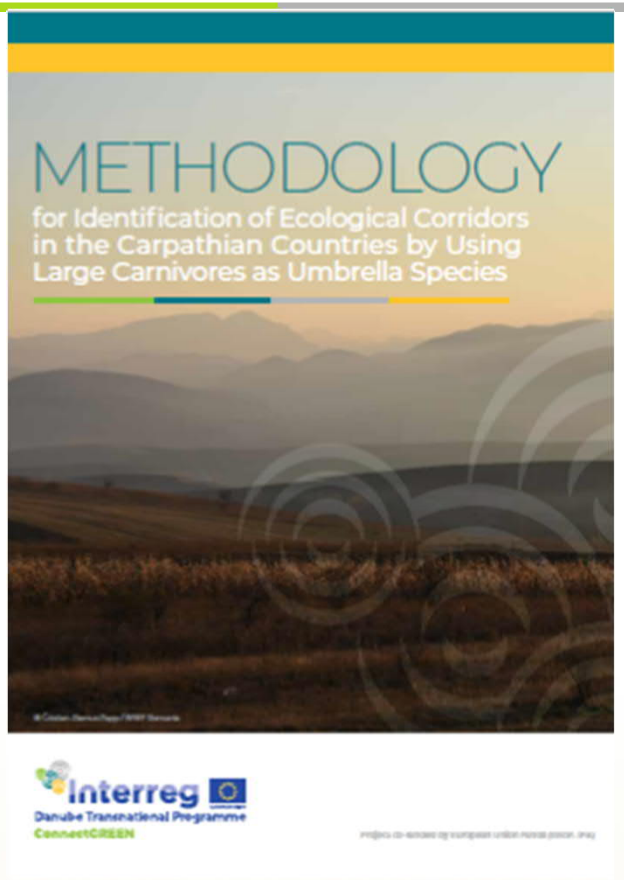
ConnectGREEN project

"Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin"

Methodology for Identification of Ecological Corridors in the Carpathian Countries by Using Large Carnivores as Umbrella Species



SNC SR, Zuzana Okániková
NCA CZ, Václav Hlaváč & Martin Strnad

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ConnectGREEN project – Title/Aim: "Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin"

What is needed?	Tools in the project
political will/support to prioritize the nature protection and in particular connectivity protection	development of strategic documents that will be accepted on the level of the Carpathian Convention
bullet-proof data and arguments from nature protection managers in respect to the needs of the connectivity protection	development and adoption of the Methodology for identification of ecological corridors in the Carpathian countries by using large carnivores as umbrella species
harmonization of interests of spatial development and nature protection	development of a Guideline for harmonizing the interests between nature conservation and different land uses

Project co-funded by the European Regional Development Fund (ERDF).

Methodology for identification of ecological corridors in the Carpathian countries by using large carnivores as umbrella species

Why Methodology?

Methodology is "'a contextual framework for research, a coherent and logical scheme based on views, beliefs, and values, that guides the choices researchers [or other users] make

Aim

solid data and arguments

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Why Identification of ecological corridors?

Ecological corridors are landscape structures of varying size, shape and with diverse forms of vegetation cover that connect core habitat areas, such as national parks, protected areas, and remote sections of wilderness and allow migration of species between them. The number, permeability, interlinkages and functionality of these corridors define the ecological connectivity of an area.

Ecological corridors need to be legally and geographically defined in order to protect, maintain, establish or enhance ecological connectivity in human-influenced landscapes.

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Methodology for identification of ecological corridors in the Carpathian countries by using large carnivores as umbrella species

Why Large Carnivores?

Large carnivores are wellsuited as umbrella species for forest ecosystems due to their large home ranges and high ecological demands on migration. The less specific demands of other smaller forest bounded species will be fulfilled.

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CONCEPT of 2 Sections

Section 1

Section 1 provides in particular Chapters information on the topic of the Methodology in terms of the ConnectGREEN project with specific focus on the practical steps and procedures towards identification of wildlife/migration corridors of large carnivores.

Section 2

Supporting documentation provides reference material and additional information on topics like connectivity, target species, the Carpathians, main types of barriers, pro-connectivity measures, monitoring of pro-connectivity measures.

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Section 1 – Foreword, Main chapters (1-5)

PREFACE refers to main goals of the Methodology, describes target groups and policy framework

HOW TO USE THE METHODOLOGY provides instructions for a better orientation in the document, clarifies the concept of the document

CONTENT OF THE METHODOLOGY – brief summary of particular chapters and supporting documentation

USE OF RESULTS underlines the importance of acceptance of results provided by the Methodology and real applicability of results in practical life in the field of spatial development

DEFINING THE ECOLOGICAL NETWORK FOR LARGE CARNIVORES represents the crucial part of the document and brings step-by-step instructions for defining the Ecological network for large carnivores including Factsheets that bring further in-depth information mostly for field experts on procedures of inventory of data and its evaluation, in particular regarding species occurrence data, evaluation of barriers/critical zones etc.

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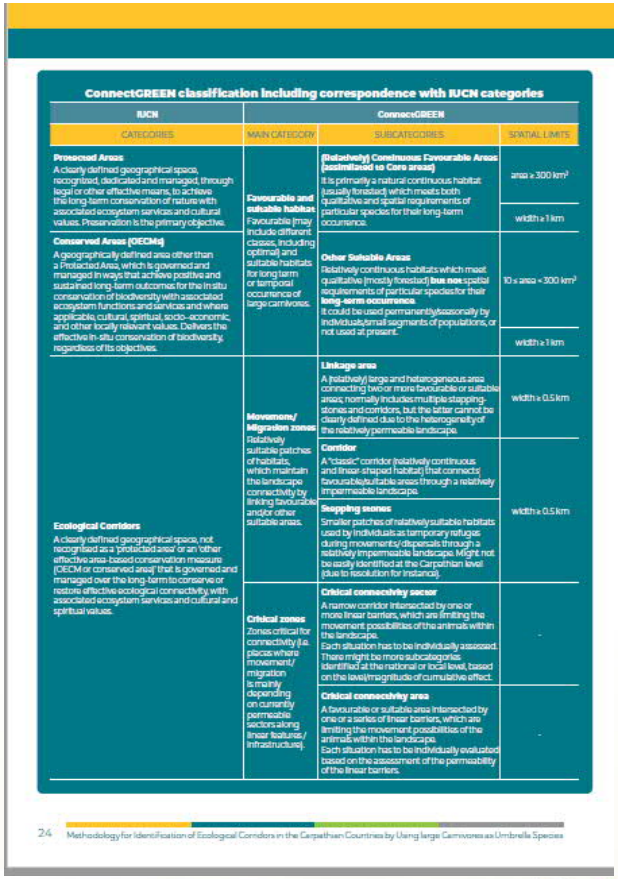
Chapter 5 - DEFINING THE ECOLOGICAL NETWORK FOR LARGE CARNIVORES

Categorisation/terminology

3 categories within CG project in relation to the IUCN Categories:

IUCN Categories	ConnectGREEN categories with subcategories
Protected Areas Conserved Areas	favourable and suitable habitat - (relatively) continuous favourable areas (assimilated to core areas) - other suitable areas
Ecologcial Corridors	movement/migration zones - linkage areas - corridors - stepping stones
	critical zones - critical connectivity sectors - critical connectivity areas



ConnectGREEN classification including correspondence with IUCN categories

IUCN	ConnectGREEN		
CATEGORIES	MAIN CATEGORY	SUBCATEGORIES	SPATIAL LIMITS
Protected Areas A clearly defined geographical space, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. Preservation is the primary objective.	**Favourable and suitable habitat** Favourable (may include different classes, including optimal) and suitable habitats for long term or temporal occurence of large carnivores.	**(Relatively) Continuous Favourable Areas (assimilated to Core areas)** It is primarily a natural continuous habitat (usually forested) which meets both qualitative and spatial requirements of particular species for their long-term occurrence.	area ≥ 300 km²
			width ≥ 1 km
Conserved Areas (OECMs) A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values. Delivers the effective in-situ conservation of biodiversity, regardless of its objectives.		**Other Suitable Areas** Relatively continuous habitats which meet qualitative (mostly forested) **but not** spatial requirements of particular species for their **long-term occurrence.** It could be used permanently/seasonally by individuals/small segments of populations, or not used at present.	10 x area < 300 km²
			width ≥ 1 km
Ecological Corridors A clearly defined geographical space, not recognised as a 'protected area' or an 'other effective area-based conservation measure (OECM or conserved area)' that is governed and managed over the long-term to conserve or restore effective ecological connectivity, with associated ecosystem services and cultural and spiritual values.	**Movement/ Migration zones** Relatively suitable patches of habitats, which maintain the landscape connectivity by linking favourable and/or other suitable areas.	**Linkage area** A (relatively) large and heterogeneous area connecting two or more favourable or suitable areas; normally includes multiple stepping-stones and corridors, but the latter cannot be clearly defined due to the heterogeneity of the relatively permeable landscape.	width ≥ 0.5 km
		Corridor A "classic" corridor (relatively continuous and linear-shaped habitat) that connects favourable/suitable areas through a relatively impermeable landscape.	width ≥ 0.5 km
		Stepping stones Smaller patches of relatively suitable habitats used by individuals as temporary refuges during movements/ dispersals through a relatively impermeable landscape. Might not be easily identified at the Carpathian level (due to resolution for instance).	
	Critical zones Zones critical for connectivity (i.e. places where movement/ migration is mainly depending on currently permeable sectors along linear features/ infrastructures).	**Critical connectivity sector** A narrow corridor intersected by one or more linear barriers, which are limiting the movement possibilities of the animals within the landscape. Each situation has to be individually assessed. There might be more subcategories identified at the national or local level, based on the level/magnitude of cumulative effect.	-
		Critical connectivity area A favourable or suitable area intersected by one or a series of linear barriers, which are limiting the movement possibilities of the animals within the landscape. Each situation has to be individually evaluated based on the assessment of the permeability of the linear barriers.	-

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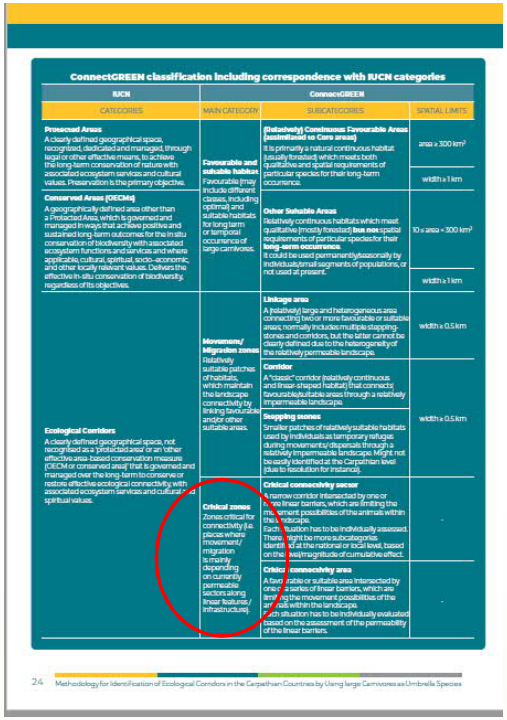
Interreg Danube Transnational Programme ConnectGREEN

Interreg Danube Transnational Programme ConnectGREEN

UN environment programme | CARPATHIAN CONVENTION | CNPA | Interreg CENTRAL EUROPE Centralparks | CEEweb for Biodiversity | WWF

Methodology for identification of ecological corridors in the Carpathian countries by using large carnivores as umbrella species

Special attention to the Critical zones – focused protection and measures for improvement of the permeability



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Chapter 5 - DEFINING THE ECOLOGICAL NETWORK FOR LARGE CARNIVORES - PROCESS

The level of the Carpathians

Habitat suitability modelling

Connectivity modelling

Critical zones

Definition of the ecological network

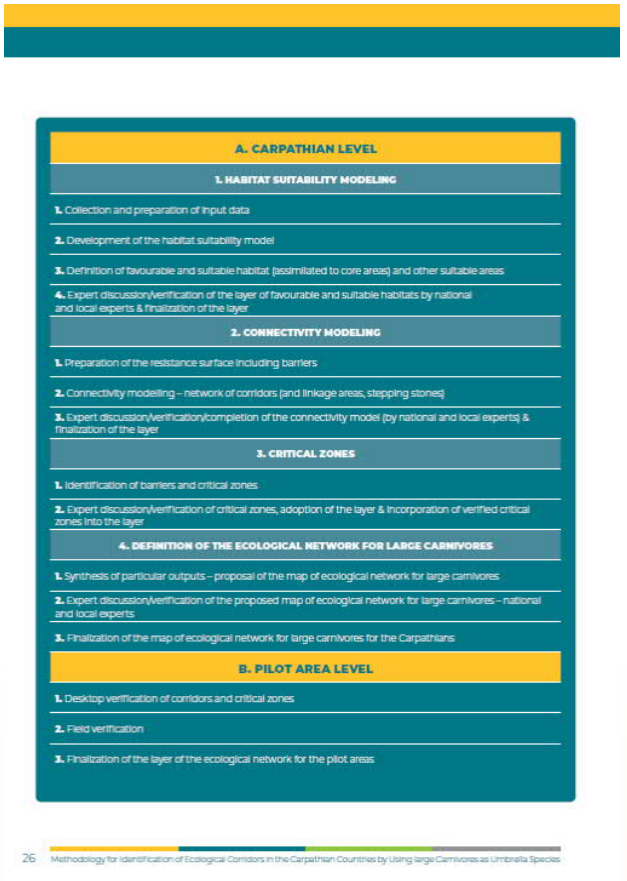
Pilot areas

Desktop verification of corridors and critical zones

Field verification

Finalization of the layer of the ecological network for the pilot areas

More information in the follow-up presentation by the PP VUKOZ



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Section 2 - Supporting documentation

INTRODUCTION TO THE CARPATHIANS brings information on the Carpathian Mountains, Carpathian Convention, and Carpathian Network of Protected Areas.

PREVIOUS PROJECTS AND INITIATIVES describes projects and initiatives focused on the landscape connectivity that have been implemented in the Carpathians within the last decade.

CONNECTIVITY AND FRAGMENTATION provides general basic knowledge on connectivity, fragmentation, corridors and can serve as an introduction to the topic also for persons who are not experts in this field.

TARGET SPECIES focuses on the three target species – brown bear, Eurasian lynx and grey wolf and brings information on the status of protection, occurrence and dispersal, ecology and ethology, migration behavior and threats.

BARRIERS describes main types of barriers for migration of large carnivores and also includes the evaluation of particular types of barriers. The principles of evaluation of barriers are reflected in the "mapping sheets (cards)" which were developed for mappers to facilitate the field work in order to get results as unified as possible. The respective mapping sheets (cards) and inventorying instructions are described in Factsheets to the Chapter 5 Defining the ecological network for large carnivores.

CONNECTIVITY MEASURES brings the list of possible measures that can be applied to maintain or restore the ecological connectivity and mitigate the negative impacts of landscape fragmentation.

MONITORING OF CONNECTIVITY MEASURES brings the list of possible monitoring methods that can be used to monitor the efficiency of applied connectivity measures.

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Supporting document 05 – BARRIERS

describes main types of barriers for migration of large carnivores

and also includes the evaluation of particular types of barriers.

Matrix 1 - Classification of roads and motorways by their permeability for large mammals			
Class	**Specification**	**Technical solution/Status of permeability**	**Traffic flow / daily average**
C1	Motorways and expressways	Insurmountable physical obstacles (steep slopes and cuts, noise barriers, abutment, stone walls, etc.) lacking any wildlife passing objects	Over 30,000 vehicles per day
C2	Other multi-lane roads	Significant technical obstacles, high banks and cuts which may be partly surmountable	10,000 - 30,000 vehicles per day
C3	Other first class roads	Roads with surmountable physical obstacles (central or side guardrails)	5,000 - 10,000 vehicles per day
P	Local roads	No technical barriers	Under 5,000 vehicles per day
PF	No roads		

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"mapping sheets (cards)" were developed for mappers to facilitate the field work in order to get results as unified as possible

Interreg Danube Transnational Programme ConnectGREEN

FENCES INVENTORYING

Sheet n°.....

Name: .....
Date: .....

Organisation: .....
Location: .....

N° record	Code*	Perm. / Temp.	Orientation	Purpose of the fence	Material	Total height	Status	Surroundings description	Notes
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									

*must match the code in GIS layer

Permanent/Temporary (P/T)

P	Permanent
TP	Temporary – pasture season
T	Temporary - other reasons

Surroundings description

S	shrubs
T	trees
F	forest
M	meadow
AL	arable land

Material

W	Wood
M	Metal
EF	Electric fence
C	Concrete
P	Plastic
O	Other

Purpose of the fence

LTI	Linear transport infrastructure
PP	Pasture protection
SP	Settlement protection
GP	Game protection
FK	Forest nursery
O	Other

Status

D	damaged
U	undamaged

Total height
over 2 m
1 - 2 m
under 1 m

Orientation (in relation to the corridor)

L	Longitudinally with the corridor (180°)
P	Perpendicularly to the corridor (90°)
D	Diagonally to the corridor 45°

Project co-funded by European Union Funds (ERDF, IPA)

Things are often not as they seem...
The roe does not cross the road, the road crosses the forest