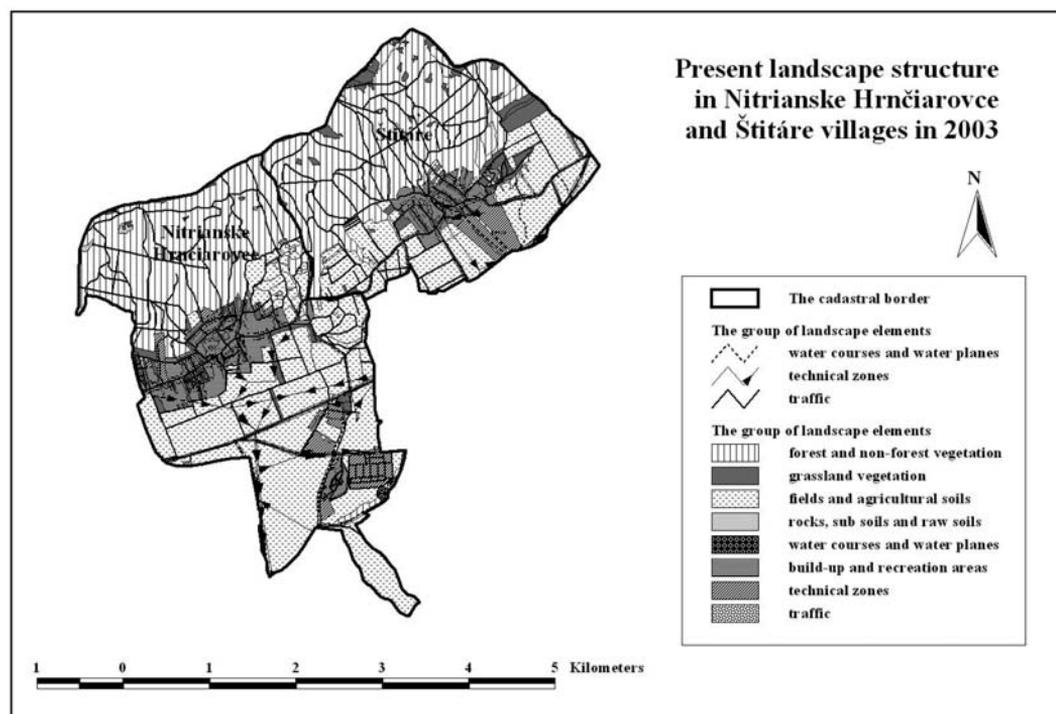


Fig. 4. Secondary landscape structure of Nitrianske Hrnčiarovce and Štitáre village in 2003

Conclusion

The development of Nitra is oriented on satisfaction of basic citizen's needs. Free spaces inside of town or in its hinterland are used for these activities. The building-up inside of town is realized by taking over the free no used places, by reconstruction of old objects or by taking public green areas. There are not enough of space inside of the town, so the building-up is realized also on agricultural areas, mainly on the soils with low producing function (1 810 ha, 16,8% of cadastre) (Kolektív 2003).

The main Nitra's influence on its contact area and hinterland is the change of occurrence and structure of secondary landscape elements. The villages near town have higher representation of technical and building-up elements in the landscape structure than the villages far away from town. The observed tendency in the town development is the change of the way of use of agricultural soils in the contact area and hinterland too. From the ecological point of view it is important to keep the harmony of development activities and potential and functional use of contact area. The contact area between settlement and followed landscape should not be the scene of conflicts of interests with consequence of devastation and exploitation. In this case, the contact area can be described as a barrier of settlement and surrounding landscape (Gažová 1984, Gál 1991).

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