

# Migration corridors for large carnivores in the West Carpathians, Czech Republic – current threats and conservation activities

Miroslav Kutal<sup>1</sup>, Tomáš Krajča<sup>1,2</sup>, Michal Bojda<sup>1</sup> & Martin Janča<sup>1</sup>



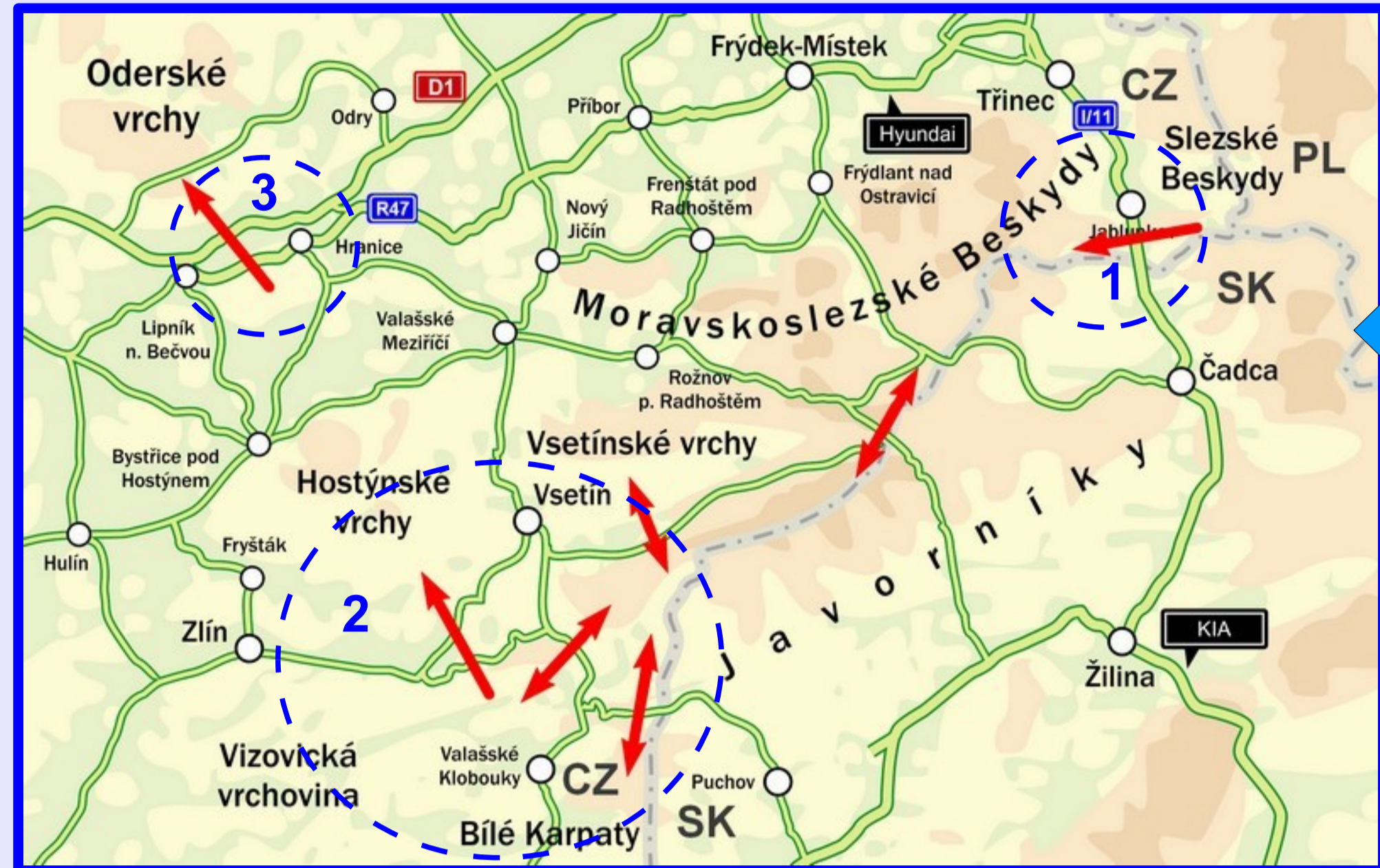
<sup>1</sup> Friends of the Earth Czech Republic (Hnutí DUHA Olomouc), Dolní náměstí 38, 77200 Olomouc, Czech Republic (FoE CZ)

<sup>2</sup> Palacký University Olomouc, Faculty of Science, tř. Svobody 26, 77146 Olomouc, Czech Republic

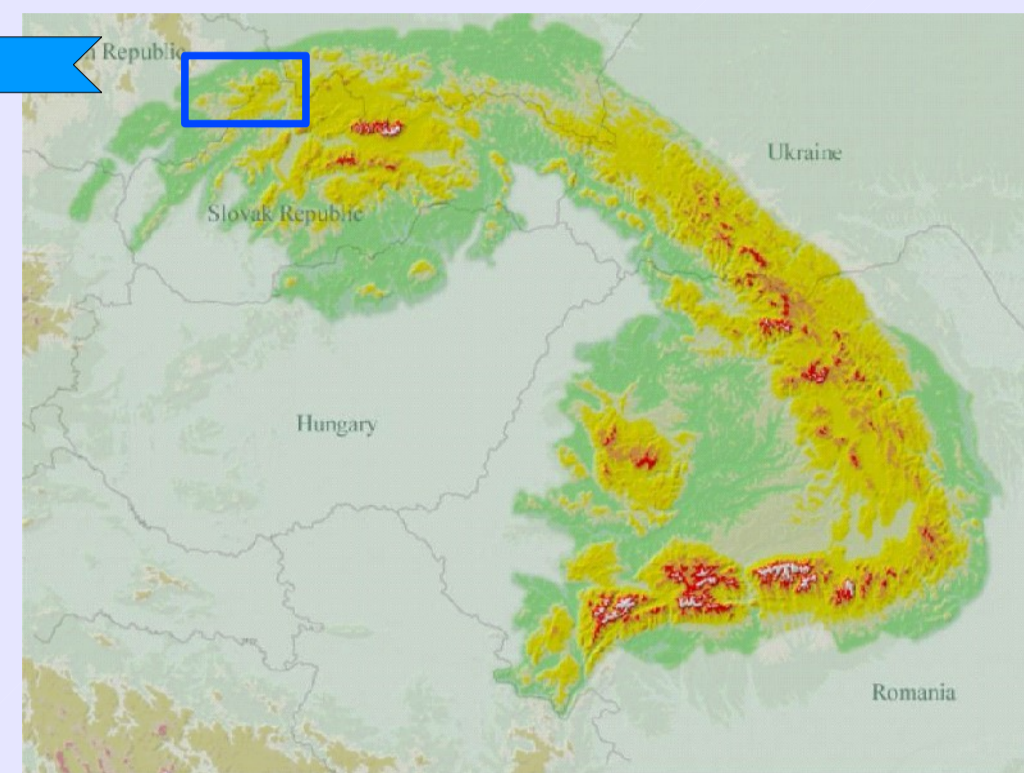
Corresponding author: Miroslav Kutal, info@selmy.cz

## Introduction

The Beskydy Mountains located on the Czech – Slovak border function as an important gateway for wolves, lynxes and bears. Their populations recovered in last 50 years by recolonisation mainly from the Slovak Carpathians, but they suffer from illegal hunting and migration barriers. There are three key migration corridors with national or international importance in the West Carpathians:



Three key migration corridors for large mammals in the West Carpathians: Jablunkov (1), Vsetín region (2) and the Moravian gate (3).



- (1) Jablunkov region located on the northern part of the Beskydy Mts. is probably the only corridor ensuring direct connectivity among Czech, Slovak and Polish populations of large carnivores.
- (2) South corridors in Vsetín region connect Beskydy with another mountain range on Czech-Slovakian border (White Carpathians) and with hills continuing to the west.
- (3) The western corridor located in Moravian gate lowlands is important for migration of large mammals to the Jeseníky Mts. and possible Šumava Mts. / Bavarian forest and other regions with potential presence of large carnivores.

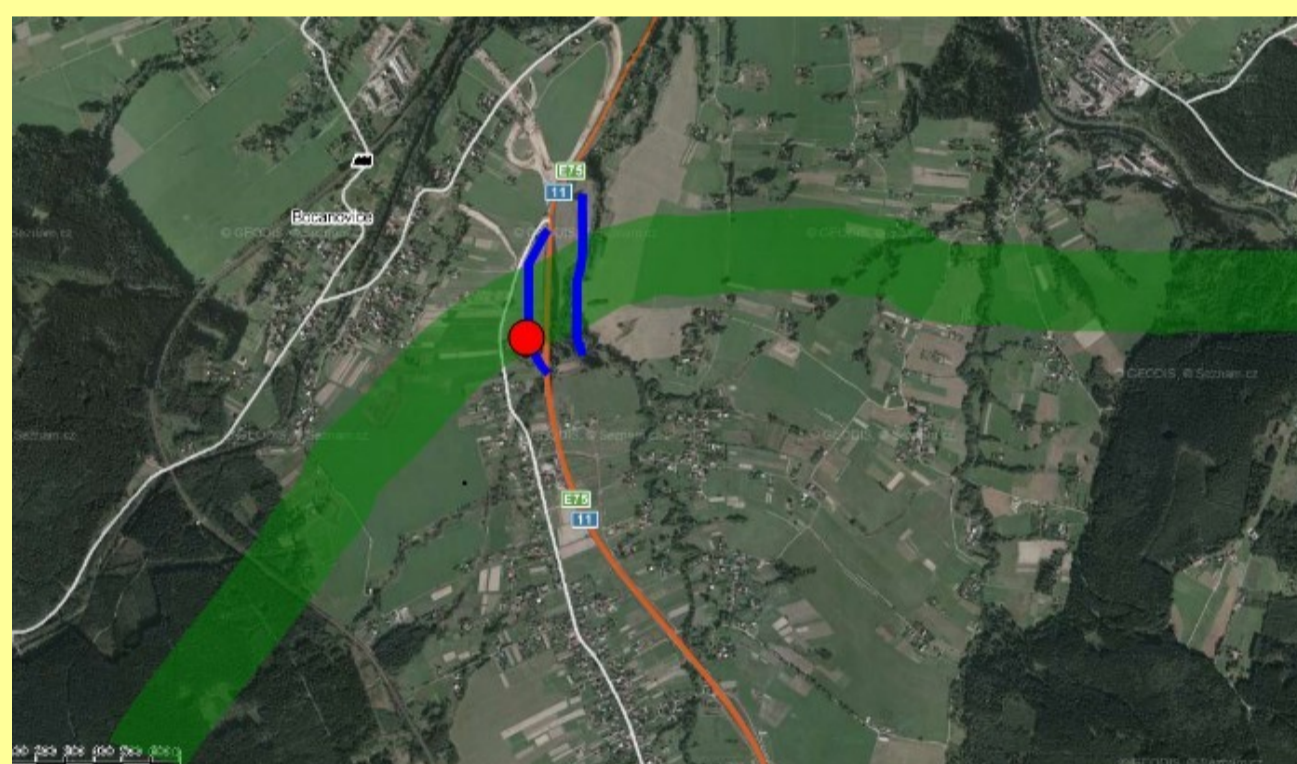
The possibilities for migration of large mammals have been studied by FoE CZ by different methods in all key corridors. Presented results are preliminary.

## Jablunkov region: comparison of two “migration habitats”

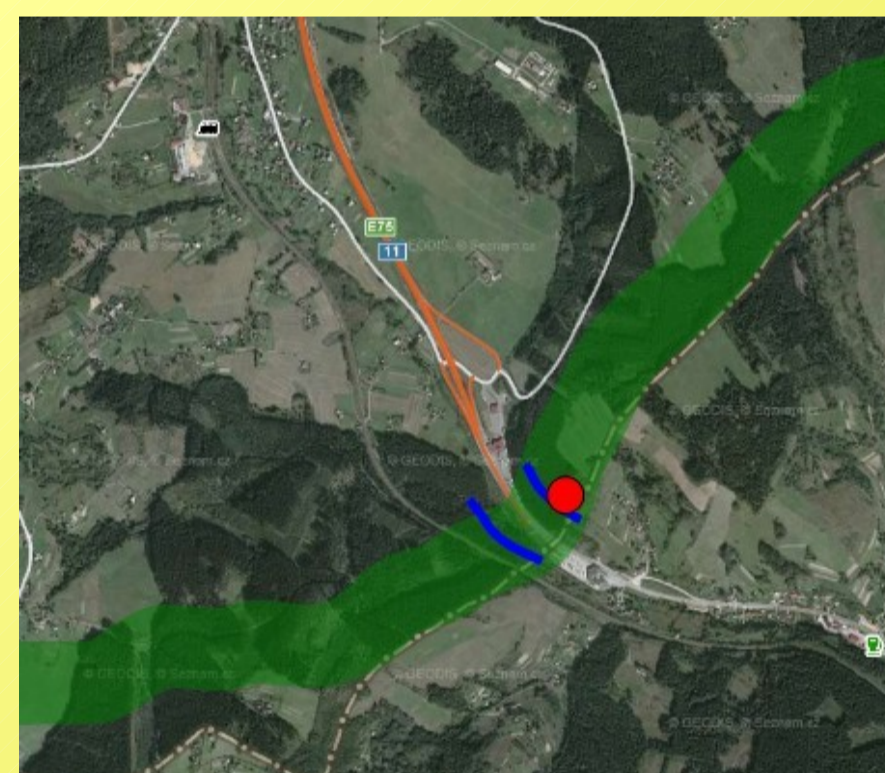
### Study area

Research conducted by FoE CZ in 2008–2010 has investigated the activity of large mammals in two last possible migration corridors between neighbouring mountain ranges (Slezské and Moravskoslezské Beskydy, Anděl et al. 2007). The valley is cut by build-up area and frequented road I/11, connecting two large car factories in Nošovice (Hyundai, CZ) and Žilina (KIA, SK). Another barrier is international double line railway No. 320.

The first corridor “Jablunkov” (49°33'33"N 18°44'56"E), is located in agricultural land. Its permeability is ensured by 460 m long and 18 m high road bridge. The distance between two large forest patches is 3,3–3,8 km. The width of the corridor is 200–500 m, the bottleneck is caused by scattered housebuilding (↓).



The second corridor “Custom-house” (49°29'43"N, 18°45'55"E) is located on the border with Czech and Slovak Republic just on the mountain-pass, 7 km from Jablunkov. There is about 160 m wide gap between two custom houses on each side of the road. Forest fits tightly to both sides of the road (→).

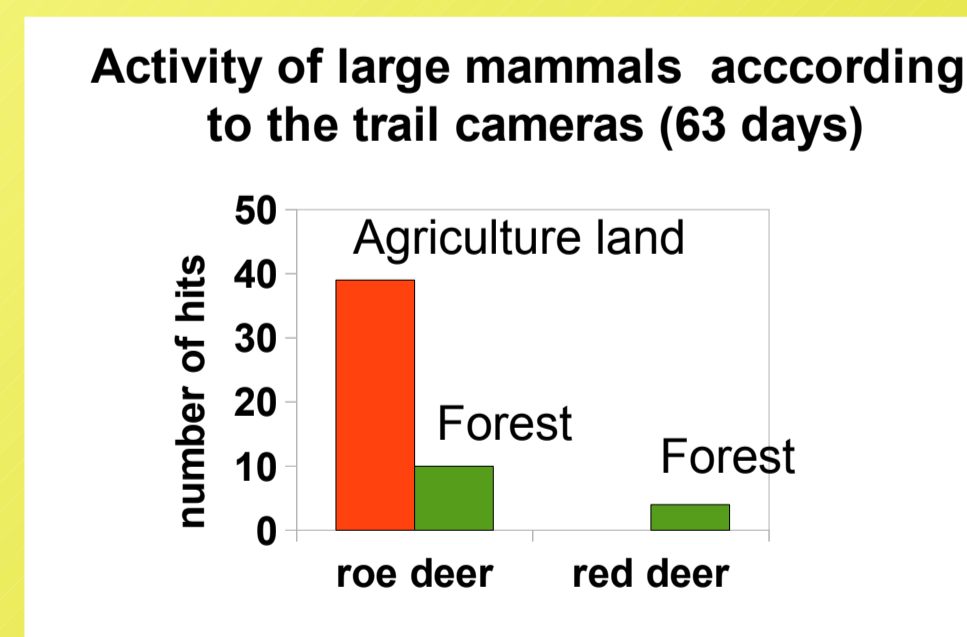
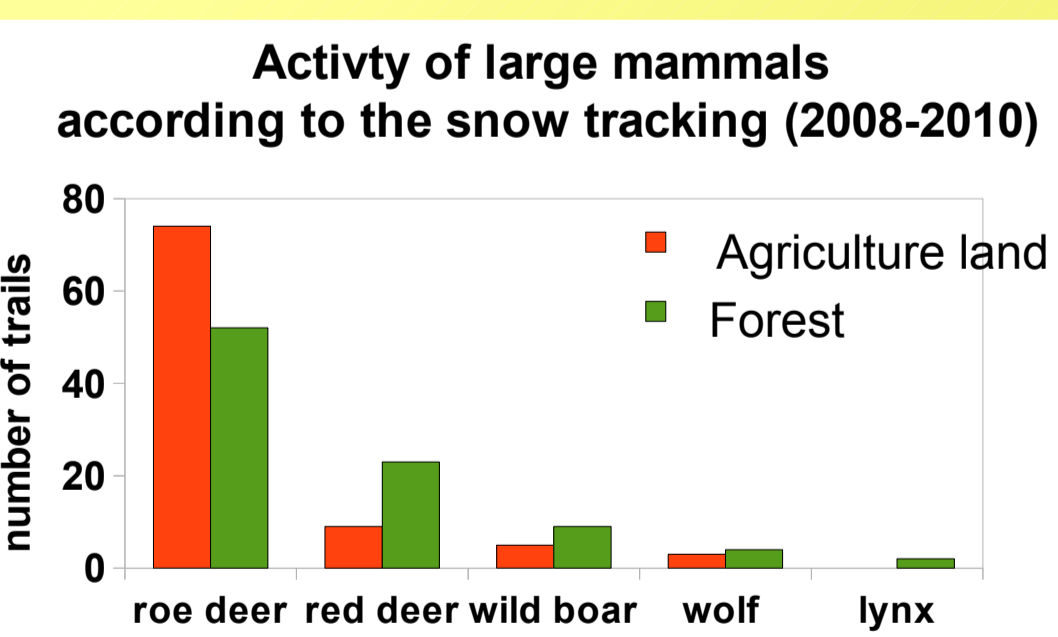


### Methods

Activity of large mammals in two corridors were monitored by snow tracking (every month during snow cover) on transects on each corridor (see blue lines in the maps) and by trail cameras placed on animals' paths (see red circles). Animal mortality on 7 km section of I/11 was studied in 1-month period in order to identify the road sections of the most frequent collisions. The detailed methodology and results are described in the study by Krajča & Kutal (2010).

### Results and discussion

“Jablunkov” was used mostly by roe deer as was shown by trail cameras. Snow tracking confirmed also the presence of red deer and wild boar and footprints of wolf (see graphics). The highest activity was recorded at the dusk and dawn.



Although “Custom-house” is forested corridor, the activity of large mammals during summer was 4x lower than in Jablunkov and it was spread more less equally during the night. Trail cameras confirmed the presence of roe deer and red deer, moreover there were found footprints of wild boar, wolf and lynx.

There were identified 4 critical sections of I/11 with mortality higher than 2 roe deer (during study period). One section lays directly in migration corridor “Custom-house”. The highest mortality was recorded during IV–IX., none mortality during winter. It corresponds with the lowest activity of mammals recorded by trail cameras year round.

The function of “Custom-house” corridor is affected by frequent road I/11 as was shown by lower deer activity and higher road mortality. A green bridge was suggested in mountain passage as a compensation of increased traffic caused by new car factory in Nošovice. Although the factory has worked from 2008, at present there are even no high-quality documentation for the green bridge prepared by responsible authorities.

Both studied corridors within the Czech Republic are important for large mammals including protected species of large carnivores and the corridors should be protected by spatial plan. This target has been reached by demands of nature conservation bodies and FoE CZ active participation in SEA and spatial planning procedures. However, there are still threats for both localities: new gas station in “Custom-house” and an industry area in “Jablunkov”. Investor intentions have not been allowed so far but the real conservation of migration corridors need permanent control of all decision making processes.

References:  
 Anděl P. et al., 2007: Zajištění migrační průstřednosti Jablunkovské brázd (...) Evemia s. r. o., Liberec, 31 pp.  
 Anděl P. et al., 2006: Migrační objekty pro zajištění průchodnosti dálnic a silnic pro volně žijící živočichy. Ministerstvo dopravy, 92 pp.  
 Bojda M., et al., 2010: Aktuální situace prostupnosti krajiny v údolí Vsetinské Bečvy a Senice (...) Hnutí DUHA Olomouc, 35 pp.  
 Jedrzejewski W. et al., 2006: Zwierzęta a drogi: Metody organizowania negatywnego wpływu dróg (...). Zakład Badania Ssaków Pol. Ak. Nauk, Białowieża, Polsko, 95 pp.  
 Krajča T. & Kutal M., 2010: Migrace velkých savců v Jablunkovském průsmyku. Hnutí DUHA Olomouc, Olomouc, 27 pp.  
 Kutal M. et al., 2010: Monitoring velkých šelem v Beskydech 2003–2010. Hnutí DUHA Olomouc, Olomouc, 21 pp.

## Vsetín region: deep insight into the future – slowly end of “highwayless” area

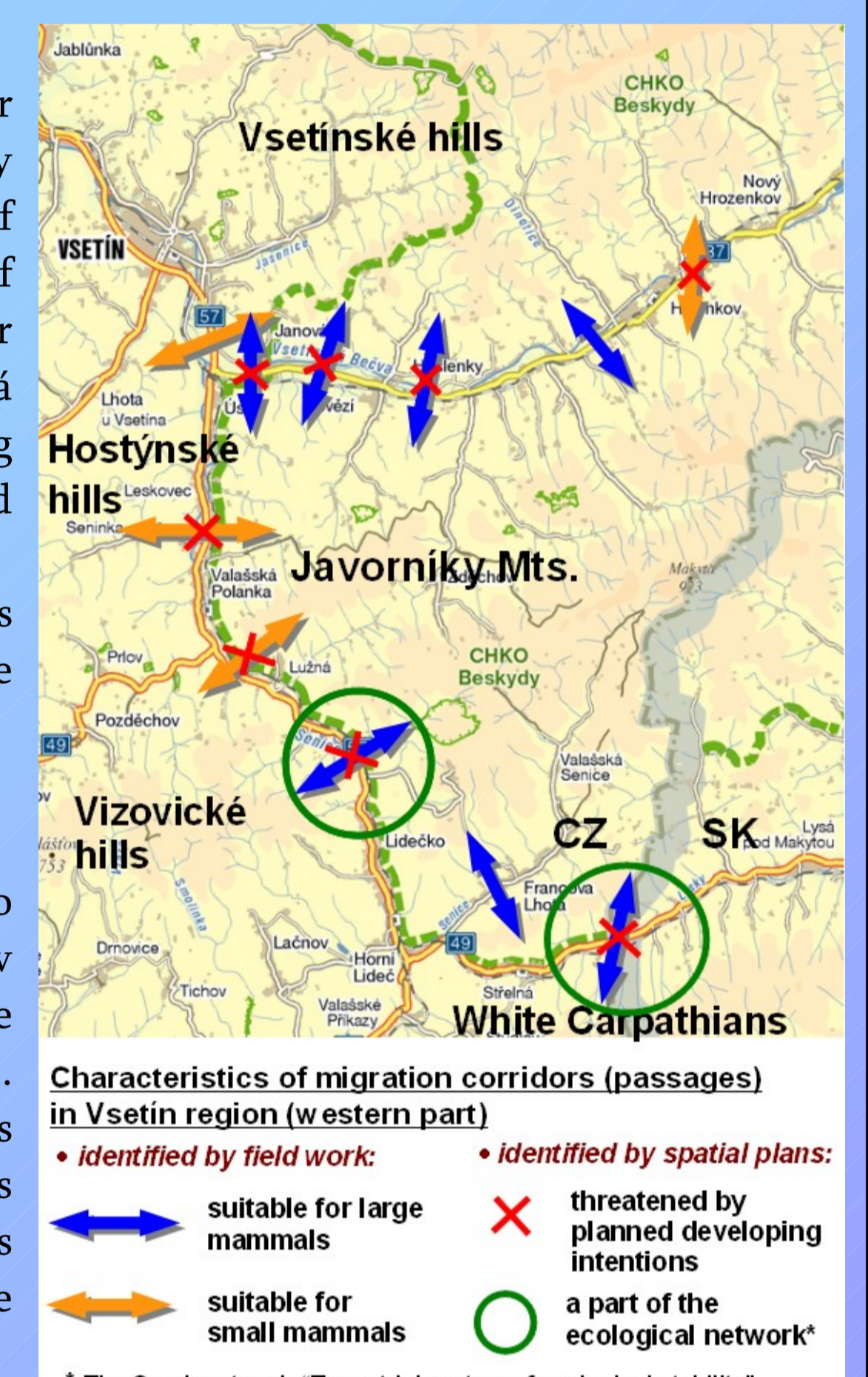
### Background information and methods

The area covers several mountain ranges and hills near the border with Slovakia. To conserve good connectivity of the area (currently without highway or very frequented road) we investigated spatial plans of municipalities in Vsetín region. We were interested in conflicts of existing migration corridors with the plans of municipalities or superior institutions, focusing on two valleys: 27 km long valley of Vsetinská Bečva river (between Vsetinské hills and Javorníky Mts.) and 20 km long valley of rivers Senice and Střelenka (between Javorníky Mts. and Vizovické hills and Bílé Karpaty – White Carpathians).

Corridors suitable for migrations of large mammals were defined as gaps between build-up and fenced area with minimum of 100 meters wide at the bottleneck, connecting over a valley two mountain ranges.

### Results and discussion

There are 18 potential migration corridors found in two surveyed valleys. Two of them have been currently destroyed by new family houses, 7 others are already too narrow and cannot ensure the migration of large mammals (but can be suitable for smaller mammals). Finally only 9 corridors now fulfil the criteria for large mammal passages and out of them only 2 are (partly) protected in the spatial plan as biocorridors. At the same time, 5 corridors are threatened by various intentions and build-up areas (Bojda et al. 2010). Both of them lay in the valley of Senice and Střelenka rivers.



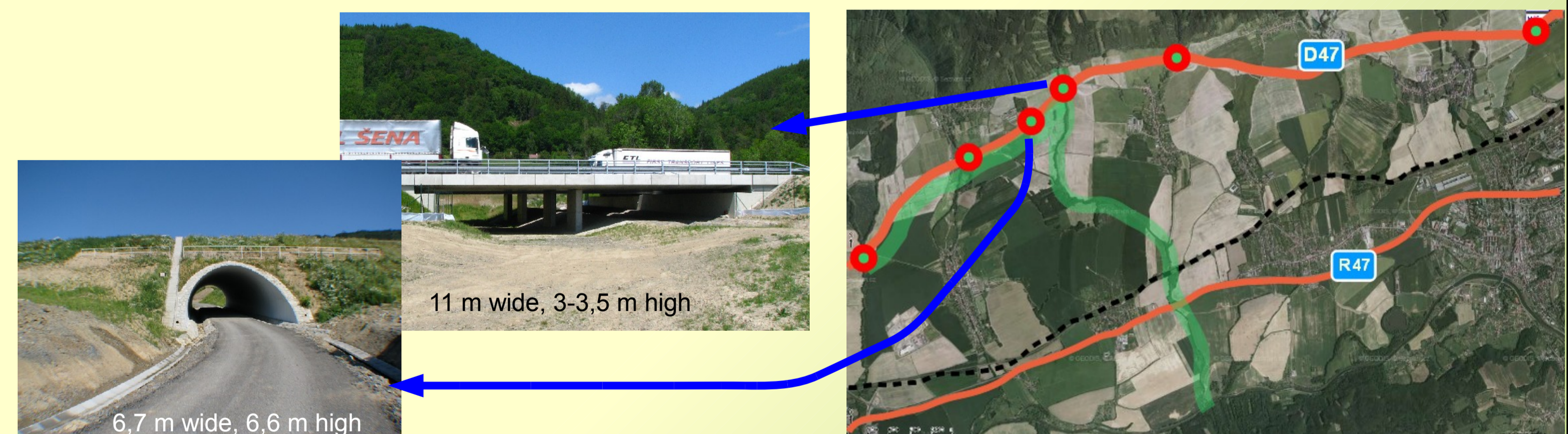
The connection to the Vizovické hills is important since it can enable migrations to the west – Moravian gate. The north part of the White Carpathians (including Slovak part) is one of 3 core areas for the brown bear in the eastern part of the Czech Republic (Kutal et al. 2010). The main future threat is planned highway R49 across Vizovické vrchy and planned new industry areas in lowlands.

## Moravian gate region: land purchase instead of green bridge – a worthwhile change?

### Background information

There are mostly agricultural lands with low forest cover in Moravian gate. At the distance of 5 km between two large forested areas there are three parallel unnatural barriers: the most frequented Czech railway No. 270, four-lane highway R47 and new motorway D47 (D1) (in operation from 2008).

During the planing process and EIA procedure, a green bridge was suggested in 04 section of D47 (49°34'11"N, 17°38'43"E) in order to ensure the permeability of highway between Maleník massive and Oderské vrchy. However, the condition was cancelled during the construction works. As a compensation, investor suggested the land purchase and planting of forest in the corridor between Maleník and Oderské vrchy. The permeability of the highway should be ensured by vegetation leading the animals under existing bridges.



### Preliminary results and discussion

Two underpasses – bridges closest to the axis of the corridor (see pictures above) do not fulfil the criteria for migration of mammals with the highest space demands (Anděl et al. 2006, Jedrzejewski et al. 2006). One of them was built even narrower than planned – contradictory to the building approval. Other underpasses can be more suitable for the large mammals' migrations, but they are often situated near villages and located 2–5 kilometres from the axis of the corridor, what would double the length of the corridor. The attractiveness of the long and fractional corridor for large mammals is a question for other research. Moreover, results of the traffic monitoring on parallel road R47 imply very low permeability: only 8 % gaps between cars during the night (between working days) are longer than 2 minutes. Further research is going on at the Moravian gate.

Although the main reason for the desertion the idea of the green bridge was the price (210 millions CZK, approx. 8,4 millions €), during 2006–2008 there were 2,8 millions € spent for the green bridge despite the fact its construction has never started. Until now no actions have started in favour of land purchase or realization of the biocorridor. Whole action is extremely important as a bad leading case for future. It seems additional changes in once approved (and partly realized) documentation obviously cannot lead to the satisfactory solution for the migration of large mammals (at least in the Czech Republic). However, FoE CZ will do their best to change this statement in the case of the Moravian gate.