GREEN BELT – A CASE OF ECOLOGICAL NETWORK IN EUROPEAN CULTURAL LANDSCAPE

Michael Bartoš, Drahomíra Kušová, František Zemek, Jan Těšitel

Institute of Systems Biology and Ecology, v.v.i., Academy of Sciences of the Czech Republic, Department of landscape ecology, Na Sádkách 7, 370 05 České Budějovice, email: michlba@usbe.cas.cz

Abstract:

The area along the former „iron curtain", which once ran across Europe from the North Sea to the Black Sea, evolved in a specific way for more than forty years. Inaccessibility and absence of intensive agricultural and forest management contributed to the origin of a belt tens to hundreds of meters wide – the Green Belt. The unique project of a large biocorridor – a belt of natural biotopes – across Europe in the place of former iron curtain is currently supported by the state institutions as well as the European Union. The Green Belt runs through the cultural landscapes of 22 European countries and its total length is almost 8, 500 km. Its width is changeable, from tens of meters to several kilometers. It consists mainly of forests close to natural state, meadows, wetlands, barrens and fallow land, and managed farmland including related biotopes. As such, it has no equivalent all over Europe. At the same time it contains areas which are disturbed or even strongly disturbed, technogenic areas and areas under intensive agricultural management. Interconnecting particular isolated Green Belt parts of great natural value should facilitate continuous distribution of plants and animals. This is the main objective of European cooperation within the INTERREG III B CADSES project.

Motto:
„ Borders separate – nature unites. "

Introduction

Almost every day we witness the disappearance of green areas in our neighbourhood. New highways, lay-by belts and parking spaces, large shopping, manufacturing and storage centers, satellite residential zones and roads attack the landscape, often at the expense of the existing greenery. On the other hand, we are provided with more information on the necessity of green areas for sustainable life on our planet. Human society and nature are two main forces that shape landscape structure and drive landscape-level processes (Farina, 2000).

The Green Belt

The term Green Belt starts to be widely used in territorial planning for describing territories under specific management. They are mostly areas with natural („wild") character or close to natural characteristics, sometimes cultural forest stands or farmland of croft character. Here we can also classify the greenery of linear character, running through residential or urban areas. This form of greenery is considered to be an important aspect for the sustainable development in the 21st century (Těšitel et al., 2001). The purpose and character of these areas differ in particular states and territories. In an open landscape the Green Belt

can constitute networks of biocorridors, which are important components of the territorial system of ecological landscape stability (ÚSES, Act no.114/1992 of the Law Code). Biocorridors may not ensure permanent existence of some organisms but they allow for their migration between particular biocenters and thus constitute a network in place of formerly disconnected biocenters (Bouwma et al., 2002; Sklenička, 2003).

From „iron curtain“ to European „life line“

The „iron curtain“ represented a political, ideological and also physical barrier dividing the whole of European continent. For more than 40 years it divided Europe in the long line from the Barents Sea to the Black Sea, or the Adriatic Sea. The impenetrable line consisted of wire or sheet metal fences, electric wire, minefields, self-release guns, aggressive dogs as well as armed soldiers – the line, which was referred to, concerning mainly the border in inner Germany – as the line of death. In the other countries in question it was perceived in a similar way – as a border between two completely different worlds (Fig.1). This area was practically inaccessible, almost without any use. Thus, only the nature could benefit from the existence of the border (Fig.2).

Fig. 1 The border between two completely different worlds

Fig. 2 Only the nature could benefit from the existence of the border

The idea of changing the meaning of the former death belt into the life belt occurred in Germany soon after the fall of the iron curtain. They realized that the line between the inner German border and the so called Kolonnenweg, a military road, which is from 50 to 200 m wide, could form the basic part of the national network of biotopes. The survey carried out at the end of the 1970s proved the richness of plant and animal species as well as whole biotopes. The declaration of 1989 appealed for saving the unique biotopes occurring along the German border. The project was named Grünes Band (Green Belt), and its launch also meant the foundation of the first Germany-wide project concerning nature protection. Ecological NGOs, the government and particular federal lands agreed that they will protect the former „no man´s land“ and leave it to the nature. The territory connects different types of physical-geographic units and therefore also different biotope types. Monitoring particular biotopes proved that, out of the total length of 1 393 km in Germany, 60% of the Green Belt consist of aquatic ecosystems, various types of forest stands, extensively managed mesophyllic meadows, unused meadows and fallow land as well as humid, species-rich flooded meadows. Further on it was found out that almost one half of the belt (48%) consists of rare and endangered biotopes (Engels et al., 1994) including over 600 species listed in the Red Book. Thus the Green Belt represents a chance to create a unique biocorridor interconnecting German seacoast flatland with the rolling land and forested mountain ranges in the south-east of Bavaria. German government decided that unmanaged state plots will be used for nature protection. This gave rise to 150 protected landscapes and 40 new ones are planned. The buyout of private property is organized in cooperation with the German Society for Landscape Conservation.

The Green Belt as a symbol of international cooperation

Germany was just one of the countries coping with the existence of the iron curtain. In them, too, evolved a „wild territory“, which is often institutionally protected due to its natural value. However, with a little exaggeration it can be said that the time of strict nature protection finished with the fall of the iron curtain. E.g., 15 % of the Green Belt in Germany has been degraded by intensive farming, forest plantations, roads and building constructions. This danger was reflected by the IUCN, International Union for Nature and Resources Conservation, which initiated international campaign for its preservation in 2004. The idea emerged of its preservation as a symbol of international cooperation in the field of nature protection and sustainable development – The European Green Belt (www.greenbelteurope.org). The Green Belt runs through 22 European countries (Fig.3), its total length being 8,500 km. Its width is changeable, from tens of meters to several kilometers. It consists mainly of forests close to natural state, meadows, wetlands, barrens and fallow land as well as extensively managed farmland and other biotopes, and as such it is unique all over Europe. At the same time, however, it includes damaged to seriously damaged territories, technogenic areas and intensely managed farmland (Vos and Meeus, 1999). Interconnecting the isolated Green Belt parts of great natural value should allow for continuous distribution of plants and animals, which constitutes the main objective of this project of European cooperation.

Fig. 3 The European Green Belt runs through 22 European countries

Model area - the Green Belt in the Czech Republic

The length of the Green Belt in the Czech Republic is about 800 km (9.5 % out of its total length in Europe). It runs along the Czech border from the town of Aš to the confluence of the Dyje and the Morava rivers. Its larger part (380 km) is classified in the category of especially protected territories (National Parks and Protected Landscapes); an area of 171 km falls into the category of nature parks. A very unique part, the territory of Lednice – Valtice area, is listed in UNESCO World Heritage List. It means that more than a half of the Green Belt in the Czech Republic is subject to institutional regulations (Tab.1).

Tab. 1 Nature valuable areas along the Green Belt of the Czech Republic

Category of nature- and landscape protection	**Length of Green Belt** (km)
Landscape Protected Areas (Český Les, Šumava, Třeboňsko, Pálava)	250
National Parks (Šumava, Podyjí)	130
Nature Parks (Smrčiny, Vyšebrodsko, Novohradské Hory, Homolka – Vojířov, Česká Kanada)	171
UNESCO World Heritage List Lednicko -Valtický areál	21

Among real natural treasures rank e.g. large mixed forests of the Bohemian Forest, Modrava peatbogs protected under the Ramsar Convention dealing with wetland biotopes, the system of forests, wetlands and lakes in the area of Třeboň, the Dyje river canyon, riparian woodland at the confluence of the rivers Dyje and Morava (Bláha, Bartos, 2004).

More significant disturbances of the Green Belt are caused by the transport corridors (Dufek et al., 2003) which cross it, and it is also disconnected due to the existence of large farmland plots in the area of Domažlice as well as Znojmo and Břeclav in the south of Moravia. International transport corridors, such as A 5 highway connecting Prague and Bavaria or the international highway connecting the Czech Republic with Austria, are lined with big shopping and entertainment centers, which also considerably damage the belt (Fig. 4). Biological value of neighboring biotopes is further diminished by heavy light pollution in the localities in question (Bartoš et al., 2006).

Fig. 4 Large shopping and entertainment centers damage and fragment the Green Belt

Supposed results - ways to fulfil the Green Belt vision

At present the ideas of the Green Belt vision are being fulfilled through a number of partial national and international projects. One of them is the international project „Green Belt – protection and valorisation of the longest system of biotopes in Europe“, which is funded by the European Union in the framework of INTERREG III B CADSES projects. Spatially the project focuses on the part of the Green Belt which belongs to the CADSES space – Central, Adriatic, Danubian and Southeastern Space. The length of thus delimited Green Belt is almost 7,000 km and there are 17 project partners from 8 countries (Germany, Czech Republic, Austria, Slovakia, Hungary, Slovenia, Bulgaria and Croatia) participating in the project. The motto is as follows: „Borders disconnect – the nature connects“. It expresses the idea of changing the former „death belt“, having once existed in the form of the iron curtain, to a green „lifeline“. Its aim also consists in promoting and supporting cross-border cooperation along the Green Belt. Another important aspect of the project is the promotion of the idea that nature conservation appears to be a part of the regions sustainable development. Over the period 2006 – 2008 the project will focus on the following activities:

Mapping the categories of land-use along the state border (50 to 100 m from both sides) with the aim to identify any „weaknesses“ from the point of view of nature conservation

- Proposing a system of ecological transport across and in the Green Belt territory
- Proposing the development of sustainable tourism forms in the Green Belt and related marketing
- Development of cross-border cooperation based on educational projects contributing to regional development
- Proposal of the measures aimed at the Green Belt institutional protection.

The launch of the project consists in the survey (inventory) of the current state of the Green Belt. It is facilitated by a common project methodology of mapping, which is based on visual interpretation of ortho-rectified aerial photographs images (resolution 0.5 to 3m) and terrain survey. CORINE classes, level 3, used for the land-use classification in European countries, were applied as the basis of the common classification system. The results obtained are charted in maps of scale 1 : 25 000. The entire information (spatial as well as attributes) is recorded in the form of GIS layers; the method ensures both their spatial analysis and their universal usability for a wide range of users (Fig.5). Currently an international information campaign has been launched within the project, dealing with the Green Belt problems and accessible both to the public and professional community.

Fig. 5 Example of data sources used in the "Gap Analysis" – digital aerial orthophotographs and maps of scale 1:25 000

Conclusion

The project European Green Belt is a big challenge. It should fulfil the functions of an ecological corridor and thus, contribute to the conservation of biodiversity. However, it should also increase people's connection to their natural surrounding and increase the opportunities for socio-economic development that is beneficial to local communities and biodiversity as well. The Green Belt is a unique chance to overcome the old boundaries and barriers between East and West – a living symbol of growing together in Europe.

This study was elaborated in the framework of the research project of the Institute of Systems Biology and Ecology AS CR – AV0Z60870520 (http://www.usbe.cas.cz/upload/ UserFiles/File/USBE/OKE/greenbelt/greenbelt.html), and was given financial support within the projects EU INTERREG IIIB CADSES: „Green Belt – protection and valorisation of the longest habitat system in Europe, and „PANET – Protected areas networks establishment and management of corridors, networks and cooperation". Co-funding was also provided by the project GEF – „Conservation and sustainable use of biodiversity through sound tourism development in biosphere reserves in Central and Eastern Europe".

References

BARTOŠ, M., KUŠOVÁ, D., ZEMEK, F., TĚŠITEL, J., 2006: *Green Belt – nejdelší systém biotopů v Evropě. Život. Prostr., Vol. 40, No. 5, Bratislava, p. 238 - 242*

BECK, P., FROBEL, K. , 1981: *Letzter Zufluchtsort: Der Todesstreifen? Vogelschutz, Heft 2, 81 p.*

BLÁHA, J., BARTOS, J. , 2004: *Zelený pás – přírodní páteř Evropy. Informační leták, Hnutí Duha, Brno, 4 p.*

BOUWMA, I. M., JONGMAN, R. H. G., BUTOVSKY, R. O. (EDS.), 2002: *The indicative map of Pan-European ecological network – technical background document. (ECNC Technical report series) ECNC, Tilburg, The Netherlands/Budapest, Hungary. 101 pp + annexes*

DUFEK, J., JEDLIČKA, J., ADAMEC, V., 2003: *Environmental indicators in the Czech Republic transport sector. In: Joumard, R. (Ed): 1st Symposium "Environment & Transport". Arcueil, France, INRETS, p. 234 – 239*

ENGELS, B., HEIDRICH, A., NAUBER, J., RIECKEN, U., SCHMAUDER, H., ULLRICH, K. (EDS.), 2004: *"Perspectives of the Green Belt" – Chances for a ecological network from the Barents Sea to the Adriatic?; German Federal Agency for Nature Conservation, BfN-Skripte 102, Bonn, 95p.*

FARINA, A., 2000: *The cultural landscape as a model for integration of ecology and economics. BioScience, 50 (4), p. 313 – 320*

SKLENIČKA, P., 2003: *Základy krajinného plánování. Nakladatelství Naděžda Skleničková, Praha, 321 p.*

TĚŠITEL, J., KUŠOVÁ, D., BARTOŠ, M., 2001: *Biophilia as the invariant in human thinking. A case study – the town of Tábor. Landscape and Urban Planning, 53, p. 29 – 36*

VOS, W., MEEUS, H., 1999: *Trends in European culture landscape development: perspectives for a sustainable future. Landscape and Urban Planning, 46, p. 3 – 14*