



Technical University in Zvolen
Faculty of Ecology and Environmental Sciences
Department of Landscape Planning and Design



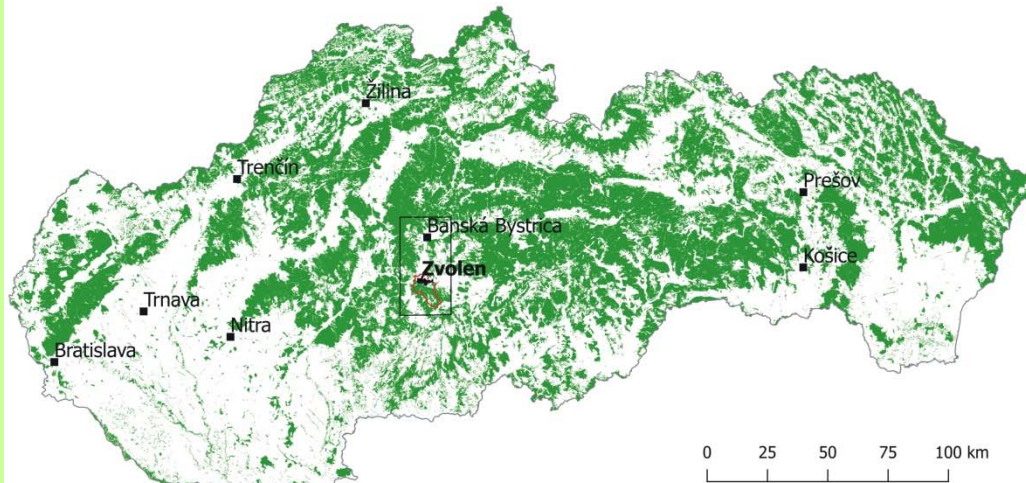
Cultural and historical aspects of forests quality in the town of Zvolen



Martina Slámová
Peter Jančura

THE ROLE OF FOREST FUNCTIONS WITHIN ECOSYSTEM SERVICES
Křtiny, Czech Republic, April 5th - 8th 2016






Forests in Slovakia



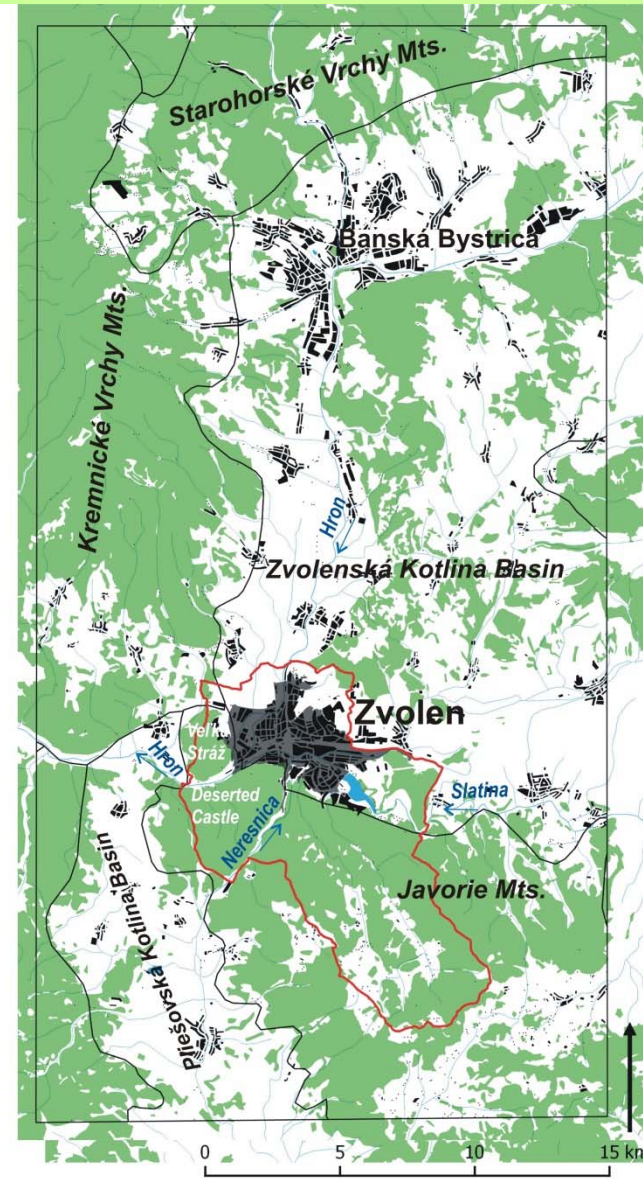
Source: ZBGIS, 2012: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get

Study area

Legend

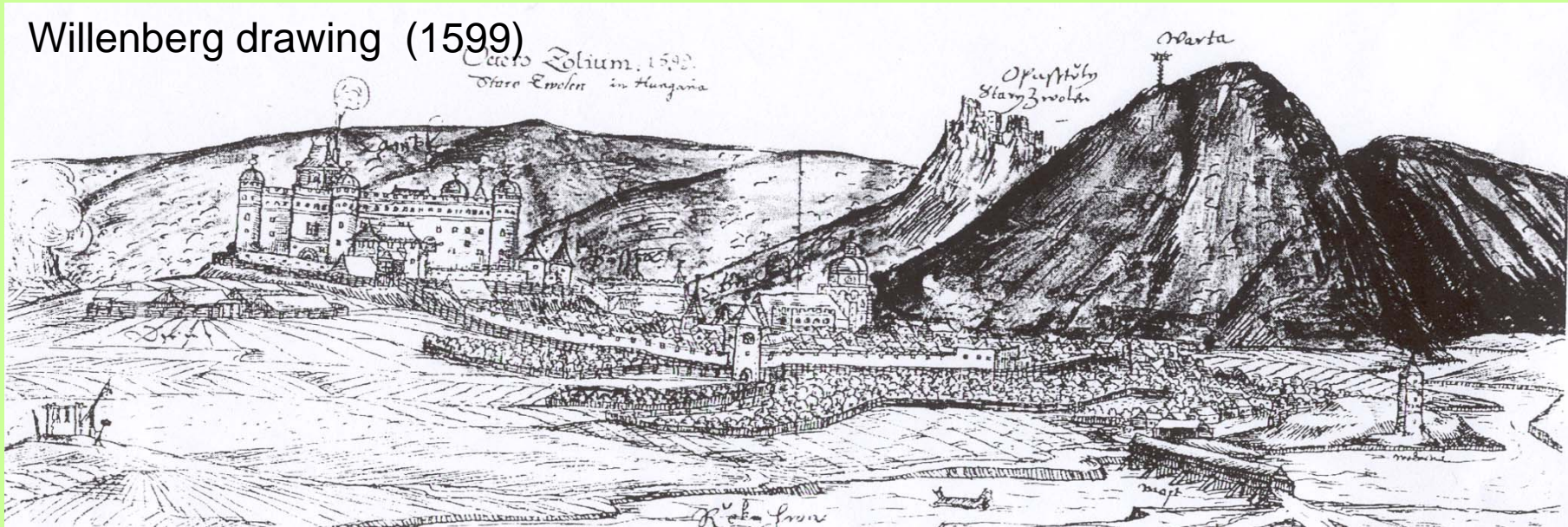
-  **Geomorphological units**
Source: <http://mserver.geology.sk:8399/arcgis/services/WMS/GMC/MapServer/WMServer>
-  **Cadastral area**
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
-  **Water courses and dam**
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
-  **Forests**
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
-  **Built-up areas**
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
-  **Urbanized territory delimited according to**
The Act no. 50/1976 Zb. on Territorial Planning and Building Order
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?

Silva de Zolum



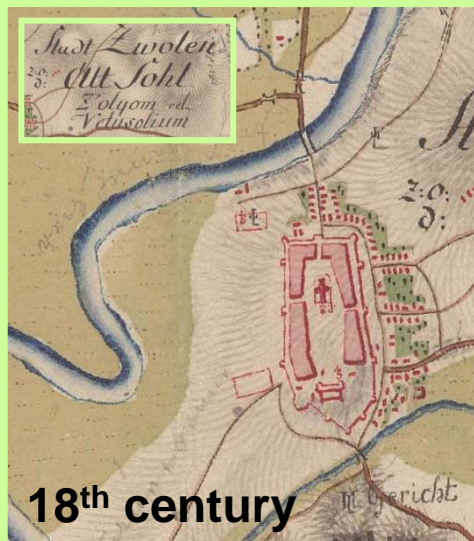
Historic image of the town (1599)

Willenberg drawing (1599)



Present view on the town (2004)





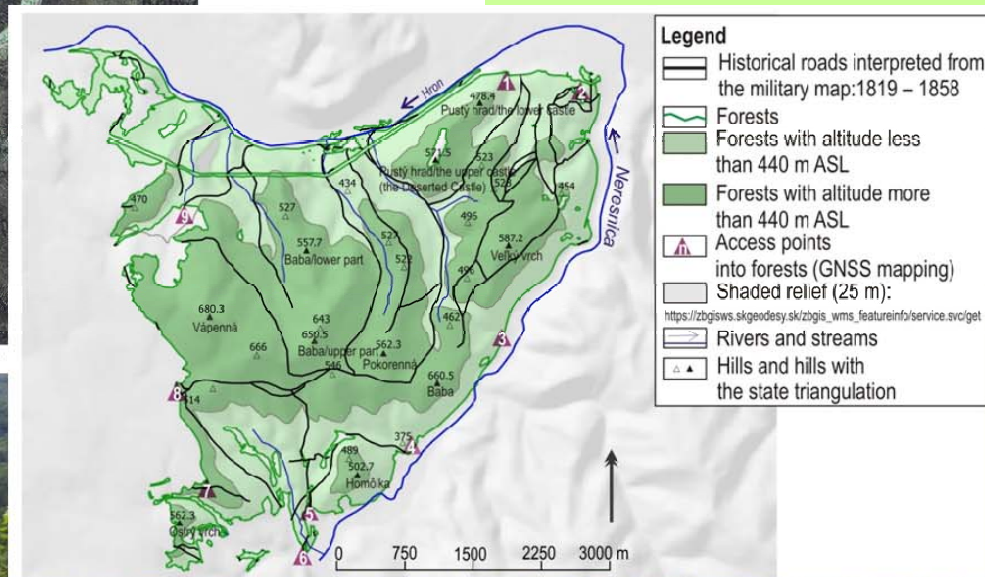
16.91 km²

Banská Štiavnica

**13th - 15th century
Via Magna**

N
E

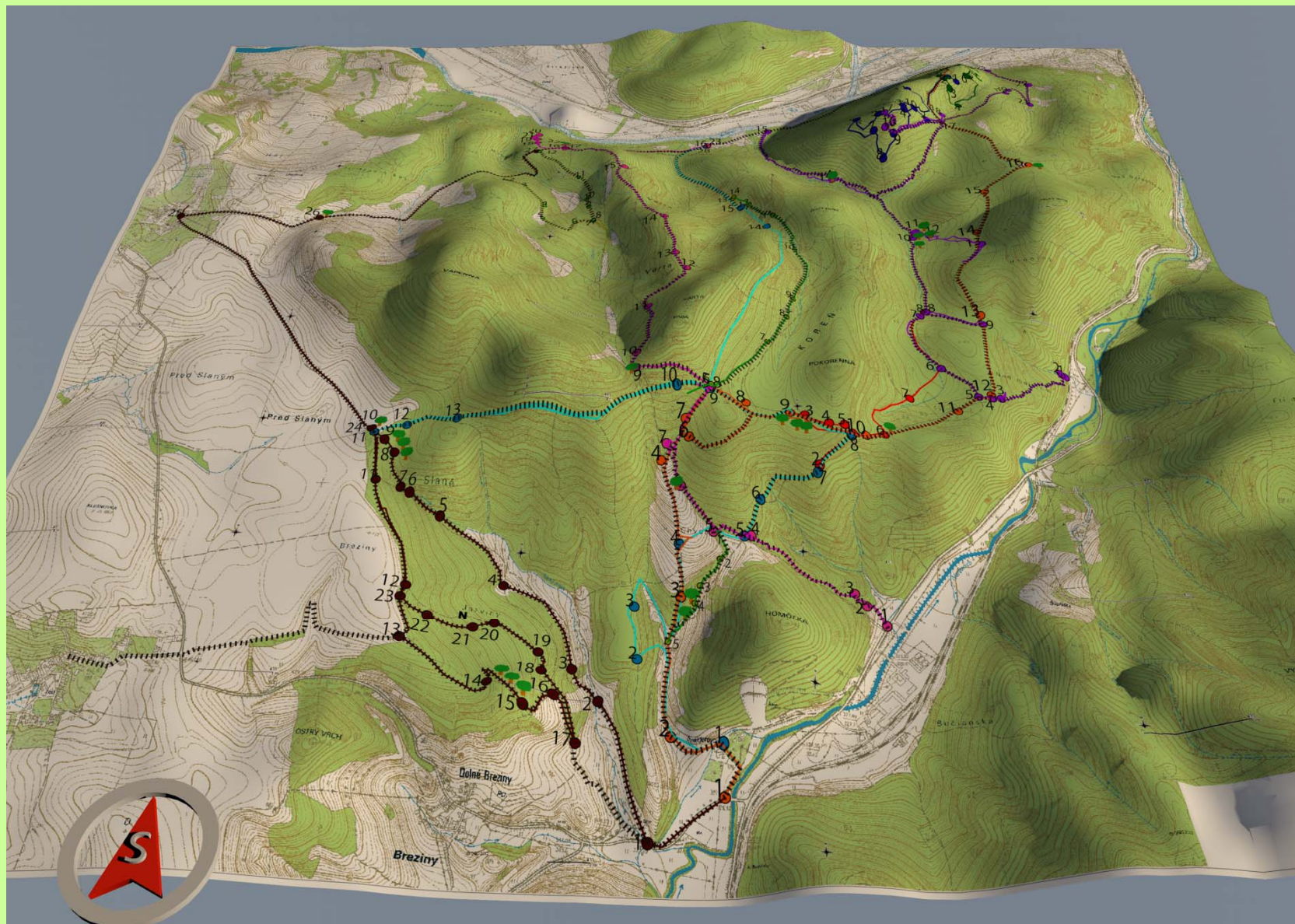
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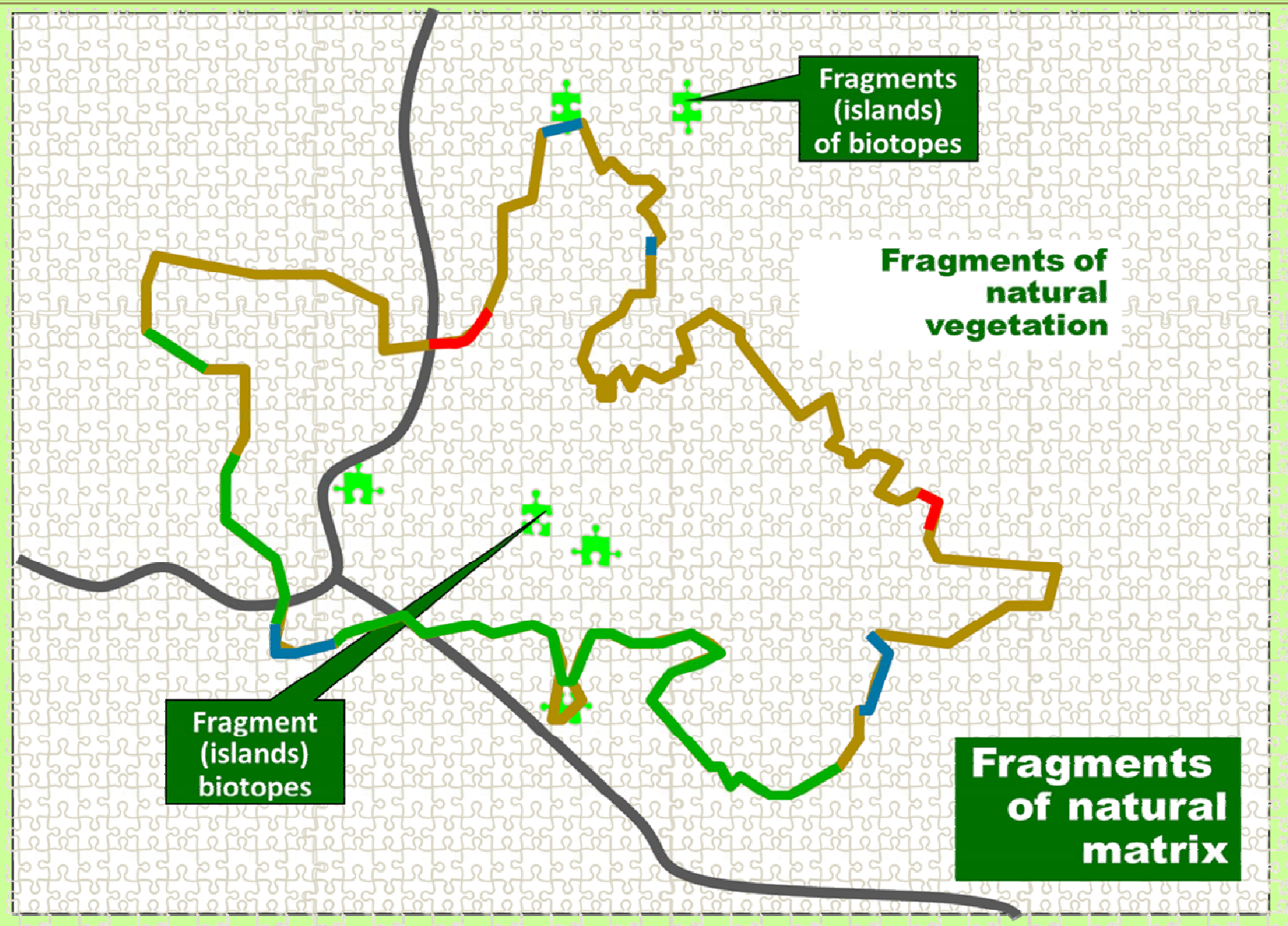
*1. Hron, Haputka, 2. Drahy, Hron, 3. Majer, Neresnica, 4. Homolka, 5. Snajderovci, Neresnica, 6. Breziny, Neresnica, 7. Jazviny, Breziny, 8. Slane, Ostra Lúka, 9. Ostrá Lúka, Sokolia skala

Martina Slamova, Frantisek Chudy, Noemi Beljak Pazinova, Jan Beljak

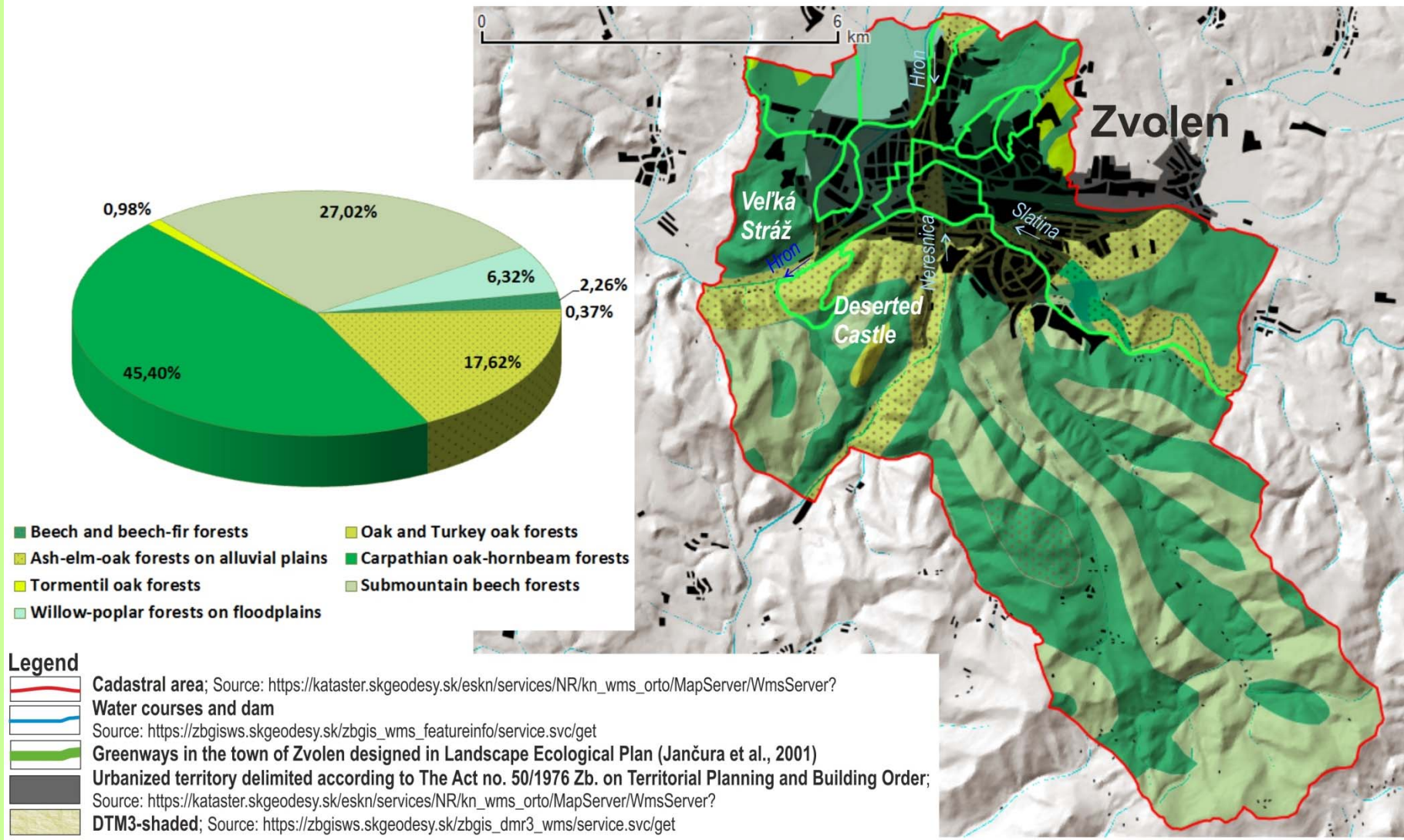
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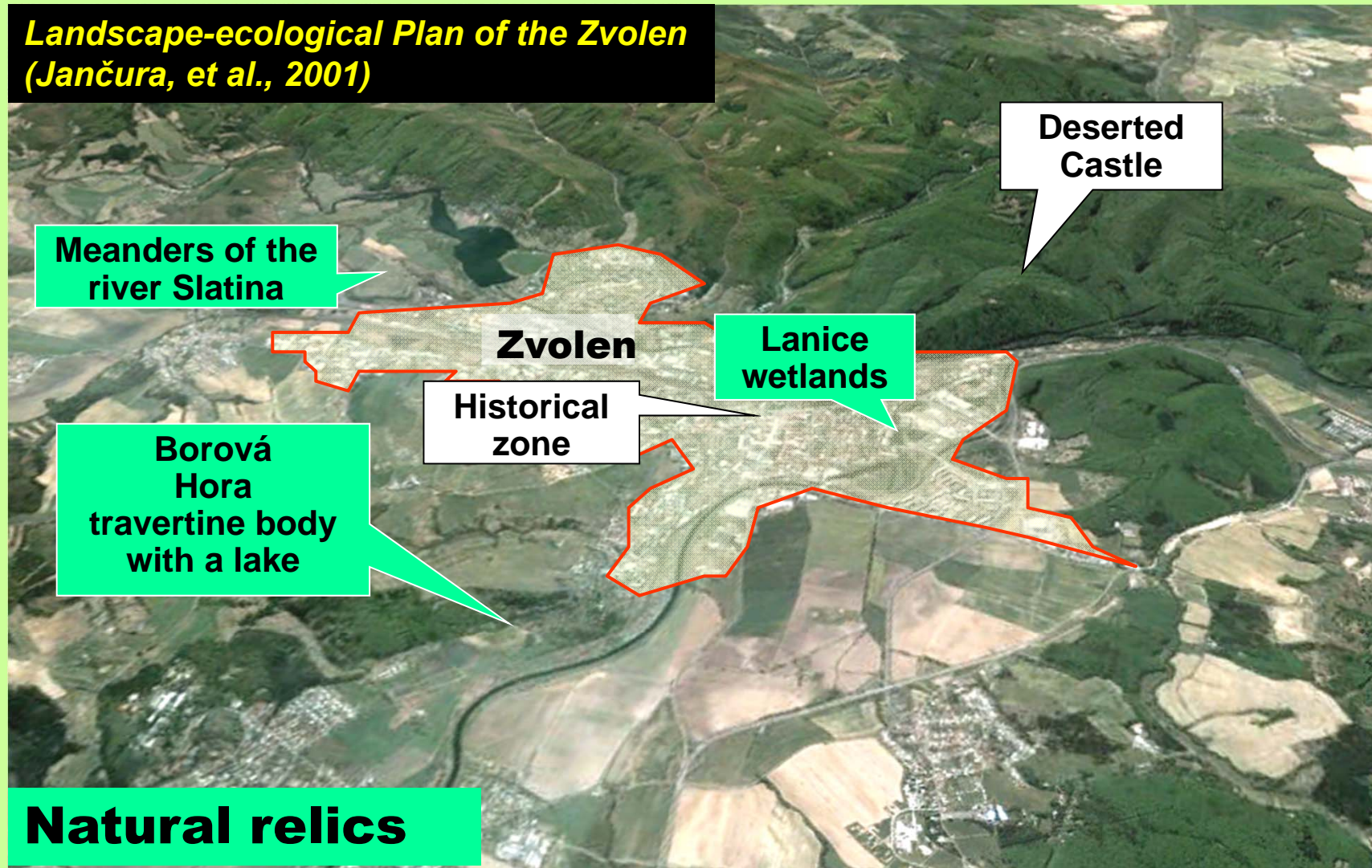
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Potential natural vegetation in the cadastral area

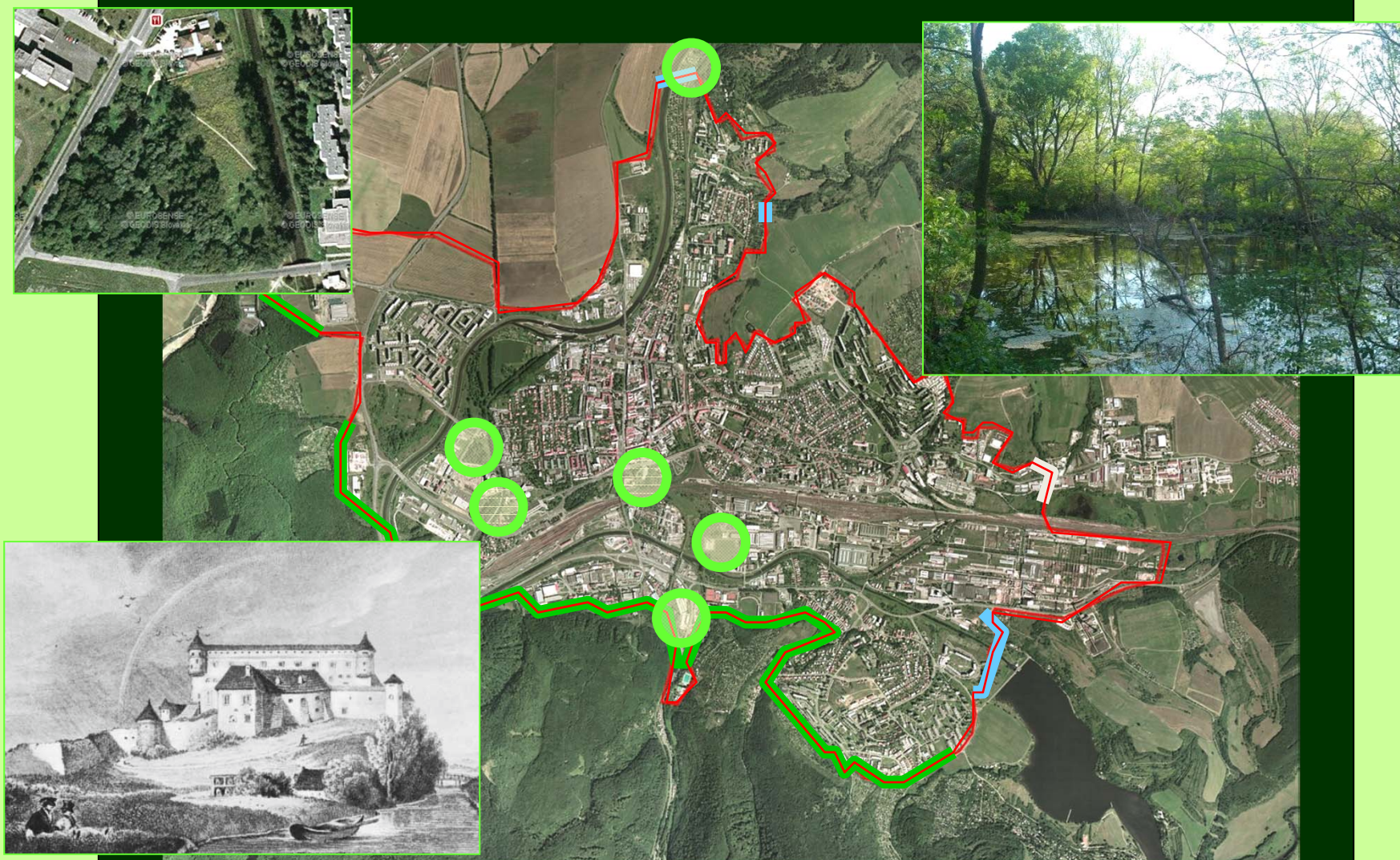


Landscape-ecological Plan of the Zvolen
(Jančura, et al., 2001)



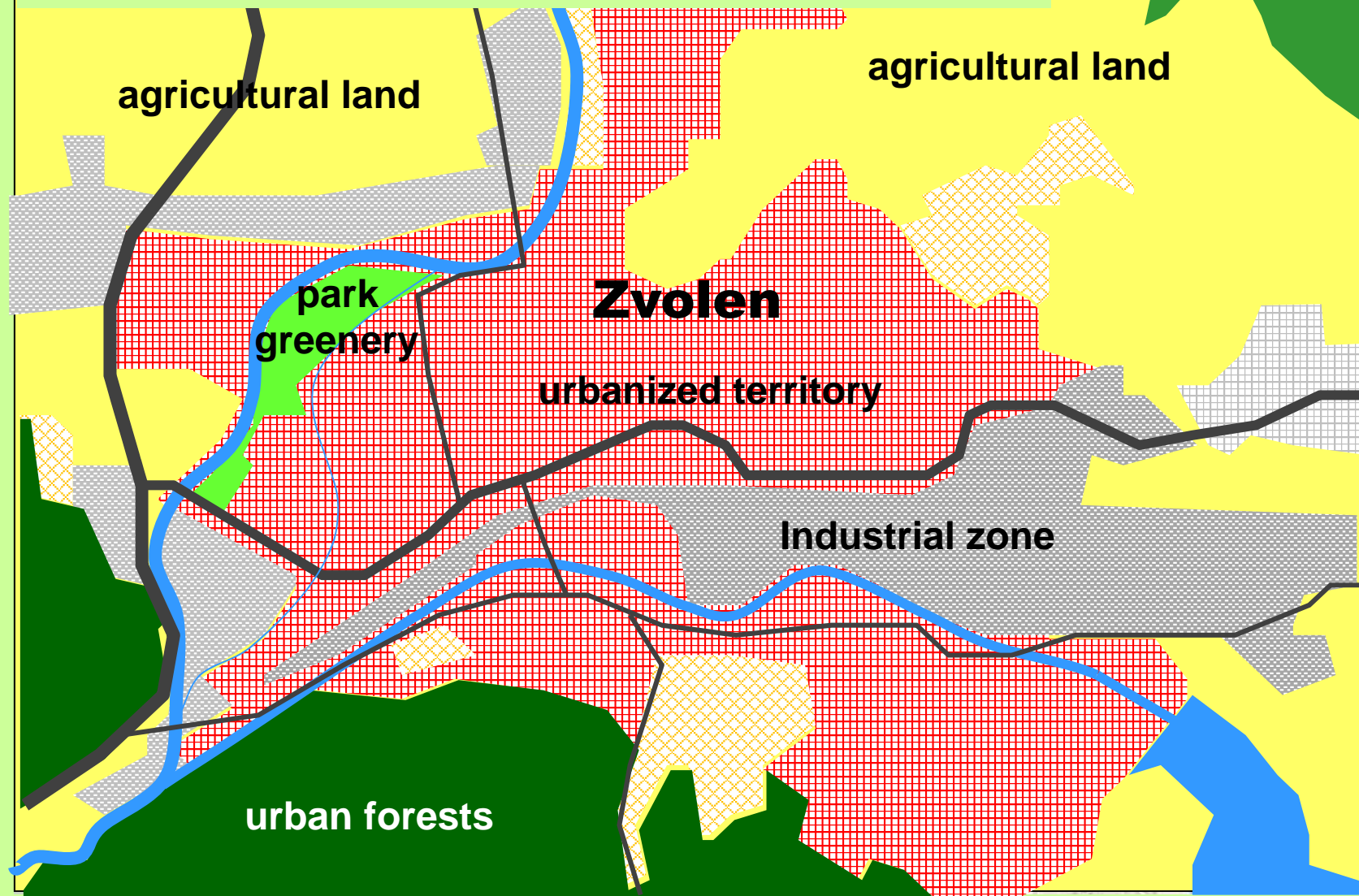
Natural relics

Cultural and historical artefacts



Fragments of seminatural vegetation

Urban zones of the town of Zvolen

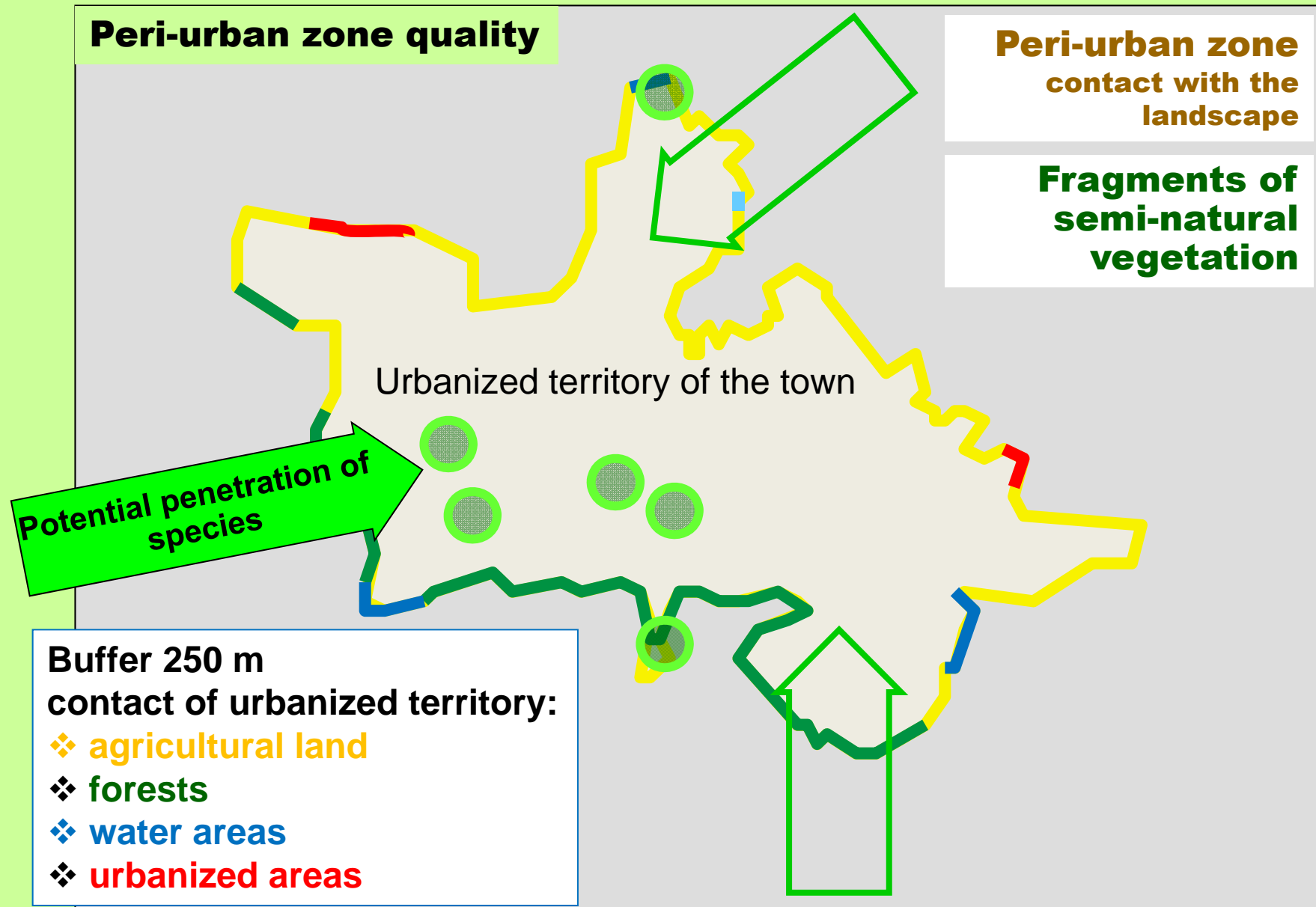


Quality of forests

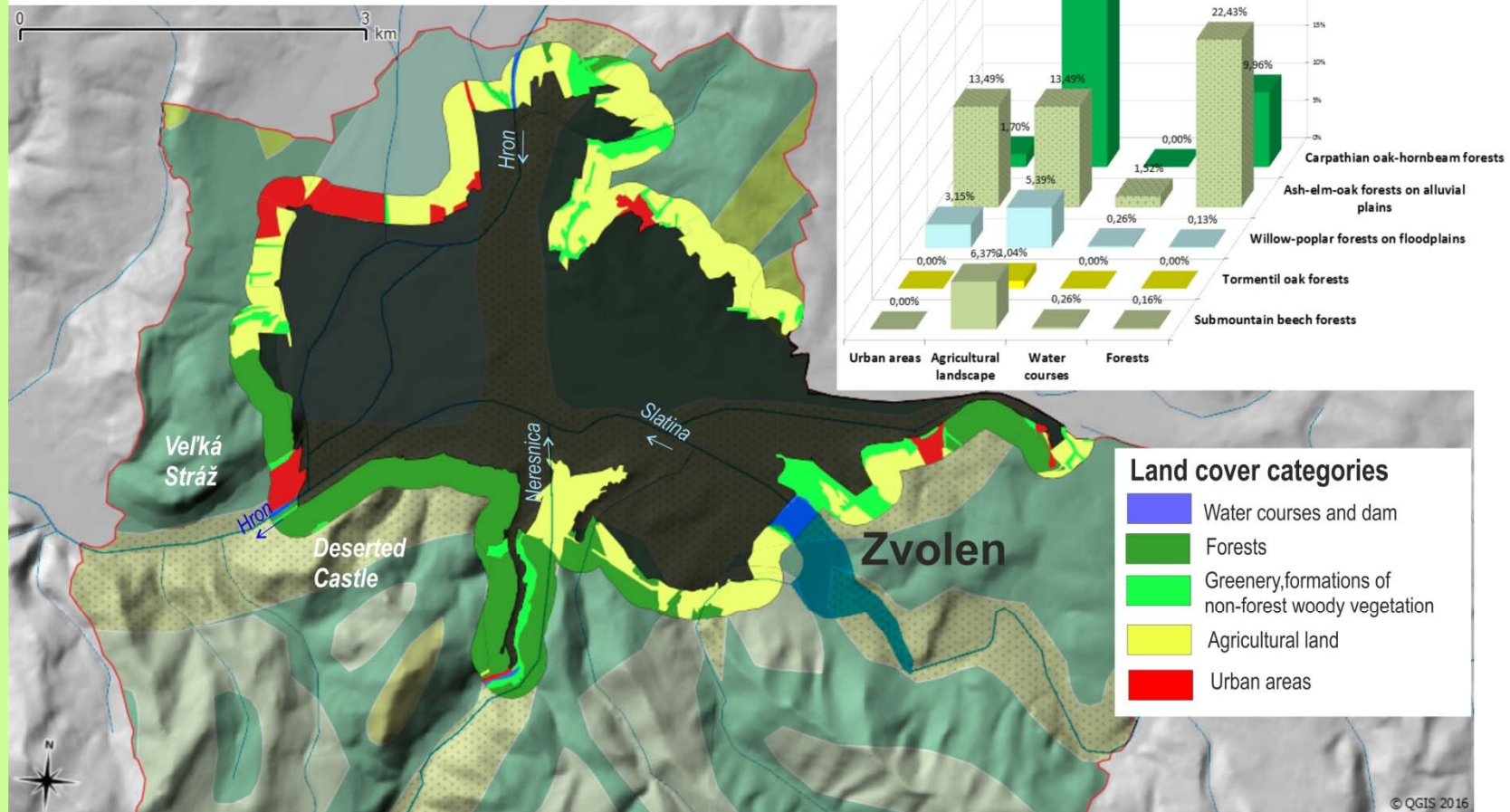


- **Quality of peri-urban zone**
- **Greenways network**
- **Access to forests**

Design of spaces for short time recreation – residents.



Land cover in peri-urban zone reclassified into 4 categories



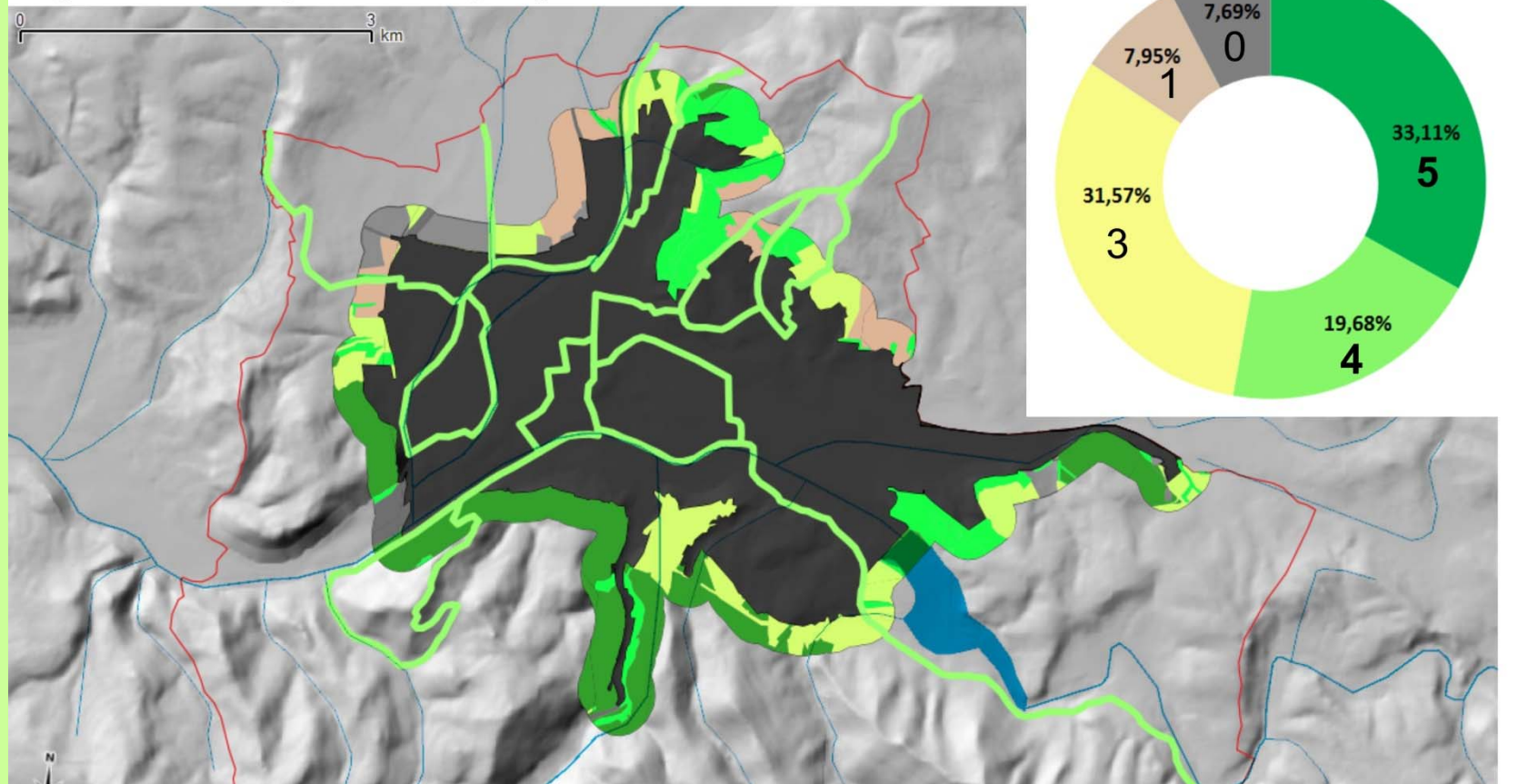
Legend

Cadastral area;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
Water courses and dam
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get



Peri-urban zone (buffer 250 m)
Urbanized territory delimited according to The Act no. 50/1976 Zb. on Territorial Planning and Building Order;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
DTM3-shaded; Source: https://zbgisws.skgeodesy.sk/zbgis_dmr3_wms/service.svc/get

Degrees of ecological stability in peri-urban zone of the town of Zvolen



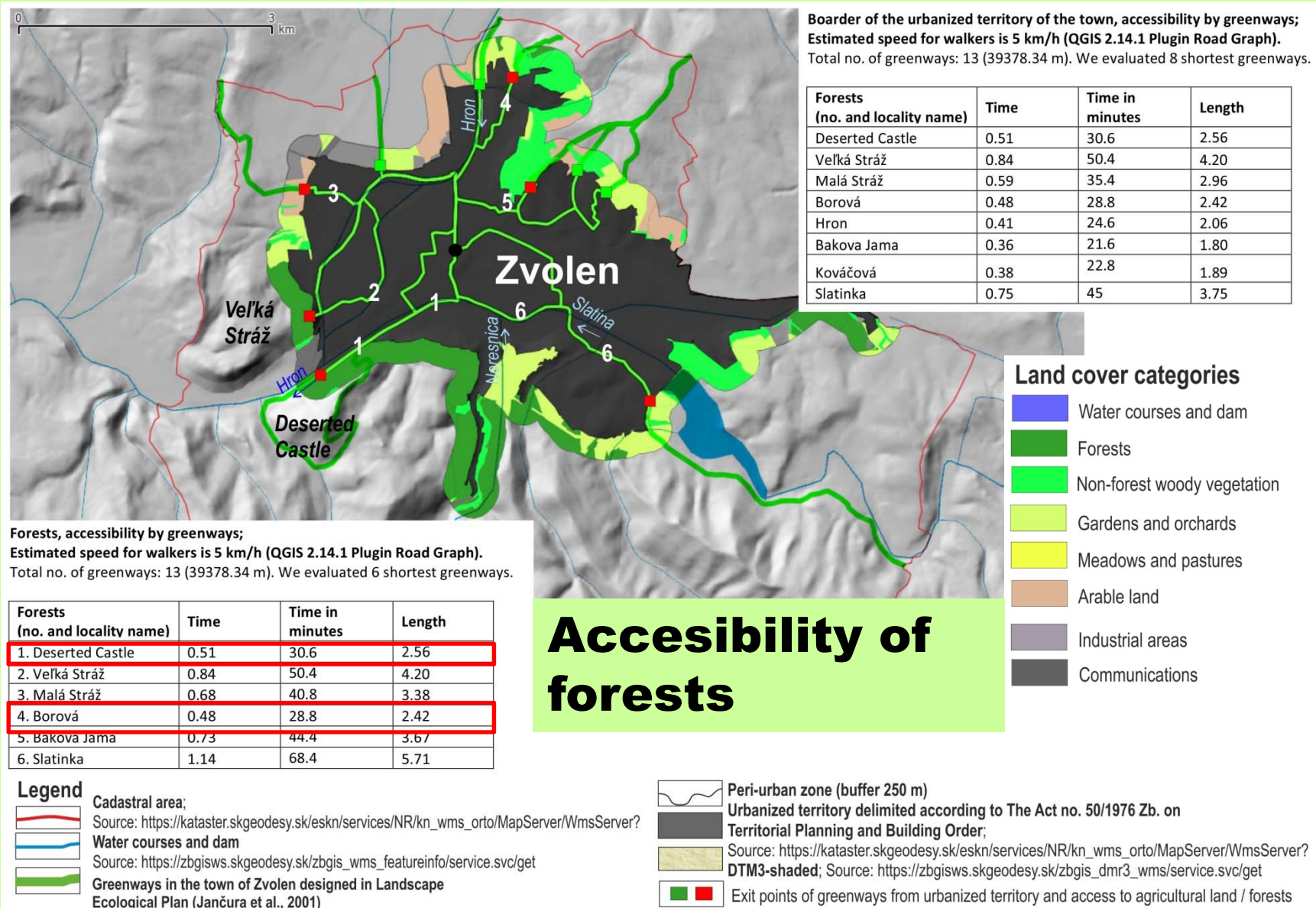
Legend

- Cadastral area; Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- Water courses and dam
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
- Greenways in the town of Zvolen designed in Landscape Ecological Plan (Jančura et al., 2001)
- Urbanized territory delimited according to The Act no. 50/1976 Zb. on Territorial Planning and Building Order;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- DTM3-shaded; Source: https://zbgisws.skgeodesy.sk/zbgis_dmr3_wms/service.svc/get

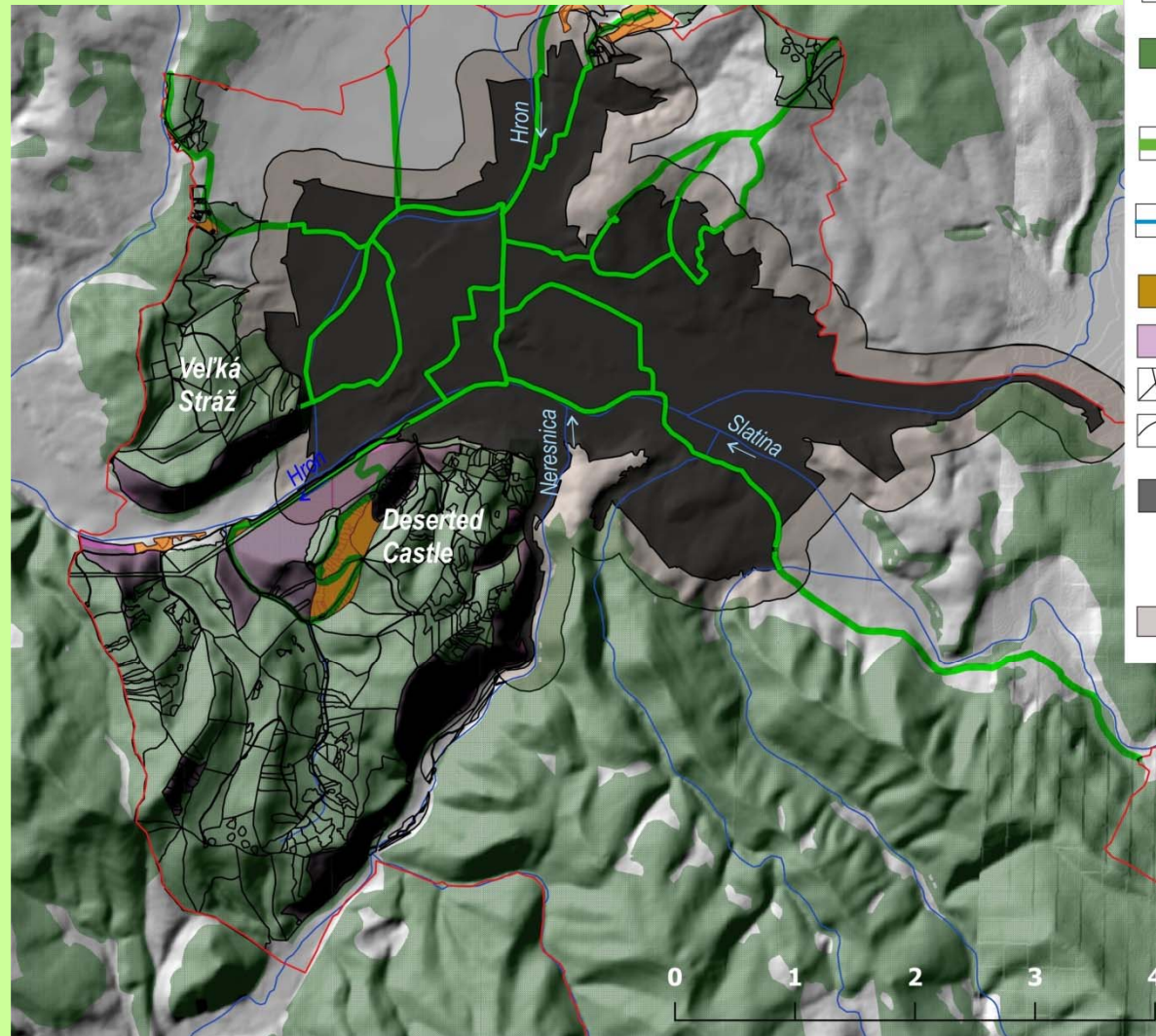
Degrees of ecological stability (Low et al, 1995)

- Degree 5- very significant relevance
- Degree 4- significant relevance
- Degree 3- medium relevance
- Degree 2- little relevance
- Degree 1- very little relevance
- Degree 0- without relevance

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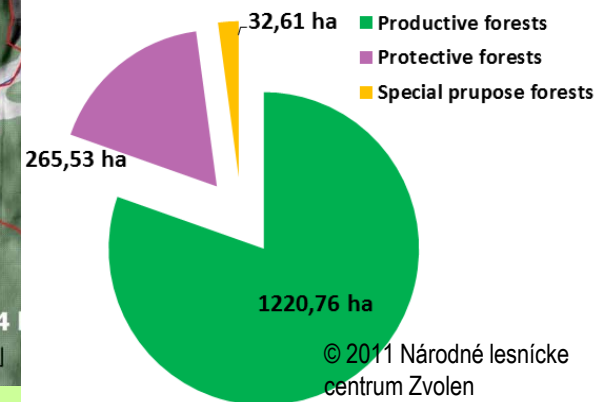


Touristic potential of forests

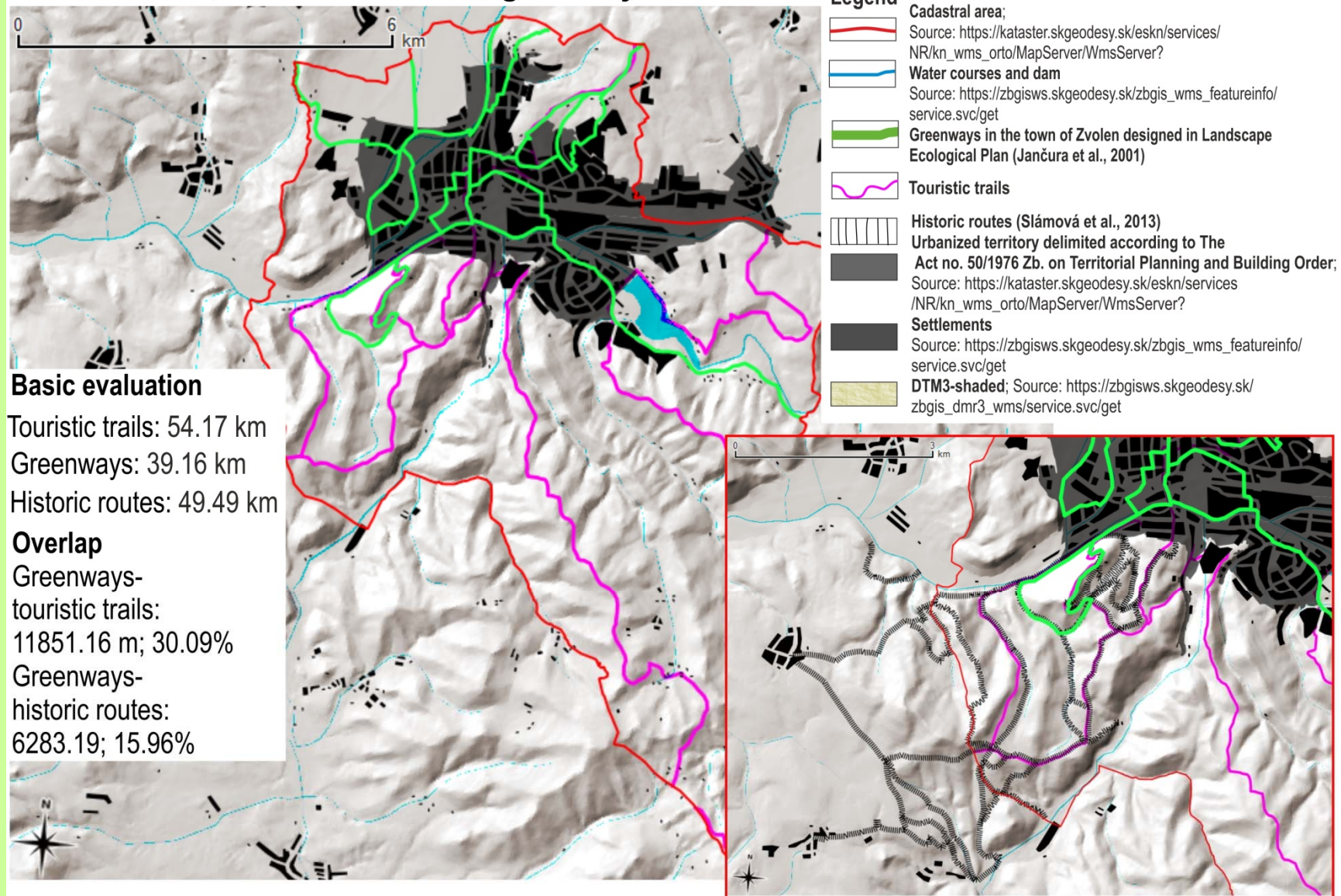


Legend

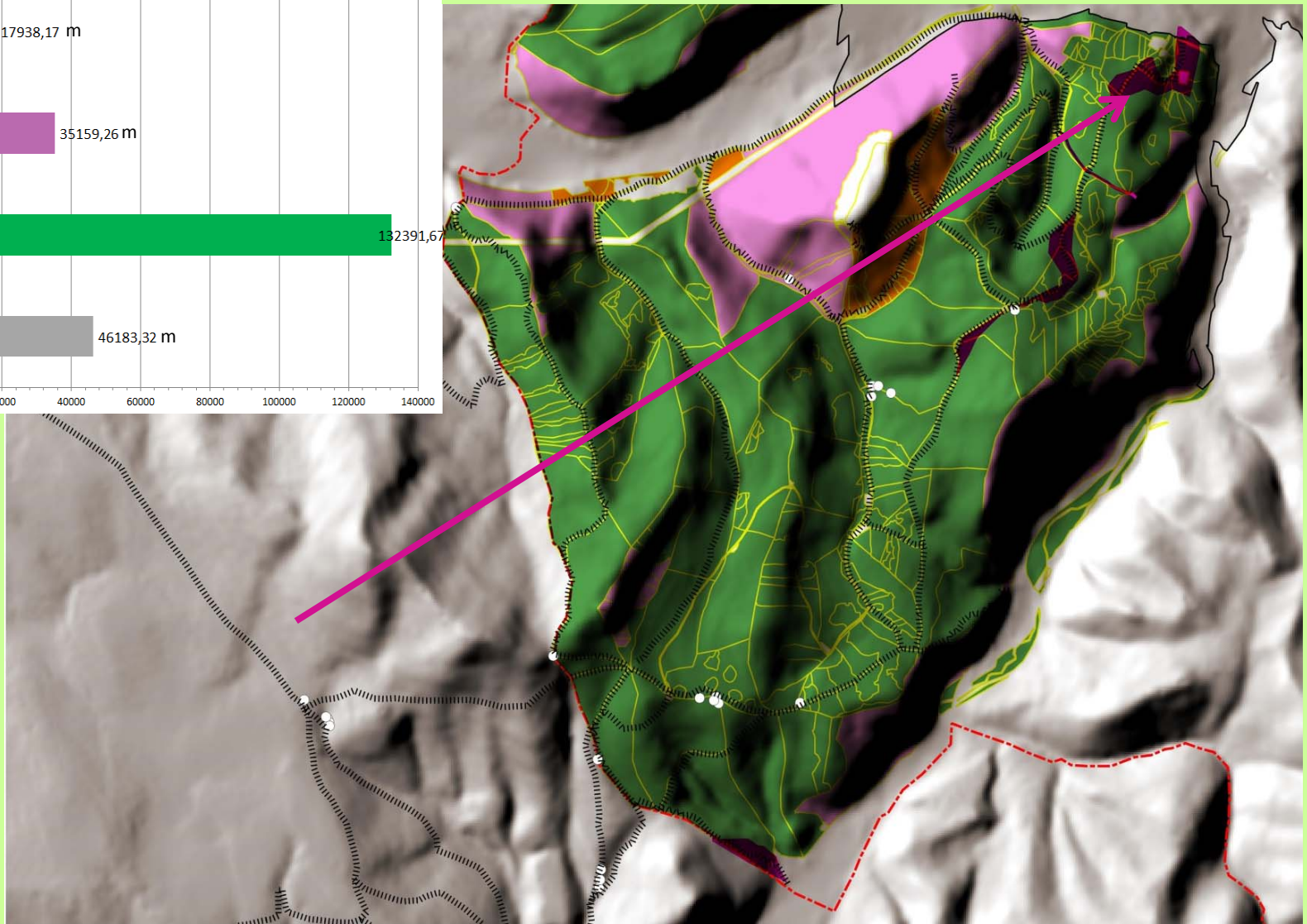
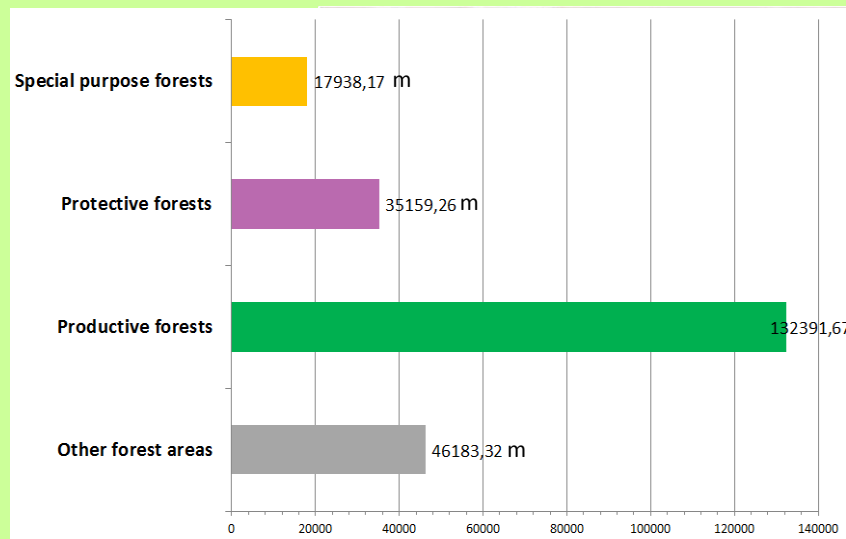
- Cadastral area;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- Forests
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
- Greenways in the town of Zvolen designed in the Landscape Ecological Plan (Jančura et al., 2001)
- Water courses and dam
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
- Special-purpose forests
- Protective forests
- Units of forests division - Urban Forests
- Peri-urban zone (250 m from the boarder of the urbanized territory)
- Urbanized territory delimited according to The Act no. 50/1976 Zb. on Territorial Planning and Building Order;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- DTM3-shaded; Source: https://zbgisws.skgeodesy.sk/zbgis_dmr3_wms/service.svc/get



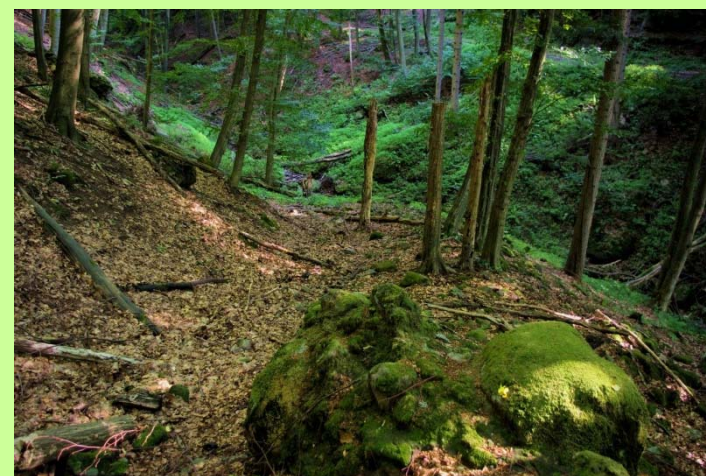
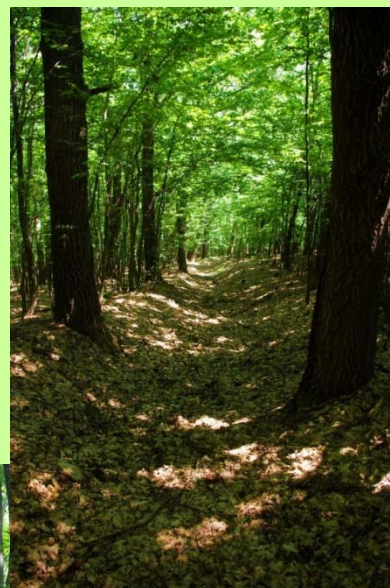
Touristic trails, historic routes and greenways



Historic routes in forest categories

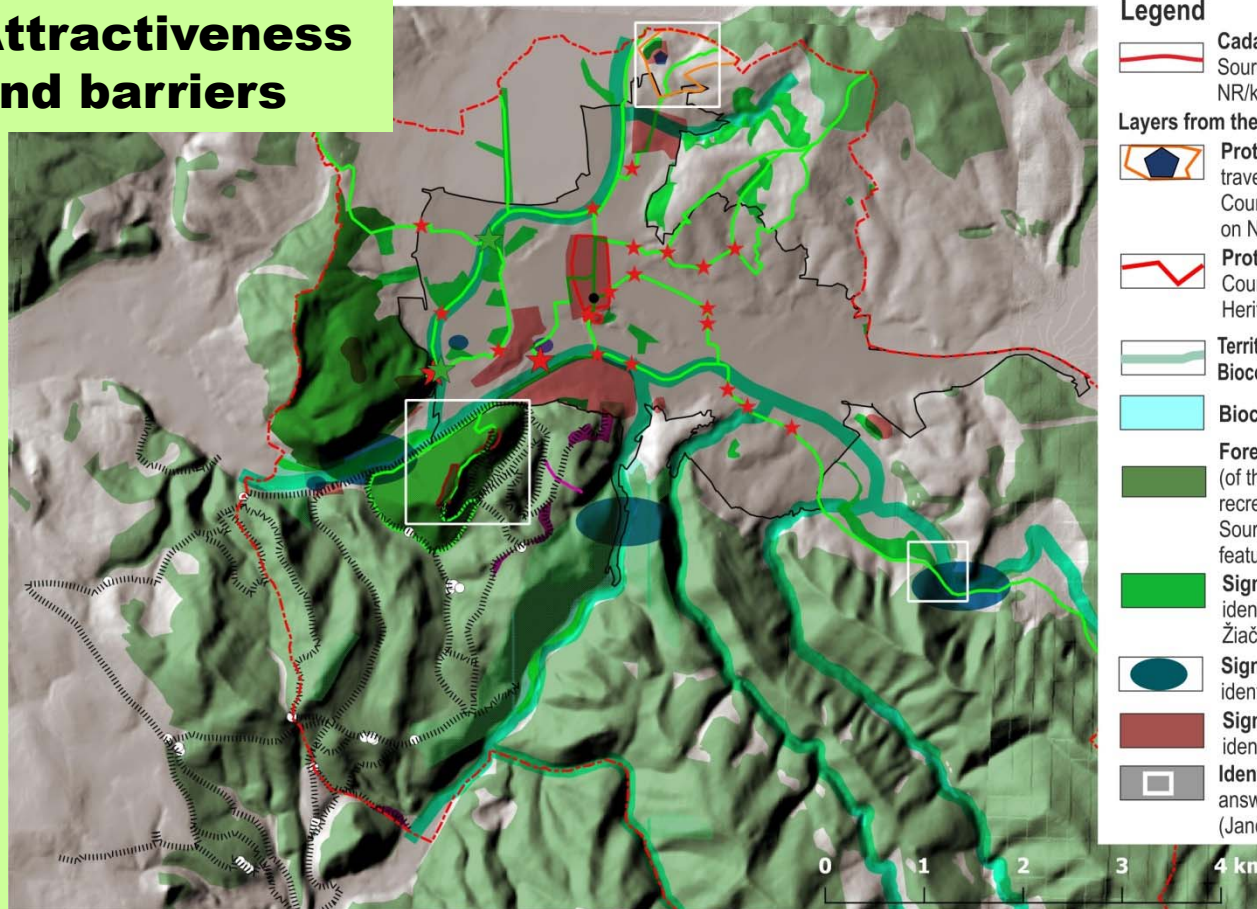


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Attractiveness and barriers



Legend

- Cadastral area;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- Layers from the Landscape Ecological Plan (Jančura et al., 2001)
- Protected area Arborétum Borová Hora with a lake in travertine body (The Act of National Council of the Slovak republic no. 543/2002 Coll., on Nature and Landscape Conservation)
- Protected National Cultural Site (The Act of National Council of the Slovak republic No. 49/2002 Coll. on Cultural Heritage Conservation)
- Territorial system of ecological stability
Biocorridors: national/regional/selected local
- Biocenters: national/regional
- Forests on hills above biocorridor of the river Hron (of the national importance) with biocenters and recreational potential;
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
- Significant biotopes without legal protection identified by experts in the field (Ujházy, K., Krištín, A., Žiačik, M., Slámová, M.)
- Significant geological objects without legal protection identified by expert in the field (Beláček, B.)
- Significant archaeological localities identified by expert in the field (Malček, R.)
- Identity recognised by local residents (respondent answers were identified by expert in the field (Jančura, Gregor, 2008.)

Base maps

- Urbanized territory delimited according to The Act no. 50/1976 Zb. on Territorial Planning and Building Order;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
- DTM3-shaded; Source: https://zbgisws.skgeodesy.sk/zbgis_dmr3_wms/service.svc/get

Barriers on greenways

- Natural river without a bridge
- Urban: crossroads, roads, railways / missing bridge

- Greenways in the town of Zvolen designed in the Landscape Ecological Plan (Jančura et al., 2001)

Field research on historic routes (2012-2013) (Slámová et al., 2013)

- Historic routes
- Old trees
- Hollow ways
- Rampart with a ditch (7th-8th century) (Beljak, Pažinová 2012)

Evaluation of forests quality for recreation (evaluation in progress)

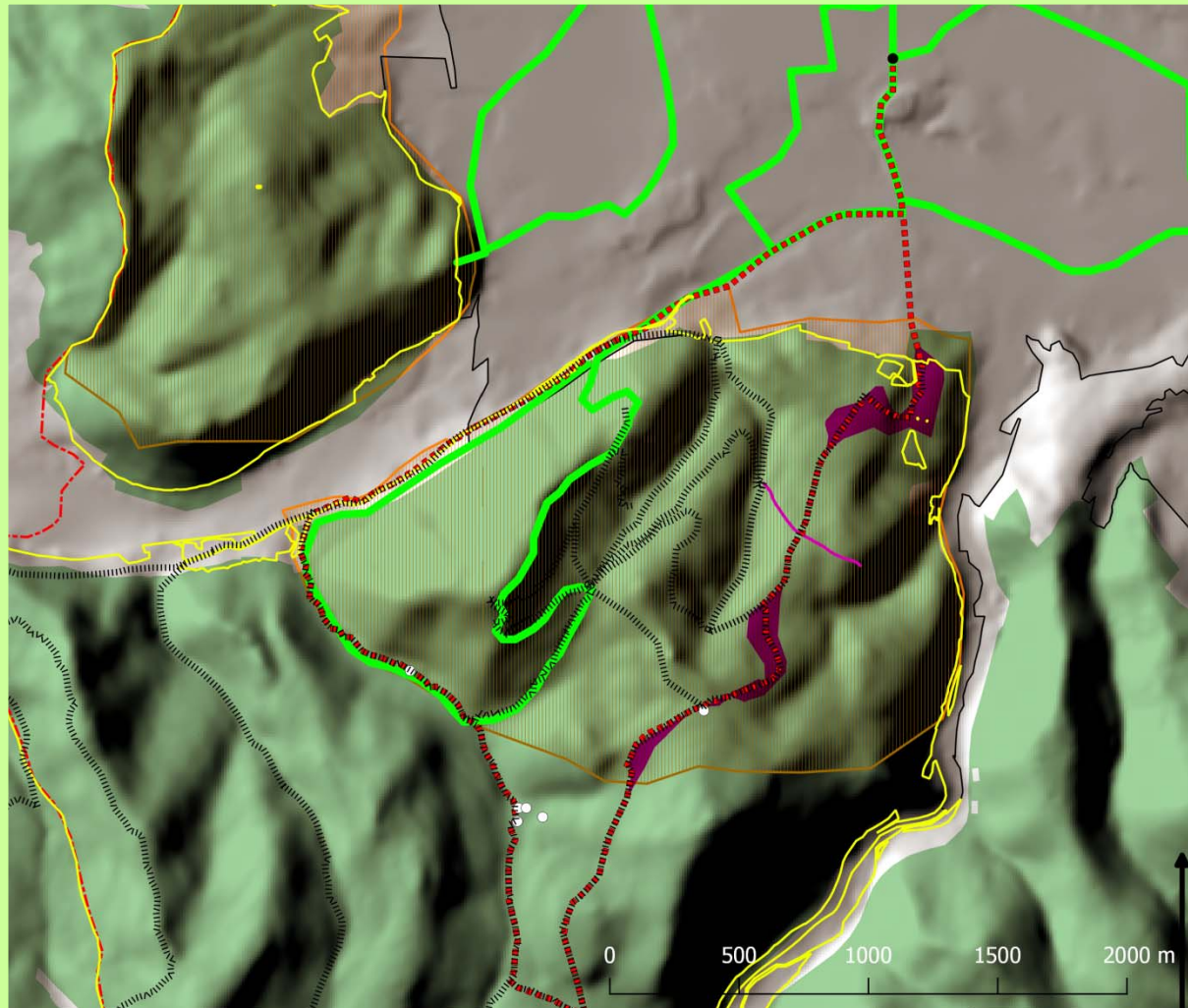
	Natural				Geology	Cultural	Historic		Identity
Name of the locality	Protected area (Act no. 543/2002)	Significant biotopes without protection	Territorial system of ecological stability		Protected cultural site (Act no. 49/2002)	Archaeological sites	Interesting artificial landforms and objects	Identity of residents (mental maps) (Jančura, Gregor, 2008)	
Forests: Categories of significance: A, B, C									Preferences by respondents (x: less than 0,2; C: 0,2-0,4; B: 0,4-0,6; A: above 0,6)
1-Pustý Hrad	x	A	A	A	A	A	B	A	I.
2-Velká Stráž	x	A	A	A	x	B	x	x	IV.
3-Malá Stráž	x	A	C	x	x	x	x	x	VI.
4-Borová hora	A	A	A	A	x	A	B	B	II.
5 -Bakova jama	x	A	C	x	x	B	x	x	V.
6-Slatinka	x	A	A	A	x	x	x	C	III.

Assessment of forests accesibility Multi-criteria matrix












(evaluation in progress)

Criteria	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.
	The fastest access to peri-urban zone	The fastest access to forest	Forest owner	Access	Degree on naturalness in peri-urban zone	<i>Greenery formations in urbanized territory along greenways</i>	Natural barriers	Urban barriers	Forest value
	Time [min]	Time [min]	Municipality and VŠLP (1)/associate landowners (0)	free (1)/limited (0)	1-very little; 2-little; 3-medium; 4-significant; 5-very significant	<i>No./lenght</i>	n	n	<i>24-16 (A), 15-7 (B), 6-1(C) ?</i>
Greenways									
G1-Pustý Hrad	30,6	30,6	1: Urban forests	free	5		0	2	
G2-Velká Stráž	50,4	50,4	1: Urban forests	free	5		2	3	
G3-Malá Stráž	35,4	40,8	1: Urban forests	free	1		1	2	
G4-Borová hora	28,8	28,8	1: VŠLP Zvolen	limited access	5		0	1	
G5 -Bakova jama	21,6	44,4	1: Urban forests	free	1		0	2	
G 6-Slatinka	45	68,4	0: Urbár Moťová	free	3		0	6	

Proposal of touristic trail



Legend

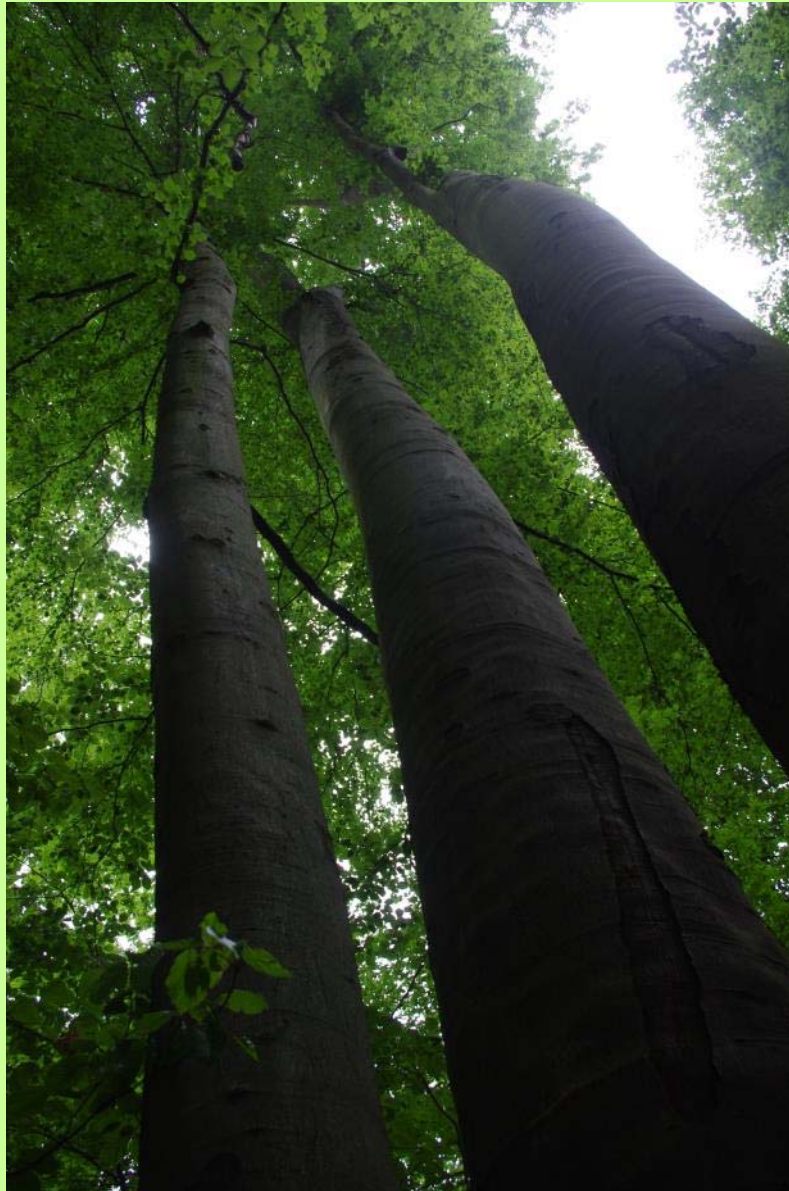
-  Cadastral area;
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-  Forests
Source: https://zbgisws.skgeodesy.sk/zbgis_wms_featureinfo/service.svc/get
-  Greenways in the town of Zvolen designed in the Landscape Ecological Plan (Jančura et al., 2001)
-  Units of forests division - Urban Forests
-  Master plan of the district of Banská Bystrica, 2008
-  Urbanized territory delimited according to The Act no. 50/1976 Zb. on Territorial Planning and Building Order;
Source: https://kataster.skgeodesy.sk/eskn/services/NR/kn_wms_orto/MapServer/WmsServer?
-  DTM3-shaded; Source: https://zbgisws.skgeodesy.sk/zbgis_dmr3_wms/service.svc/get
- Field research on historic routes (2012-2013) (Slámová et al., 2014)
 -  Historic routes
 -  Old trees
 -  Hollow ways
 -  Rampart with a ditch (7th-8th century) (Beljak, Pažinová 2012)

Cultural functions (CICES, 2016) within a group of intellectual and representative interactions has **42%** of urban forests.

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References

JANČURA, P., SLÁMOVÁ, M. 2002. *Landscape Ecological Plan of Zvolen, 1st phase, 2nd phase*. Banská Štiavnica: KPTK, FEE, TU vo Zvolene, 2002, 48 pp.

SLAMOVA, M., CHUDY, F., BELJAK PAZINOVA, N., BELJAK, J., 2015. Multidisciplinary approach to research on historical landscape structures. In Boltižiar, M., Bača, A., eds. *The Abstracts of the 17th International Symposium on Landscape Ecology: Landscape and Landscape Ecology*, Institute of Landscape Ecology SAV Bratislava, 2015, p. 33. ISBN 978-80-89325-27-6.

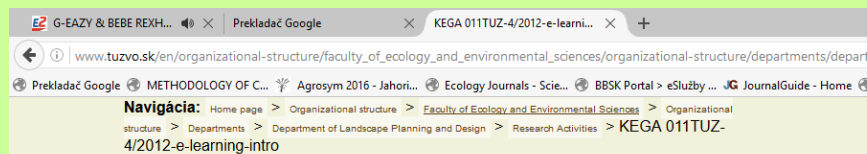
SLÁMOVÁ, M., BELACEK, B., BELJAK, J., PAZINOVA, N., CHUDY, F., 2014. Dependence of the Medieval Settlements and Historical Roads to the Natural Environment Around the Deserted Castle in Zvolen (Slovakia). In *Procedia, Social and Behavioral Sciences*. ISSN 1877-0428, 2014. vol.120, p. 213-223. doi: 10.1016/j.sbspro.2014.02.098

SLÁMOVÁ, M., BELÁČEK, B., BELJAK, J., PAŽINOVÁ, N. 2013. Research of Historical Roads around the Deserted Castle, near Zvolen. Research Report on the Historical Roads Identification in the Forest Landscape. Zvolen : KPTK, FEE, TU vo Zvolene, 2013, 46 p.

Thank you for attention

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Educational website

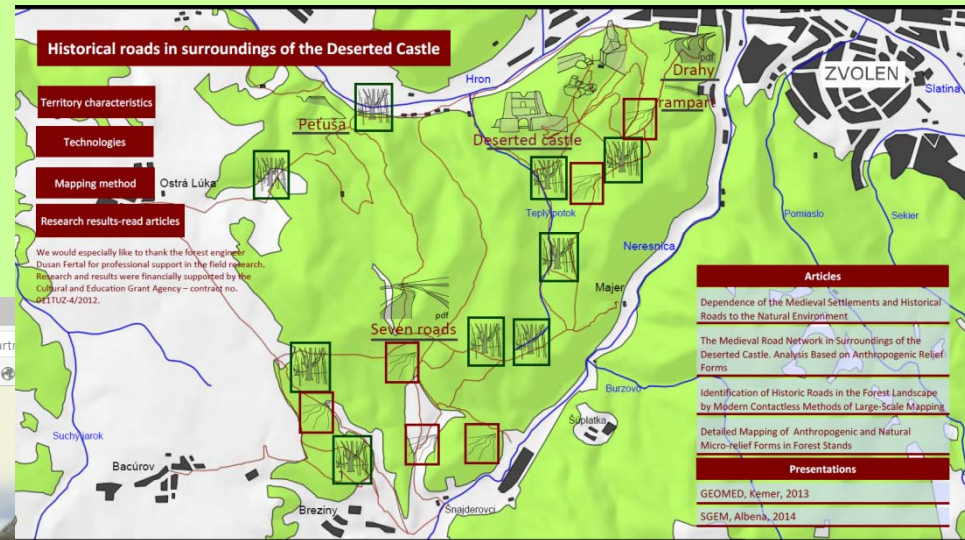
Historical landscape structures

- References
- Gallery
- Contact

- Introduction
- Research on historical structures in landscape
- Methods for identification historical structures in landscape
- Modern methods used in field survey of relief forms: GEOMED 2013, Kemer; SGEM 2014-presentation; SGEM2014-poster (papers will be soon available)
- Research applications - case studies (only in Slovak)

Educational tool is financially supported by agencies

IPA TUZVO 13/2010
KEGA 011TUZ-4/2012



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