



Carpathian Biodiversity Information System

towards a Carpathian Ecological Network

16 – 19 November 2009, Conservation of Wetlands in the Carpathians,
Tatranská Štrba, Slovakia

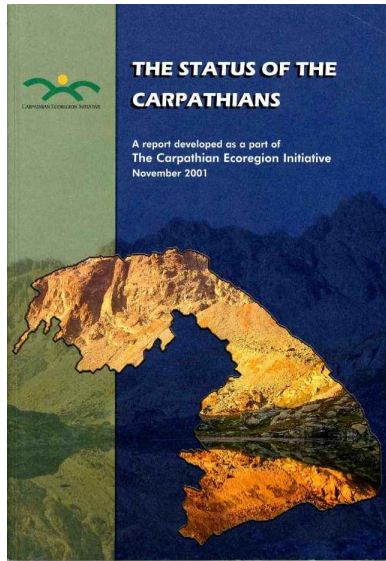


agriculture, nature
and food quality



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The Status of the Carpathians 2001



- first comprehensive demonstration of value of the Carpathians
- collection of all relevant biodiversity and socio-economic data from 6 Carpathian countries
- www.carpathians.org/docs/publications/status.pdf

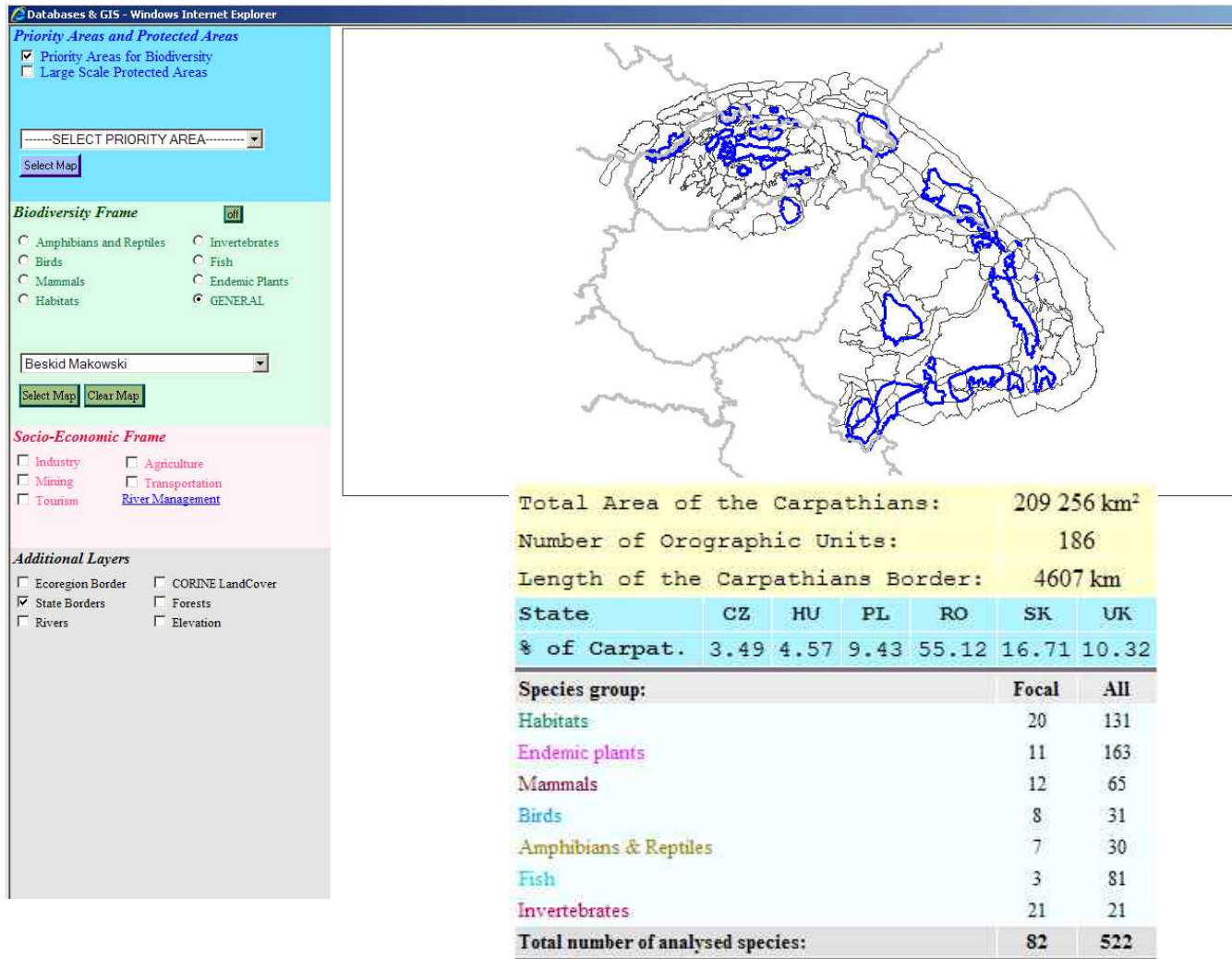


The Status of the Carpathians 2001

- GIS technology was used to identify the 30 "Priority Areas for Biodiversity" across the region by combining the biodiversity distribution data with CORINE and ESRI databases
- Data on occurrence of 62 focal species and 20 habitats in orographic units were used for delineation of **Priority Areas for Biodiversity**
- identify threats to biodiversity
- identify and develop opportunities for conservation of biodiversity and sustainable development



The Status of the Carpathians 2001



Carpathian database with simple GIS as published in the Status of the Carpathians



Carthian Biodiversity Information System 2006 - 2009

Funding:

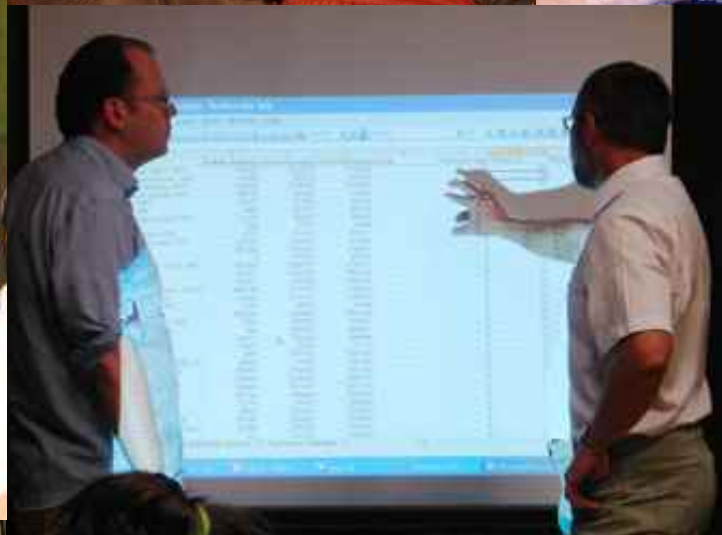
BBI-Matra (Eastern Carpathians)
DBU (Western Carpathians)

Partners:

Wageningen International
IBN

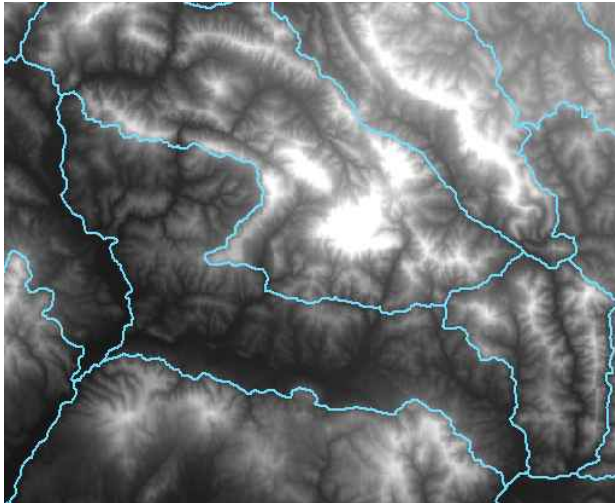
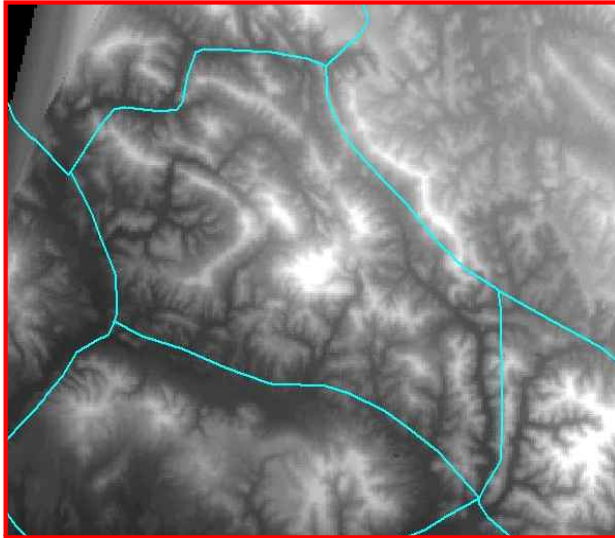
CERI, Daphne Institute of Applied Ecology,
Alterra, Orbicon, WWF-DCP, ECNC, ISCC





Organisation of the data collection

Refining of orographical units borders based on DEM



Orographical units in the Eastern Carpathians



Organisation of the data collection

Reference lists of species and habitats per country

- 148 semi-natural and natural alliances, including Habitat Directive Annex I habitat types of which 84 selected as priority conservation features for the ecological network design
- 201 endemic and Habitat Directive Annex II plant species of which 160 selected to be used for the development of the ecological network.
- 133 pre-selected focal (important for biodiversity of the Carpathians) and Habitat Directive Annex II animal species all selected as conservation features for the design of the ecological network.

Organisation of the data collection

Data form of the Serbian database

frmAlliances : Form

alliance_id Alliance Alnion glutinosae Malcuit 1929
19 Order Alnetalia glutinosae Br.-Bl. et R. Tx. 1943
Class Alnetea glutinosae Br.-Bl. et R. Tx. 1943

OrogName: Mali i Veliki Krš

Name Borsko područje, Brestovačka bar
Name Pek
Name

List of Orographic Units occupied by alliance

Mali i Veliki Krš
Miroč
Homoljske Planine
Kučajske Planine
Tupižmica

Addition/Deletion of orog sites
Select orographic unit(s) and press Add/Del button

Beljanica
Deli Jovan
Homoljske Planine
Kučajske Planine
Liškovac
Mali i Veliki Krš
Miroč
Orzen i Devica
Rtanj
Šomrda
Tupižmica

Add Del

Record: 1 of 5

Record: 19 of 148

Content of CBIS for the Eastern Carpathians December 2008

CBIS - Carpathian Biodiversity Information System Eastern Carpathians (state in december 2008)

Habitats [click to see the list and maps](#)

- Number of alliances: **148**
- Number of alliances used for eco-network design: **84**
- Number of occurrences in orounits: **4363**
- Number of precise locations GIS layers: **43**

Plant species [click to see the list and maps](#)

- Number of plant species: **201**
- Number of plants used for eco-network design: **160**
- Number of occurrences in orounits: **2031**
- Number of precise locations GIS layers: **8**

Animal species [click to see the list and maps](#)

- Number of animal species: **133**
- Number of animals used for eco-network design: **133**
- Number of occurrences in orounits: **5613**
- Number of precise locations GIS layers: **14**

Freshwater features [click to see the list and maps](#)

- Number of freshwater features: **31**
- Number of freshwater features used for eco-network design: **30**
- Number of occurrences in orounits: **1121**
- Freshwater features precise locations GIS layers are included in above groups

Ligularia sibirica (L.) Cass.

Presence in national lists:

Romania	Serbia	Ukraine
yes		yes

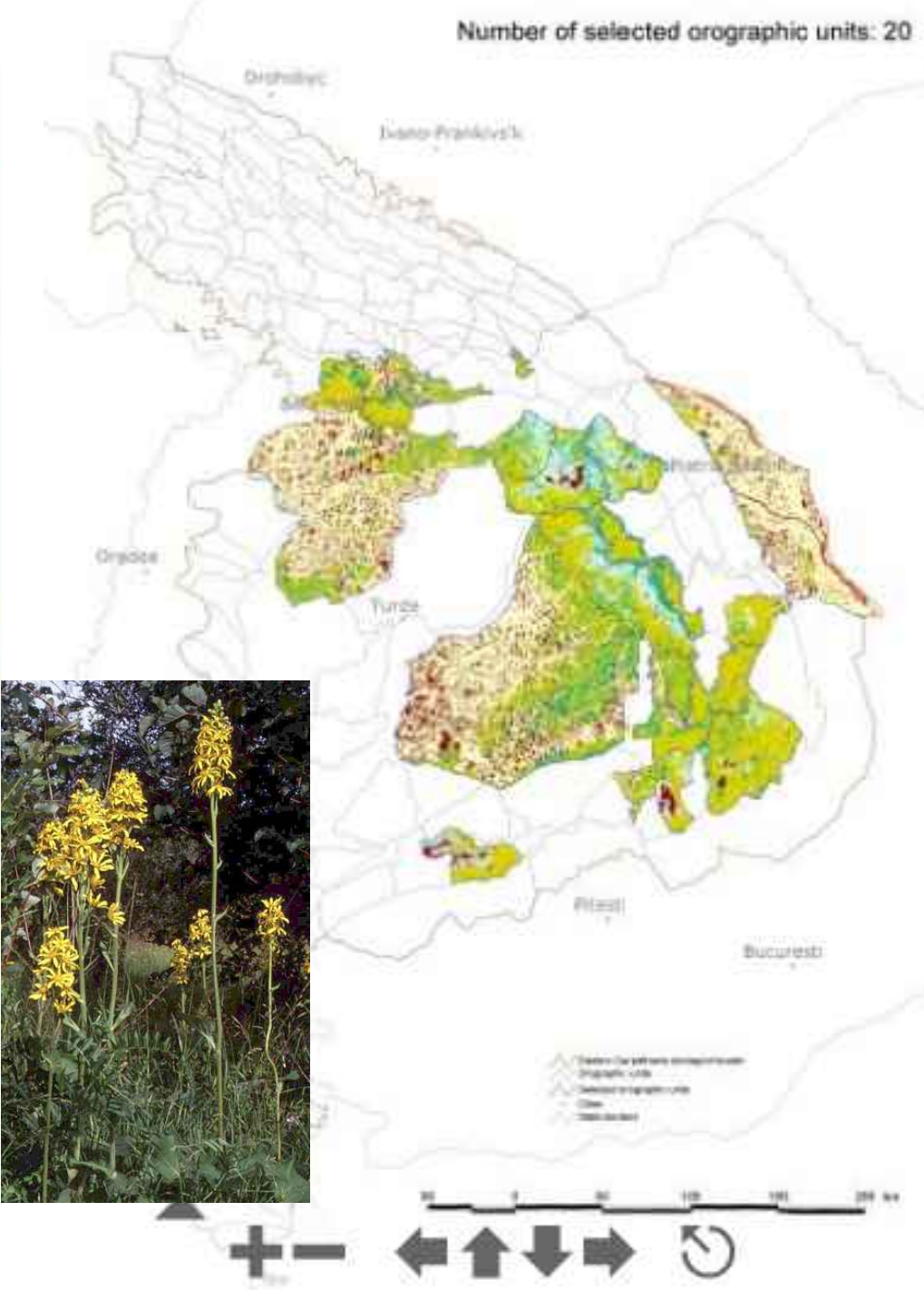
Natura 2000 species: yes

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units			
Land Cover unit	RO	SB	UA
agricultural	0 - not important		0 - not important
barren land	0 - not important		0 - not important
coniferous forests	1 - low		0 - not important
deciduos forests	0 - not important		0 - not important
mixed forests	0 - not important		0 - not important
succession areas	0 - not important		0 - not important
grasslands	3 - high		3 - high
wetlands	3 - high		0 - not important
water bodies	2 - medium		0 - not important
urban areas	0 - not important		0 - not important
Affinity to altitude			
minimal	500		
maximal	1500		

Reclassification codes and targets (needed for MARXAN)

Reclassification codes (codes from general map of distribution)			
Codes for:	RO	SB	UA
high probability		1120+1130	
normal probability		10x0+1100	
Targets			
Targets for:	RO	SB	UA
high probability		80%	
normal probability		0%	



Benefits of the CBIS

- a unique database presenting information about the wealth of biological diversity for the whole of the Carpathians
- the information shown for the Eastern part of the Carpathians is by far more accurate than the information shown for the western Carpathians but in due course the information for the Western Carpathians will be equally accurate
- a solid basis for the creation of a list of (Eastern) Carpathian endemic plants, animals and habitats
- for Serbia in particular, the project helped significantly to gain more insight into the potential value of biodiversity in the Serbian part of the Carpathians
- an indispensable tool for careful planning of various kinds of infrastructure, the development of tourism, mining activities and the development of agriculture
- the advantage of the CBIS is that it presents a compatible habitat description and interpretation across country borders and, in particular, across the border between Ukraine and Romania

Limitations of the CBIS

Besides the fact that the CBIS is the best available data source for the distribution of biodiversity data across the Carpathians, the following should be taken into account:

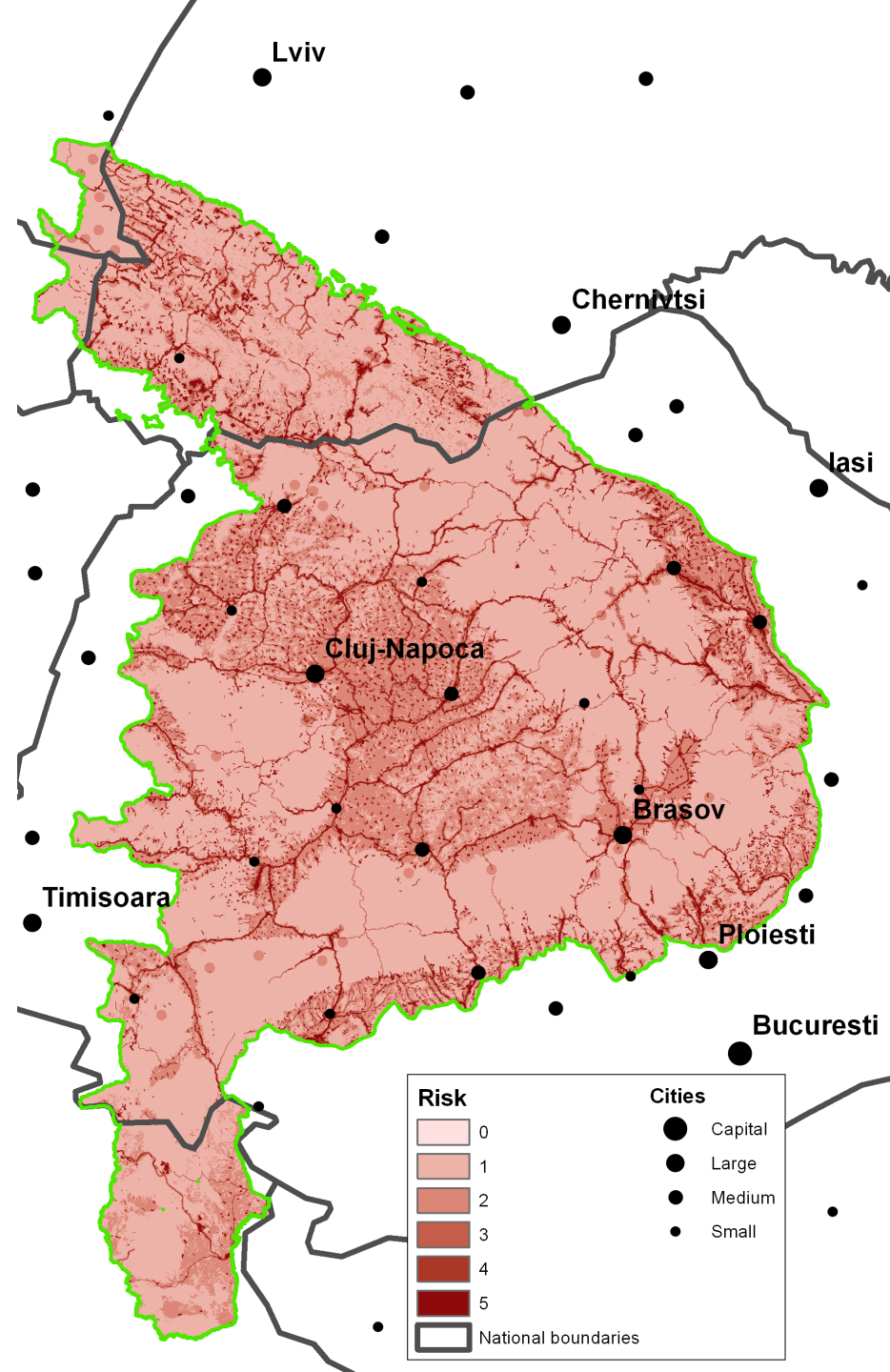
- Only literature and historical data are used, old data not verified in the field
- The methodologies of gathering and assessing the data in the three countries differ slightly
- Blank spots on the distribution maps (indicating no records of that conservation target) occur possibly due to a lack of research in that area, with the result that there may be no data available
- Land cover and altitude affinities result in potential distributions
- Affinities to land use and altitude are based partly on estimates
- As a result of 5 and 6, potential distribution can be overestimated
- Interpretation of habitat types differs slightly in the three countries

Socio-economic data

Pressure values assigned to various land uses

Land Cover information combined with other data		
Agricultural Areas outside Less Favorable Areas (LFA)		2
Agricultural Areas inside LFA		1
Grasslands outside LFA		2
Grasslands inside LFA		1
Forests		2
Water Bodies		1
Wetlands		1
Urban Areas/ settlements		5
Other Data		
Roads	RO	5
Railways	RA	5

Pressure on biodiversity map

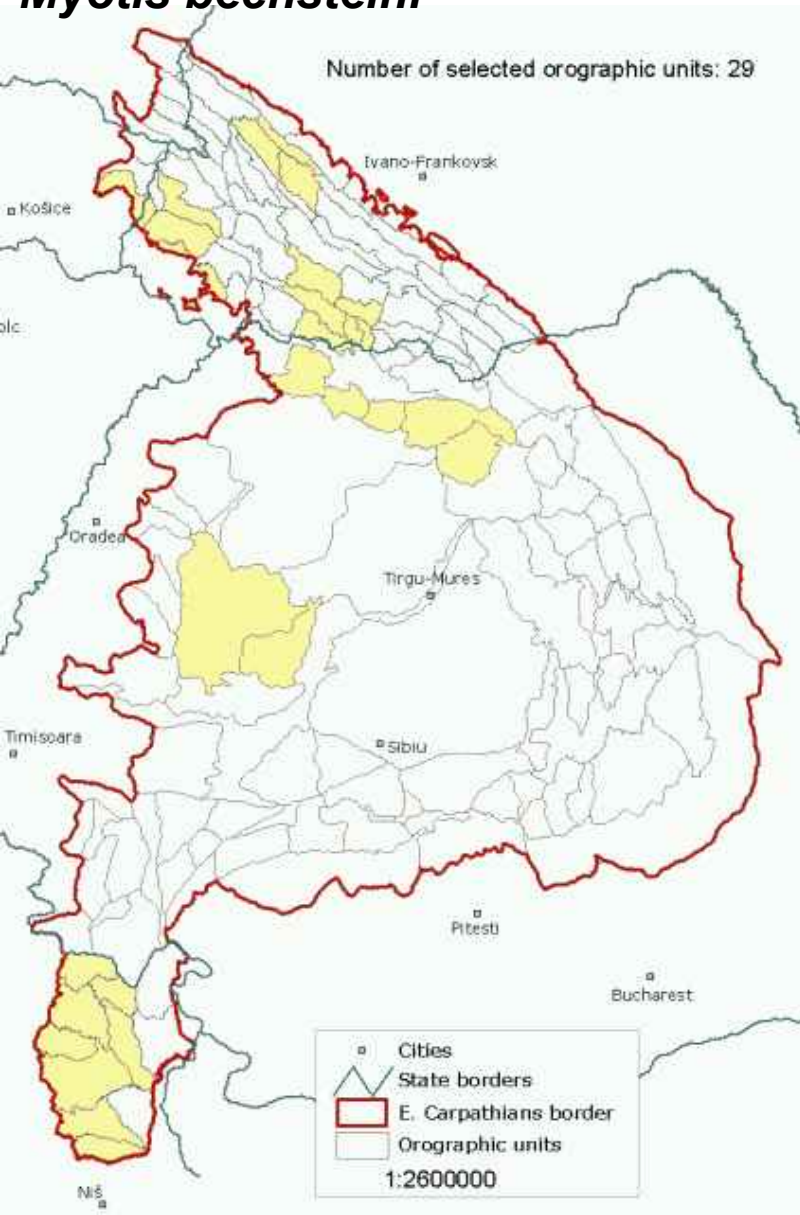


From CBIS to ecological network design

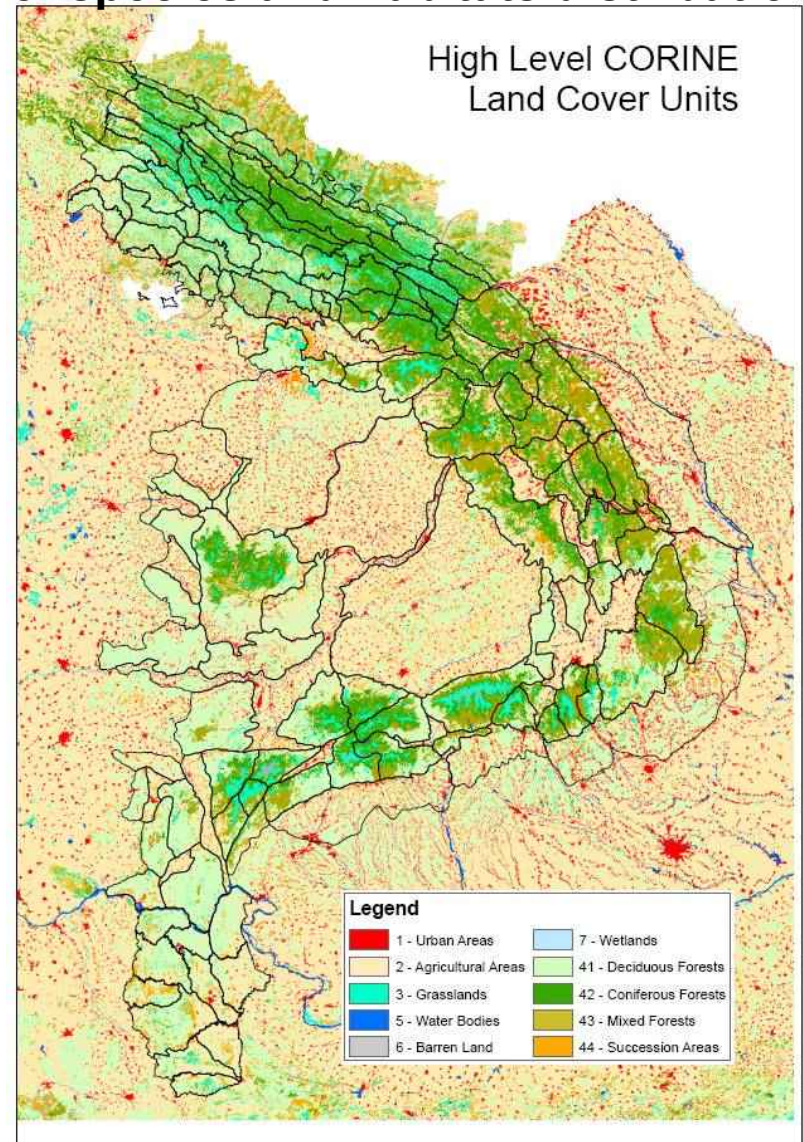
- distribution of 148 alliances (46 habitats), 201 plant species and 133 animal species and 31 freshwater species(the conservation features) per orographic unit;
- affinity to land cover units (three categories: low, medium and high);
- affinity to (range of) altitude;
- polygon layers of precise localities for 84 alliances (43 habitats), 8 plants species, 14 animal species and 30 freshwater features to be used for the design of the ecological network.
- for each conservation feature, the possibility of occurrence in a certain orographic unit was given a “high probability “and a “normal probability” score. In total, 402 targets were set; 355 based on “high probability”, 47 based on “normal probability” and 9 species had national targets.

From CBIS to ecological network design

Myotis bechsteini

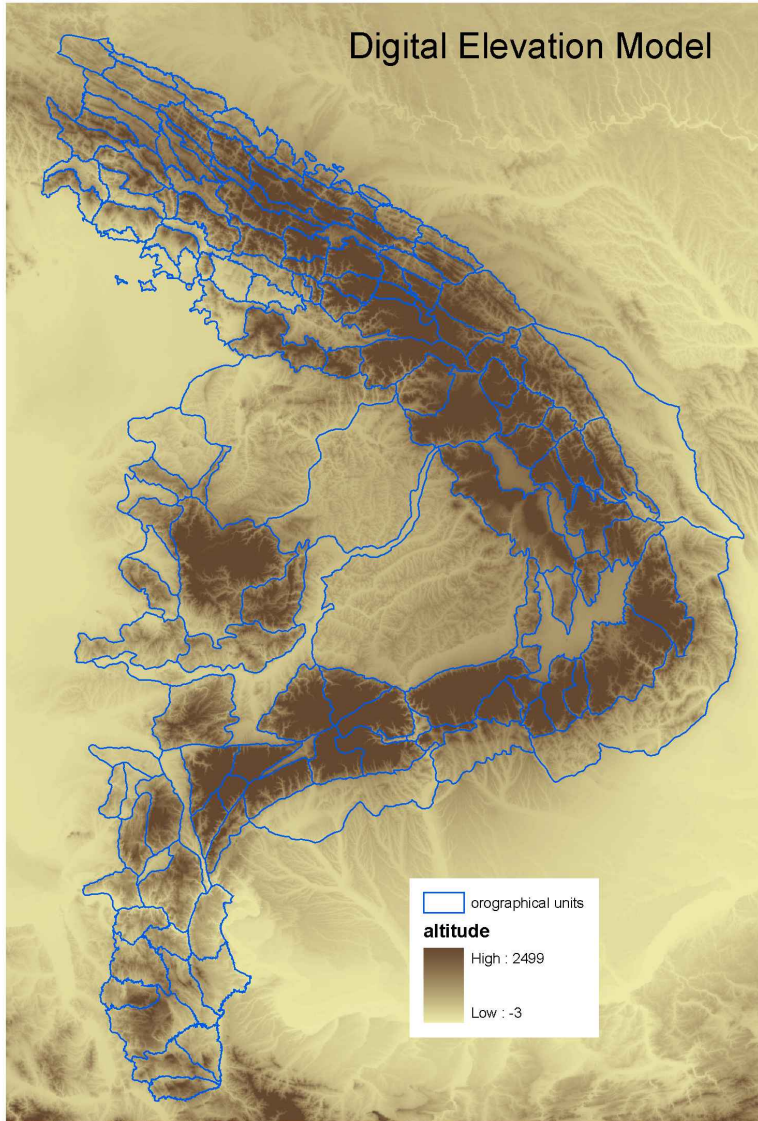


CORINE Land Cover classes used for modelling of species and habitats distribution

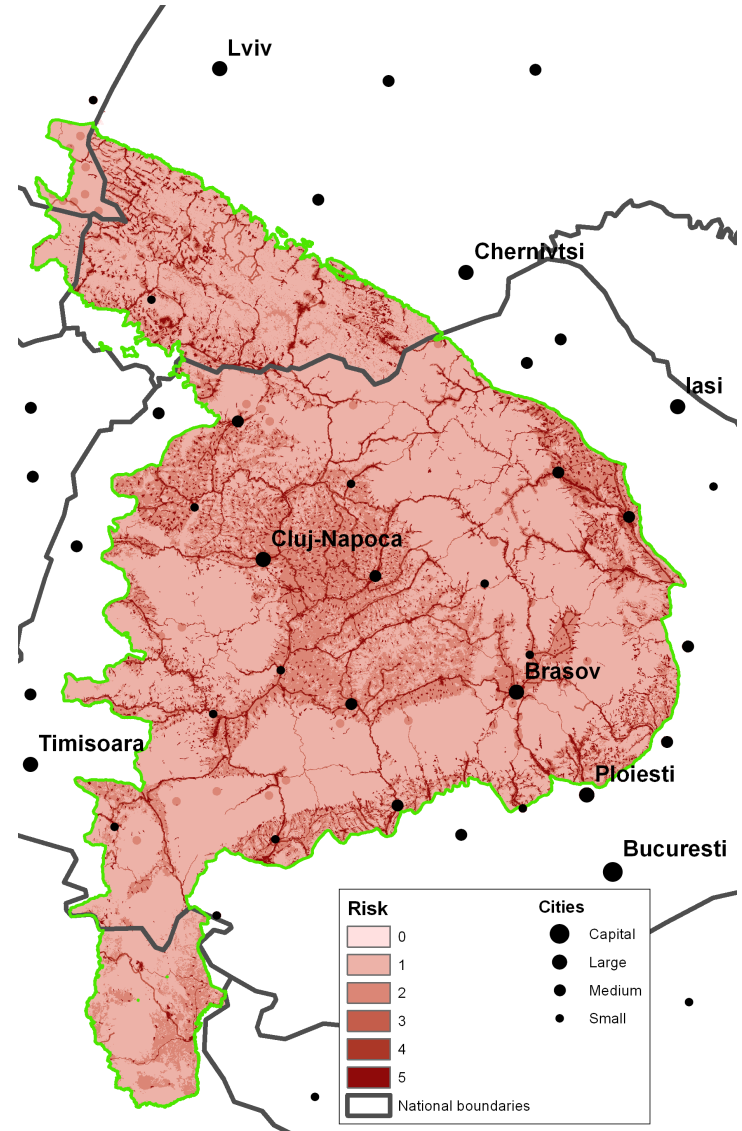


From CBIS to ecological network design

Affinity to altitude



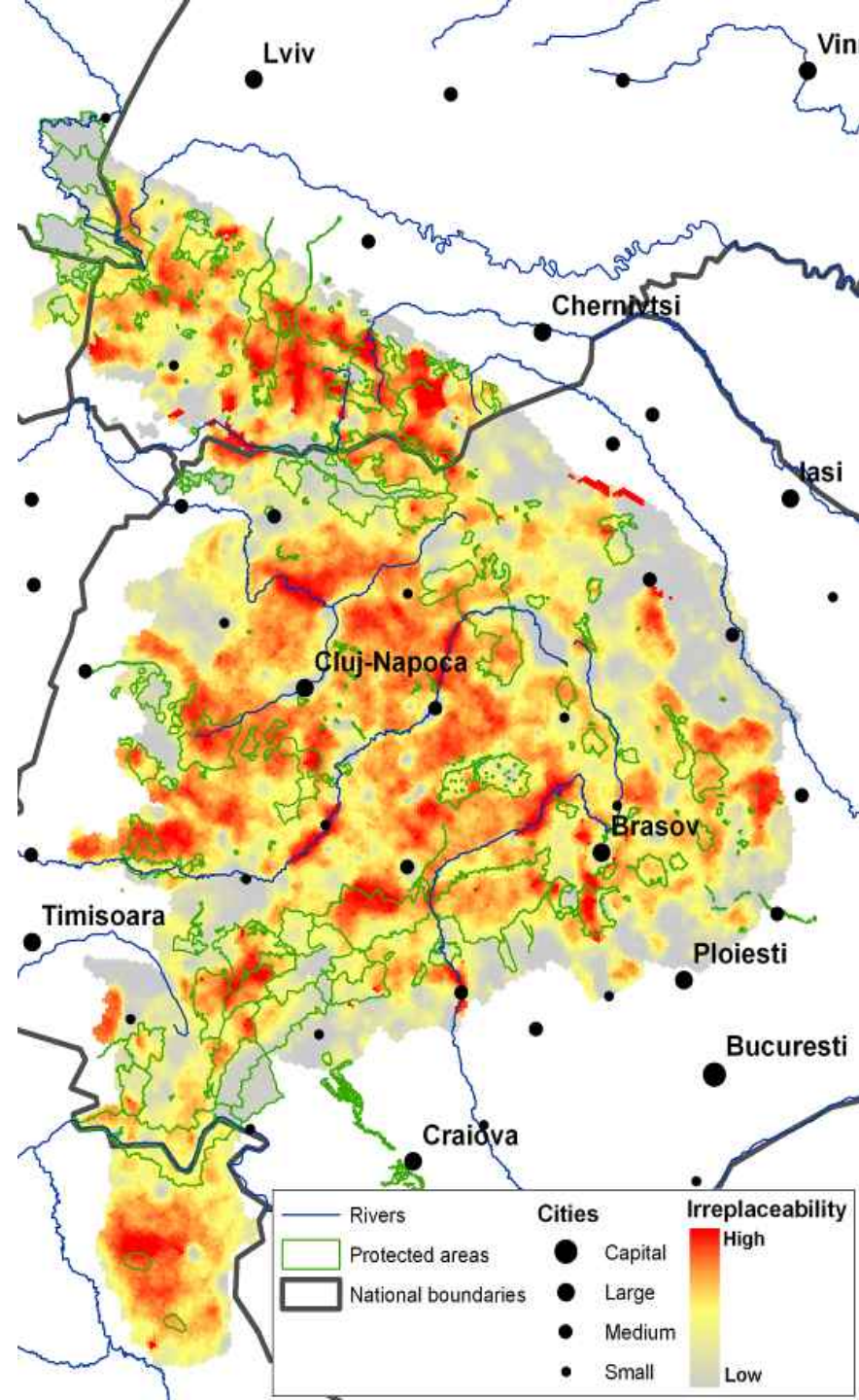
Pressure map



Irreplaceability map

Irreplaceability is used as a basis for designing the core building blocks of the ecological network

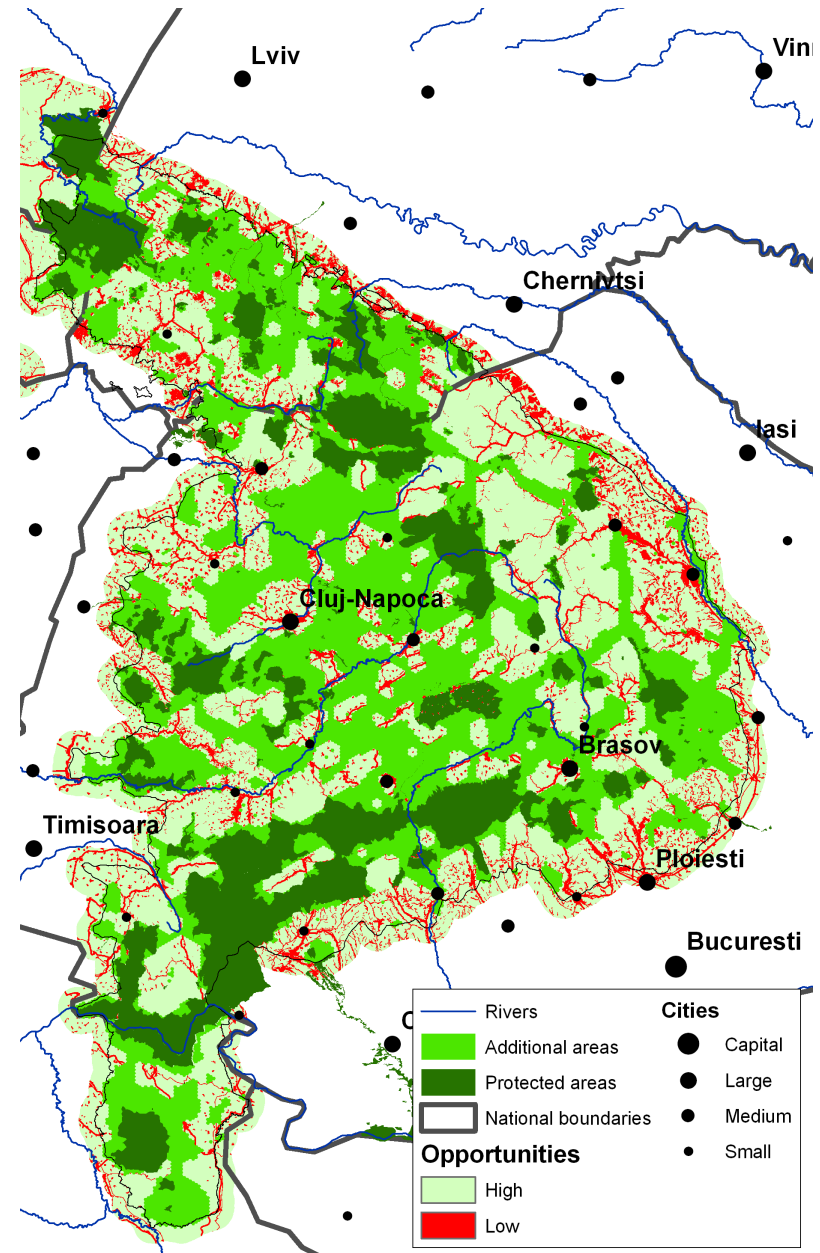
Distribution of targets (before conservation feasibility)



Conservation feasibility map

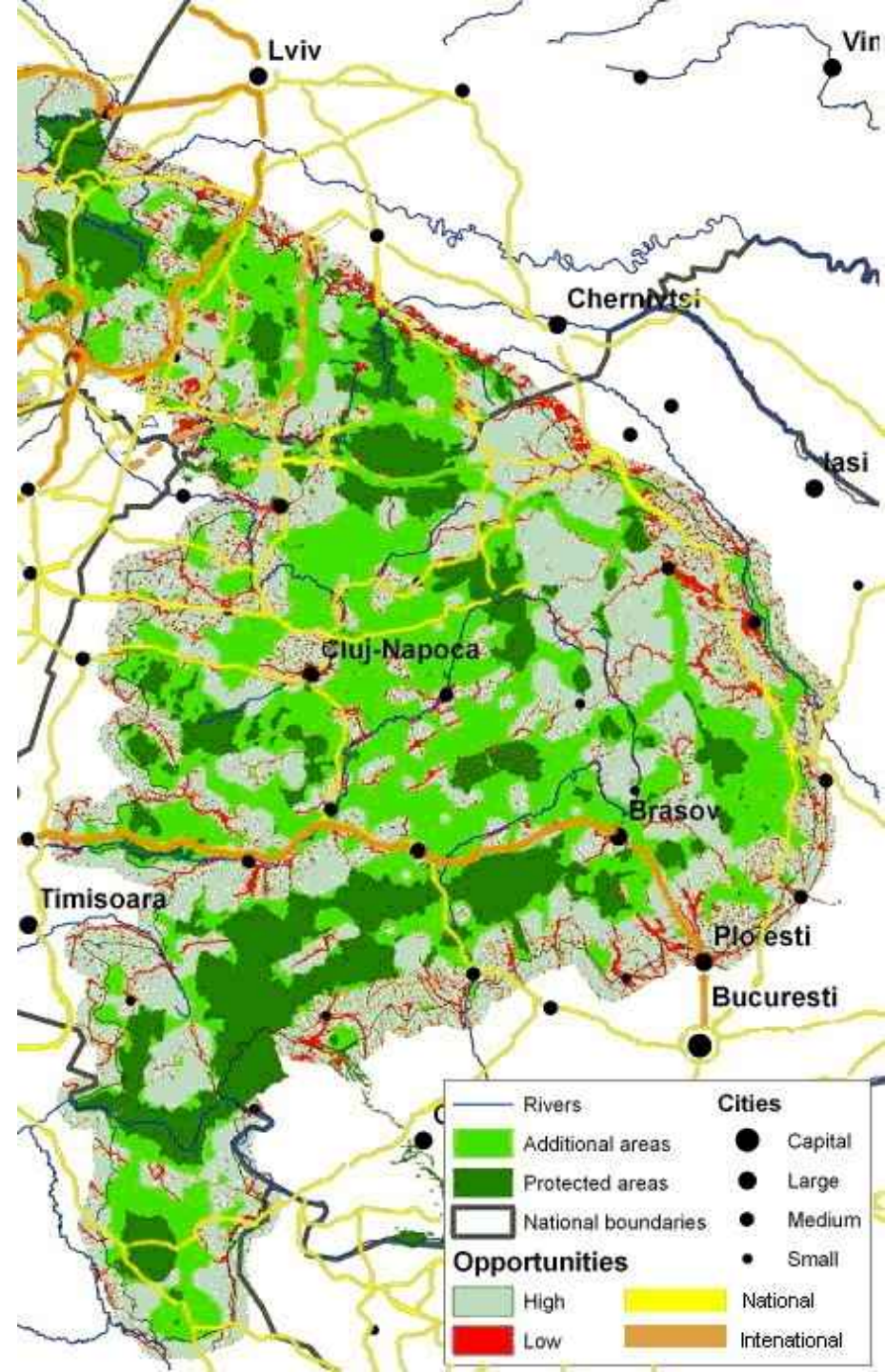
Areas with high importance for biodiversity and high chance of success (high conservation feasibility)

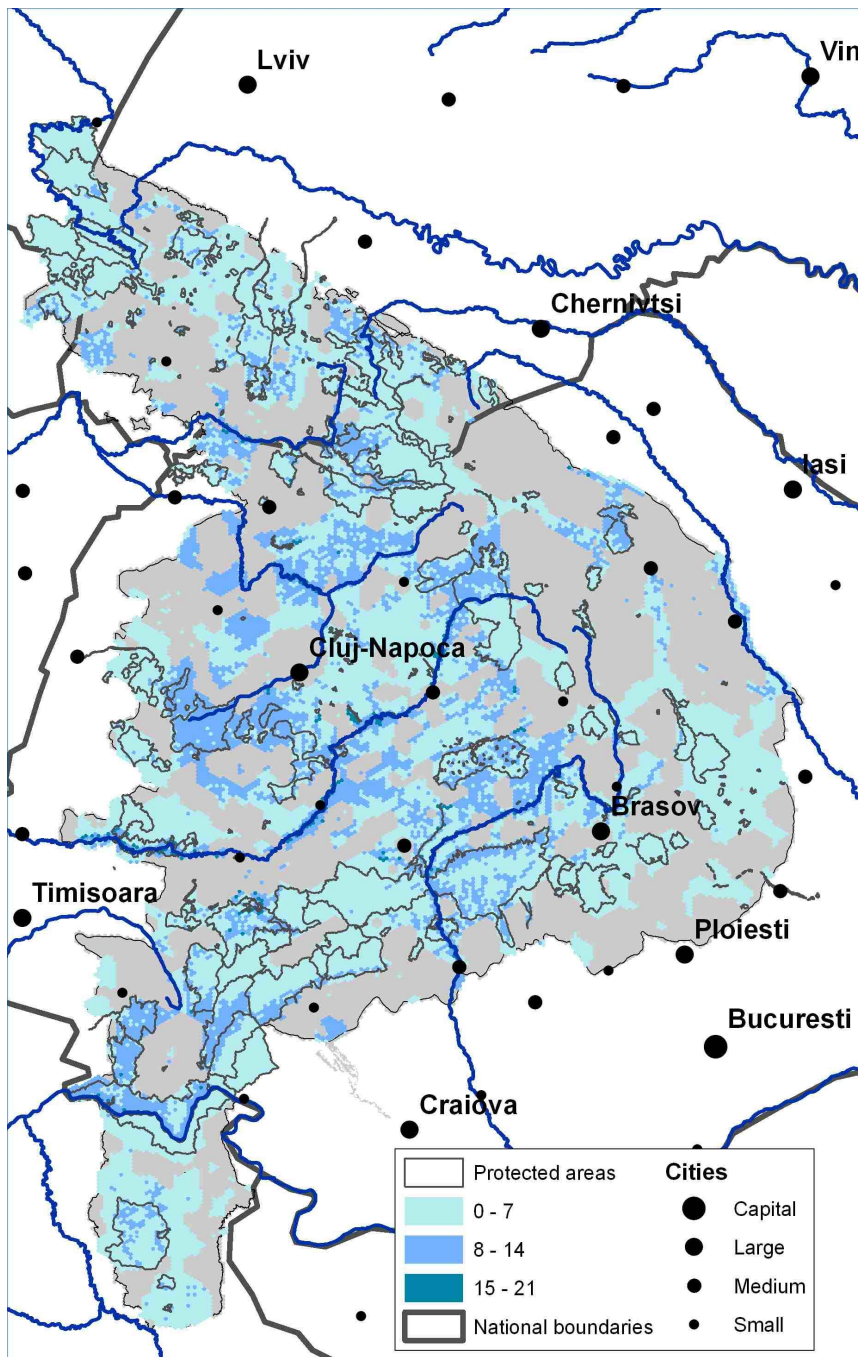
Red areas - it is likely that conservation is the least feasible here. These areas would, therefore, not be selected under ideal conditions for conservation, as investment in conservation in those areas is unlikely to bring positive results and the targets will probably not be met.



Ecological network map with major roads highlighted

- the most efficient way to meet all the targets across an ecological network





Priority freshwater areas

- identification of occurrence of freshwater habitats and species in orographical units
- affinity to High Level CORINE Land Cover units
- altitudinal range of distribution
- affinity to stream orders (the size of the stream in terms of width and discharge)
- indication of naturalness of rivers and streams (natural and undisturbed rivers would get a higher score for inclusion in the ecological network)

CBIS - Carpathian Biodiversity Information System

Western Carpathians (state in february 2009)

Habitats [click to see the list and maps](#)

- Number of alliances: **147**
 - Number of occurrences in prounits: **3130**
 - Number of precise locations GIS layers: **34**
-

Plant species

- Number of plant species: **229**
 - Number of occurrences in prounits: **1649**
 - Number of precise locations GIS layers: **7**
-

Animal species

- Number of animal species: **248**
- Number of occurrences in prounits: **2360**
- Number of precise locations GIS layers: **10**

***Pinion mugo* Pawl. 1928**

Description: Subalpine silicicolous krummholz of mountains

Endemism:

Czech Republic	Hungary	Poland	Slovakia
			partialy endemic

Number of orographical units of this alliance in countries:

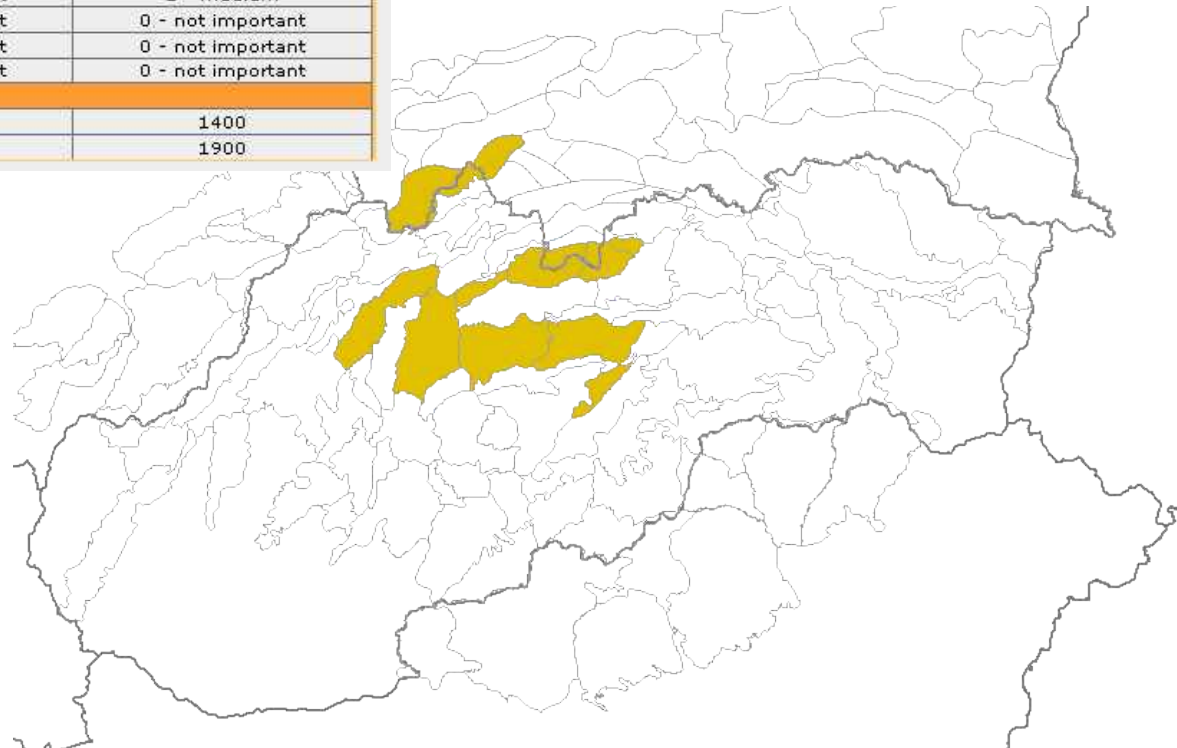
Czech Republic	Hungary	Poland	Slovakia	TOTAL
		4	19	23

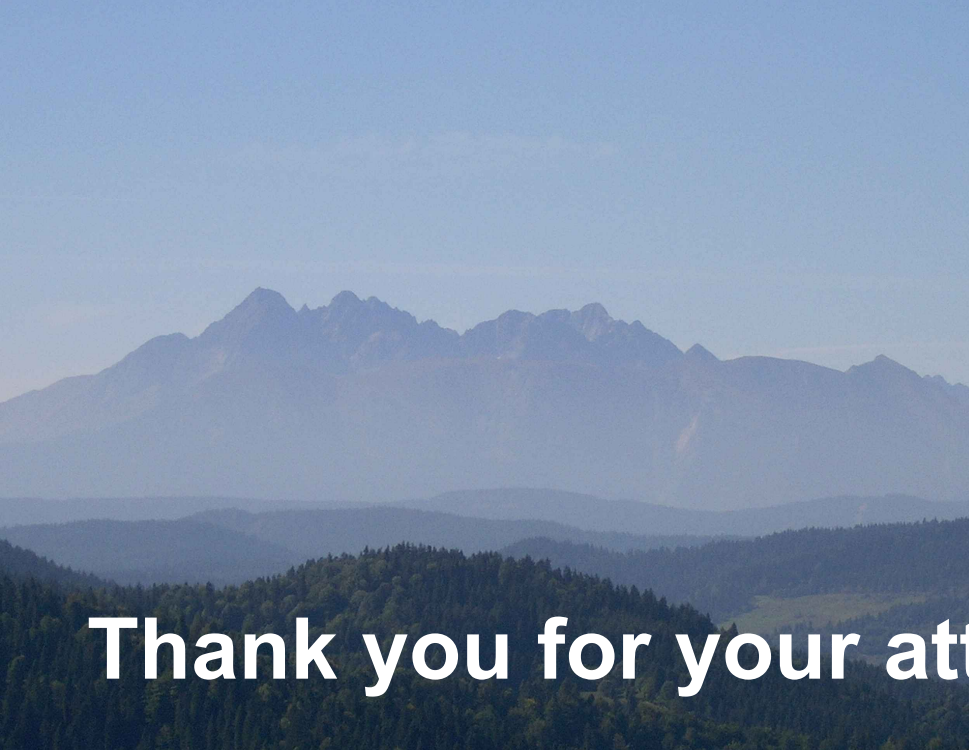
Natura 2000 habitat: yes priority

Czech Republic	Hungary	Poland	Slovakia
		4070*	4070*

Affinity to CORINE Land Cover units and altitude:

Affinity to Land Cover units				
Land Cover unit	CZ	HU	PL	SK
agricultural			0 - not important	0 - not important
barren land			3 - high	2 - medium
coniferous forests			0 - not important	2 - medium
deciduous forests			0 - not important	0 - not important
mixed forests			0 - not important	0 - not important
succession areas			0 - not important	0 - not important
grasslands			0 - not important	2 - medium
wetlands			0 - not important	0 - not important
water bodies			0 - not important	0 - not important
urban areas			0 - not important	0 - not important
Affinity to altitude				
minimal			1300	1400
maximal			1850	1900





Thank you for your attention



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