

Work Package T1 Methodologies and tools

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Project co-funded by European Union funds (ERDF)

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WP T1 Objectives



- WP T1 will entail the development of tools for the work in the pilot areas (WP T2) and the capacity building program for public authorities and/or key players (WP T3).
- A standardised methodology will be developed for the monitoring of the structural and functional connectivity.
- Based on the developed methodology critical ecological bottleneck areas and surroundings for wildlife before and during the construction and operation of a linear or other types of infrastructure will be monitored to generate lessons learned
- The Czech Transport Research Centre will develop a technical application for the standardized monitoring methodology including a mobile app for professionals
- SPECTRA will work on harmonising data gathered from the field and make them available through the existing web CCIBIS.org
- EPC Consulting Ltd. will lead the development of a comprehensive capacity-building programme consisting of training materials and on the job training dedicated to public authorities and other relevant stakeholders.

Structural vs. Functional Connectivity



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Danube Transnational Programme

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- Most of the *existing ecological corridor designations* are more or less based on the concept of structural connectivity.
- The next logical step forward is therefore, the further development of the designated corridors *from the structural connectivity to the functional connectivity perspective*.
- The monitoring concept developed within WP1 is therefore designed as a *two-stage process*.
- Stage I covers
 - *the designation of ecological corridors and*
 - *classification of the permeability of segments within the ecological corridors based on the structural connectivity.*
- Stage II is focusing on the
 - *field based collection of all required parameters for the evaluation of functional connectivity*

Structural vs. Functional Connectivity



- **Structural Connectivity**
Structural connectivity indicates the part of the landscape that is actually connected through e.g. corridors.
- **Functional Connectivity**
In contrast, functional connectivity includes species specific aspects and their interaction with landscape structures. Thus, functional connectivity is actually connectivity from a species' perspective.

Structural vs. Functional Connectivity



The aim of the developed monitoring procedure is

- to determine mitigation measures and
- minimum habitat requirements

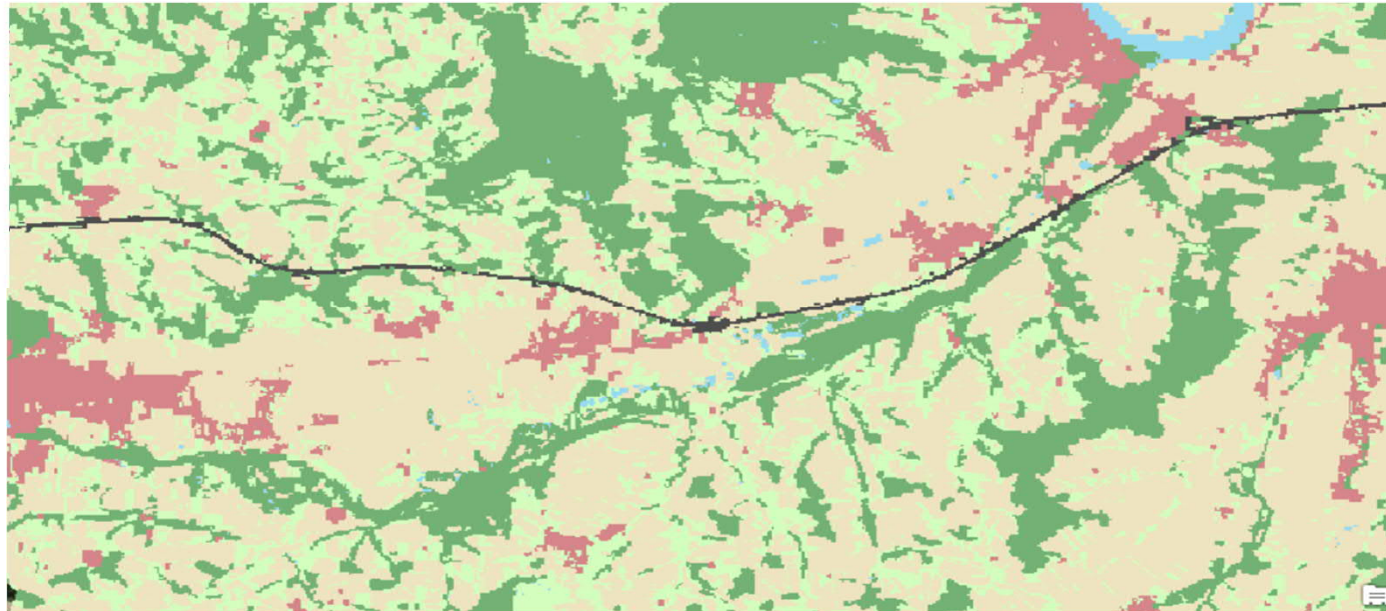
based on the evaluation results and the analysis of ecological corridor segments with functional and non functional connectivity

Monitoring Approach

STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS

Designation of ecological corridors based on structural connectivity

- Soil sealed
- Snow/ice
- Water
- Forest
- Grassland
- Woody vegetation
- Agriculture
- Settlement
- undefined
- Infrastructure

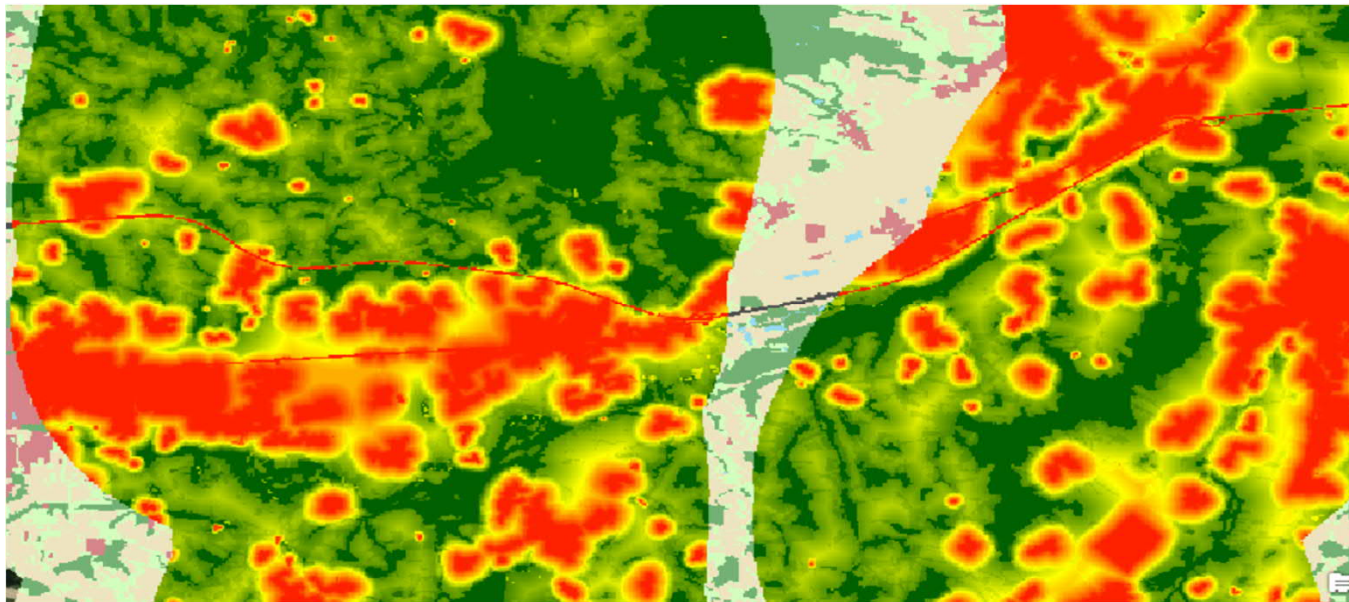


Extension of the information by barrier-effective linear landscape elements (train routes, motorways.....)

Monitoring Approach

STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS

Designation of ecological corridors based on structural connectivity

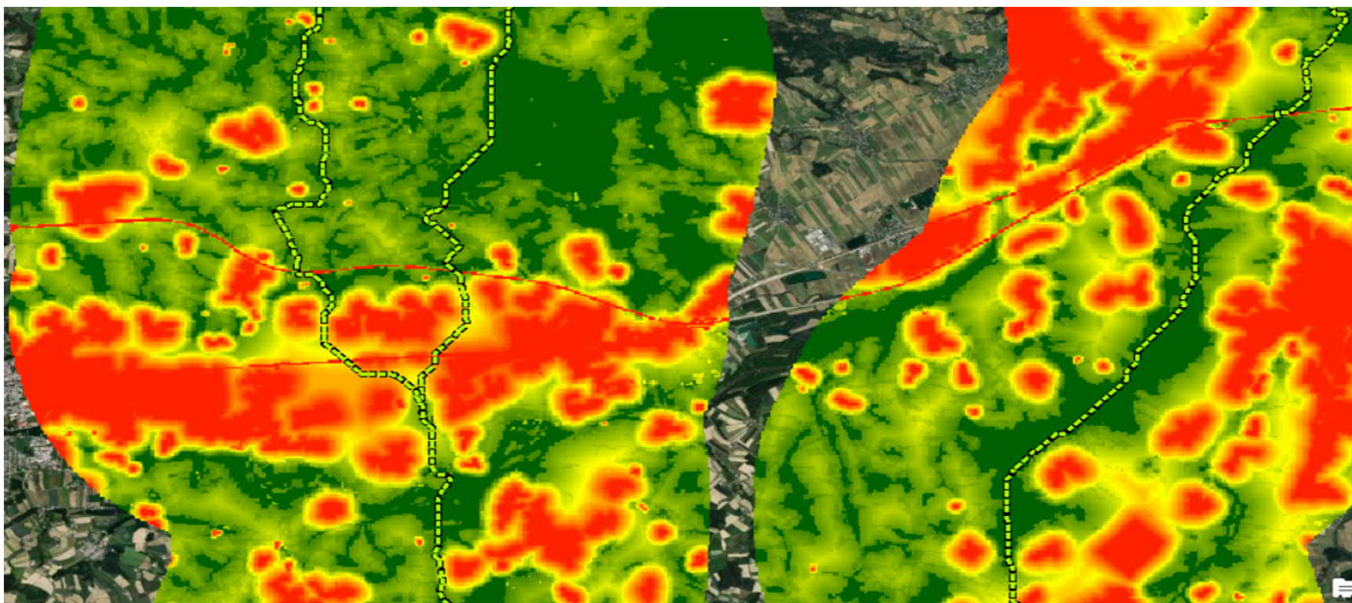


Calculation of a resistance model

Monitoring Approach

STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS

Designation of ecological corridors based on structural connectivity

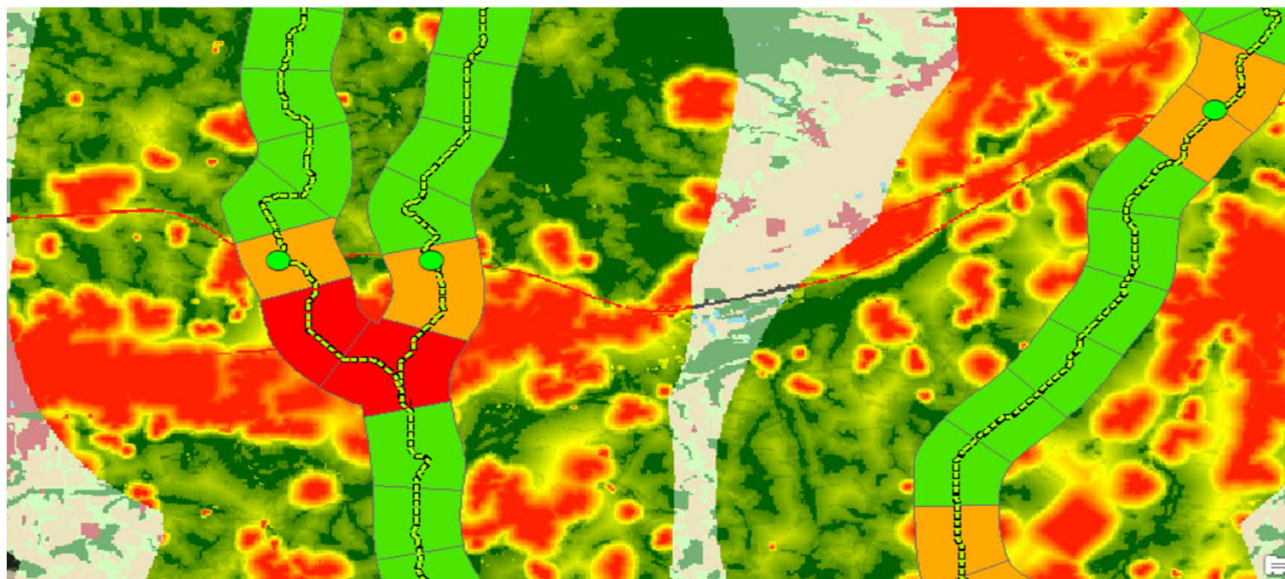


Calculation of landscape regions with the best remaining structural connectivity \neq functional connectivity!!!!

Monitoring Approach

STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS

Designation of ecological corridors based on structural connectivity

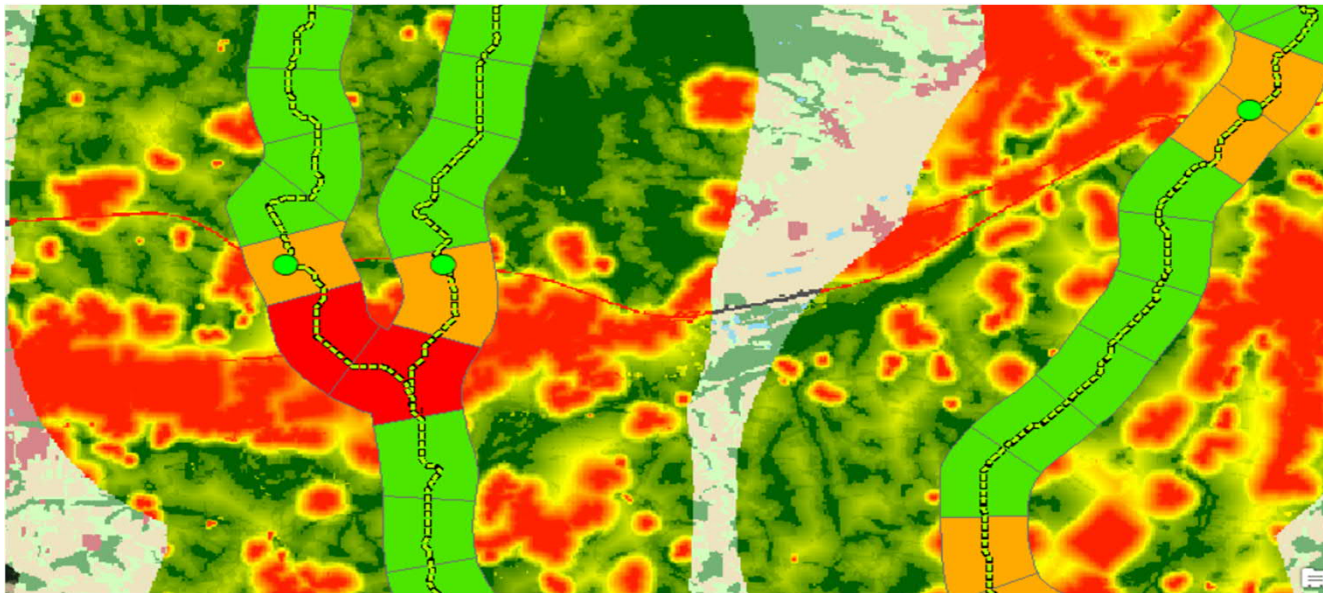


Classification of the permeability of the ecological corridors segments based in landscape metrics (spatial composition of landscape elements)

Monitoring Approach

STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS

Designation of ecological corridors based on structural connectivity



Classification of the permeability of the ecological corridors segments based in landscape metrics (spatial composition of landscape elements)

Structural vs. Functional Connectivity

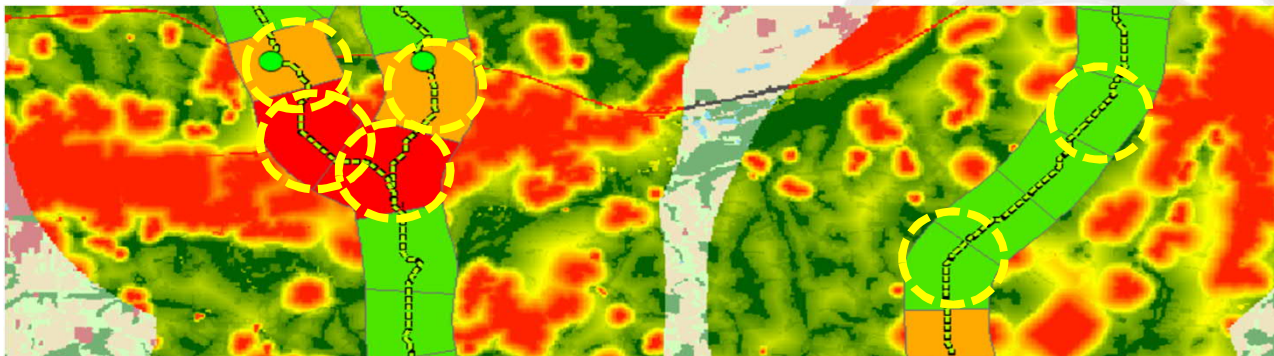
Step 1: Monitoring structural connectivity

STEP 1.1: Designation of ecological corridors

Use of existing designations of ecological corridors or new designation based on a harmonized methodology which will be developed within WP1(Ukraine)

STEP 1.2: Classification of the permeability of ecological corridor segments

STEP 1.2: Calculation and classification of the permeability of segments within the designated ecological corridors based on the spatial composition of landscape elements (=structural connectivity)



→ Essential information for the sampling design for the functional monitoring

Monitoring Approach

MILESTONES WP I – STAGE I: STRUCTURAL CONNECTIVITY ANALYSIS



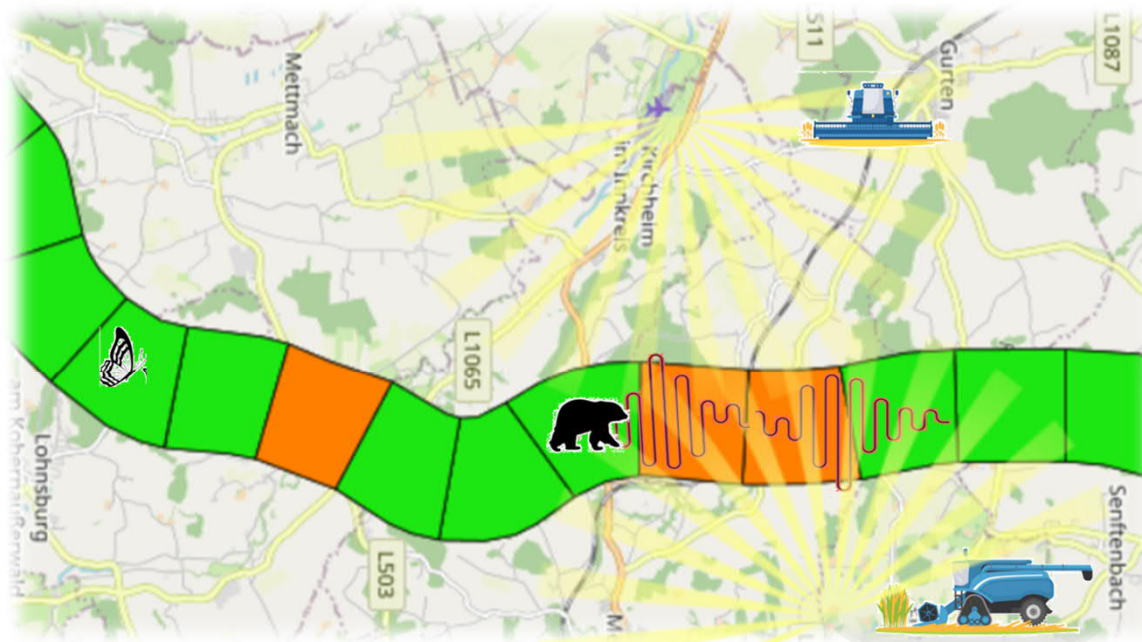
- WP1 – STEP 1.1: The harmonized methodology for the designation of ecological corridors will be based and took under consideration the on the concept developed within the INTERREG Projects
- TRANSGREEN
- CONNECTGREEN



WP1 – STEP 1.2: Methodology for the permeability classification of ecological corridor segments will be based on the calculation of structural landscape indicators (=landscape metrics)

Monitoring Approach

STAGE II: FUNCTIONAL CONNECTIVITY ANALYSIS



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Monitoring Approach

STAGE II: FUNCTIONAL CONNECTIVITY ANALYSIS

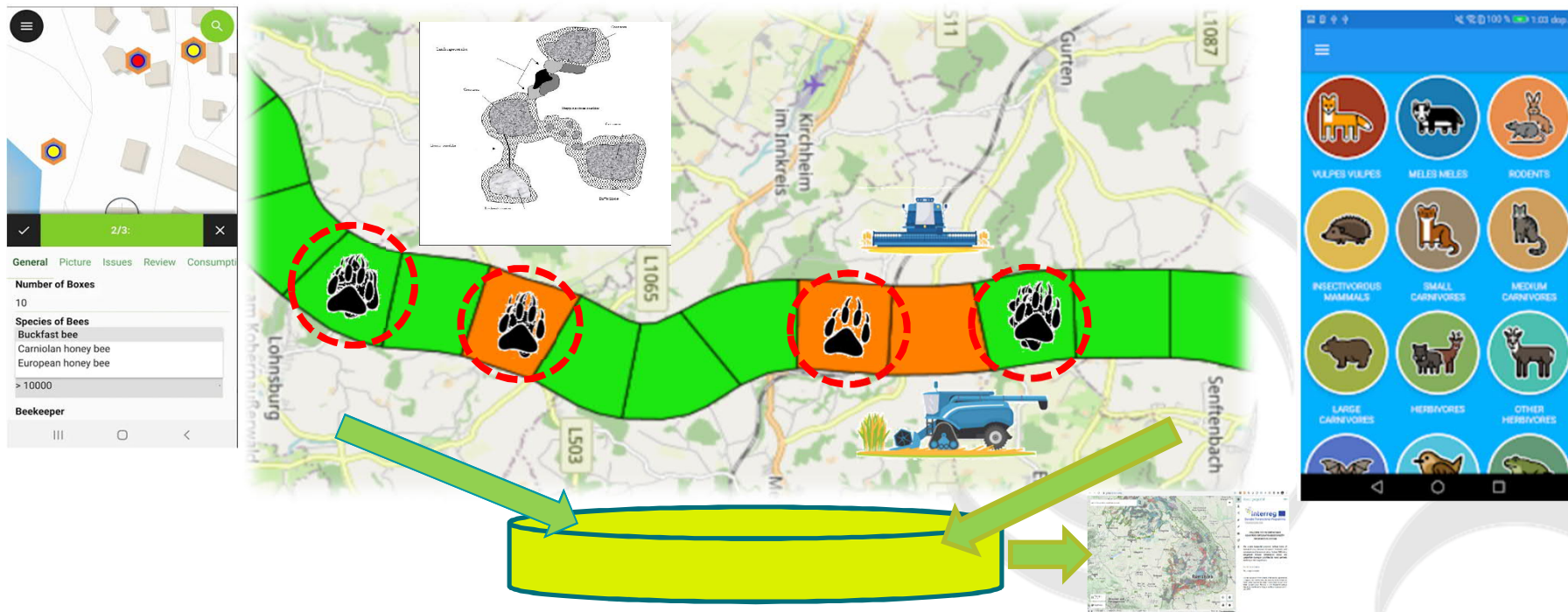


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Monitoring approach – functional connectivity

Monitoring Approach

STAGE II: FUNCTIONAL CONNECTIVITY ANALYSIS

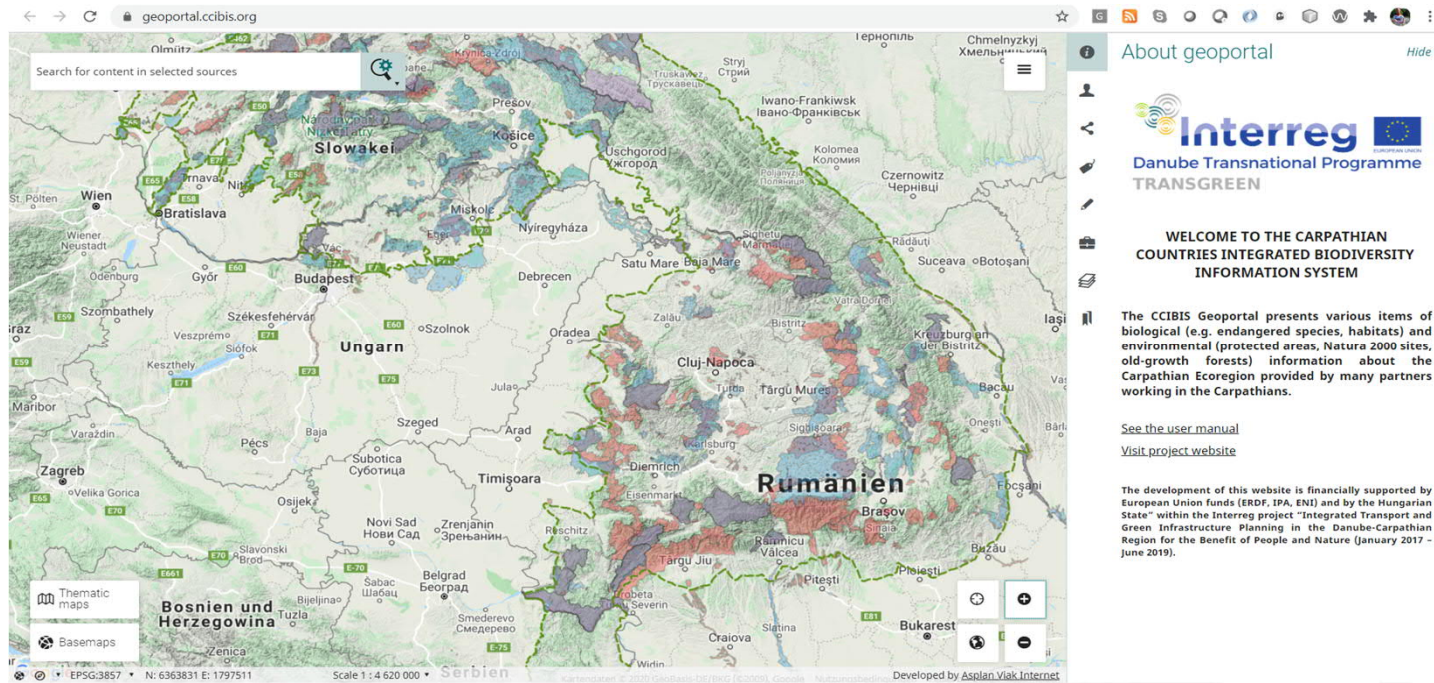


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Monitoring approach – functional connectivity

Monitoring Approach

STAGE II: FUNCTIONAL CONNECTIVITY ANALYSIS



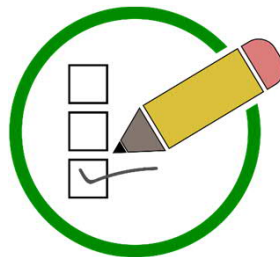
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Monitoring Approach

Questionnaire



- Methodology is based on the general concept of structural and functional connectivity.
- There are many different definitions of structural and functional connectivity and therefore many questions arise
- Common understanding between the project partners is essential



Please participate in the survey:

<https://database.xn--biodiversittsdialog-qwb.at/index.php/498544?lang=en>

Monitoring Approach

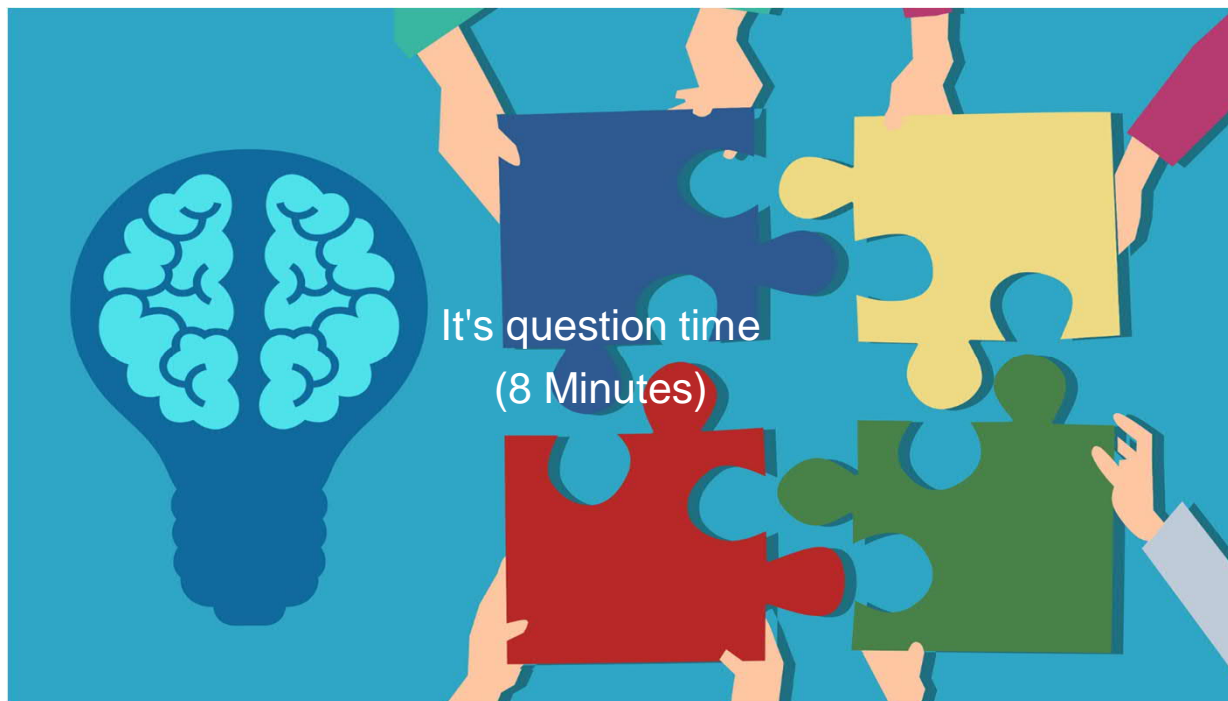
Questionnaire



- Have you ever heard about the general concept of structural and functional connectivity?
- Which of the definitions for structural connectivity seems the most logical to you?
- Which of the definitions for functional connectivity seems the most logical to you?
- Do you think that the designation of structural connectivity is completely species (species-group) non-specific?
- Does the division of the monitoring into the areas of monitoring of structural and functional connectivity represent a coherent concept?
- What parameters and measurement methods are required for monitoring functional connectivity?
- What is your preferred recording method for fieldwork?

Monitoring Approach

Questionnaire



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Monitoring Approach

Results Questionnaire



Have you ever heard about the general concept of structural and functional connectivity?

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Monitoring Approach

Results Questionnaire



Which of the definitions for structural connectivity seems the most logical to you?

Monitoring Approach

Results Questionnaire



Which of the definitions for functional connectivity seems the most logical to you?

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Results Questionnaire



Do you think that the designation of structural connectivity is completely species (species-group) non-specific?

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Monitoring Approach

Results Questionnaire



Does the division of the monitoring into the areas of monitoring of structural and functional connectivity represent a coherent concept?

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Monitoring Approach

Results Questionnaire



What parameters and measurement methods are required for monitoring functional connectivity?

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Monitoring Approach

Results Questionnaire



What is your preferred recording method for fieldwork?

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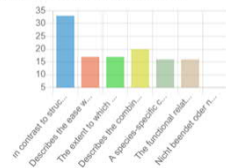
Monitoring Approach

Results Questionnaire, n=11

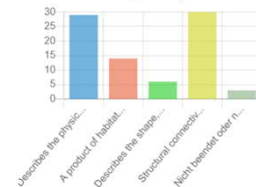
Conclusion WP1

- Preferred definitions that are still being refined and
- Most of the experts support the two stage process foreseen for the monitoring procedure
- Selection of required parameters for the functional monitoring based on the preferred parameters in the questionnaire

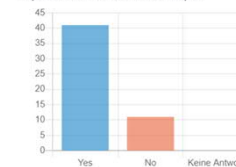
Which of the definitions for functional connectivity seems the most logical to you?



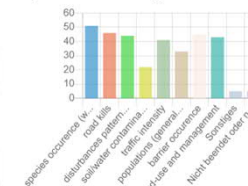
Which of the definitions for structural connectivity seems the most logical to you?



Does the division of the monitoring into the areas of monitoring of structural and functional connectivity represent a coherent concept?

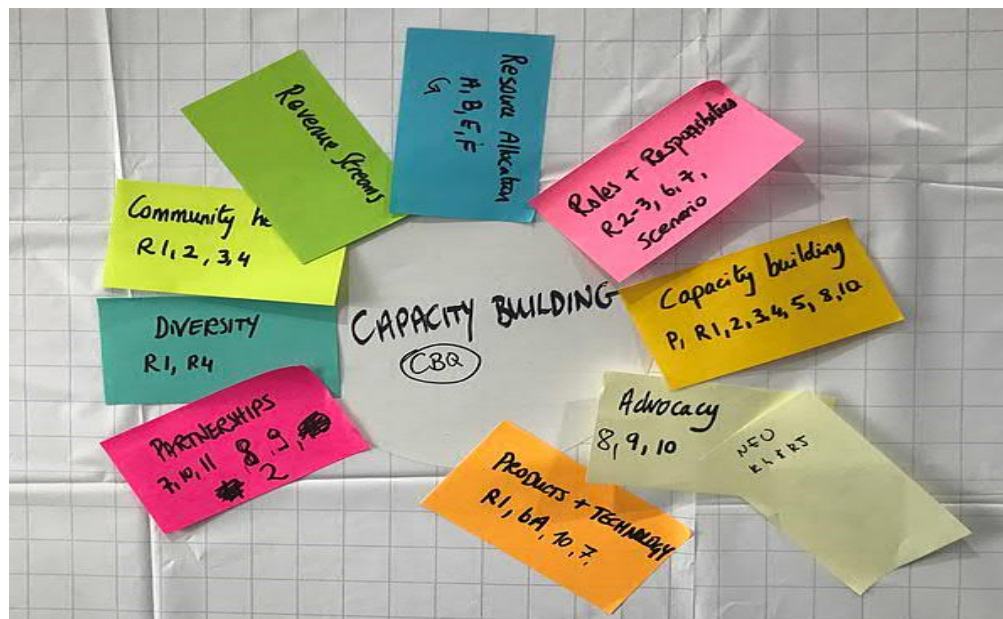


What parameters and measurement methods are required for monitoring functional connectivity?



Monitoring Approach

Capacity Building Program



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Monitoring Approach

Capacity Building Program



Capacity Building Programme

- Address public authorities and other key stakeholders
- Provides a set of tools:
 - SEA Toolkit;
 - EIA Toolkit including cost-benefit analysis;
 - The Handbook of best practices.
- A better understanding of human impacts on GI and a better identification and implementation of measures to prevent and reduce impacts.

Monitoring Approach

Capacity Building Program



Capacity Building Programme

The toolkits:

- facilitate a better understanding of the impacts by all stakeholders, especially decision makers;
- How to:
 - Chose methodologies;
 - Assess alternatives;
 - Consider cumulative impacts;
 - Assess the impact on conservation objectives.

Monitoring Approach

Capacity Building Program



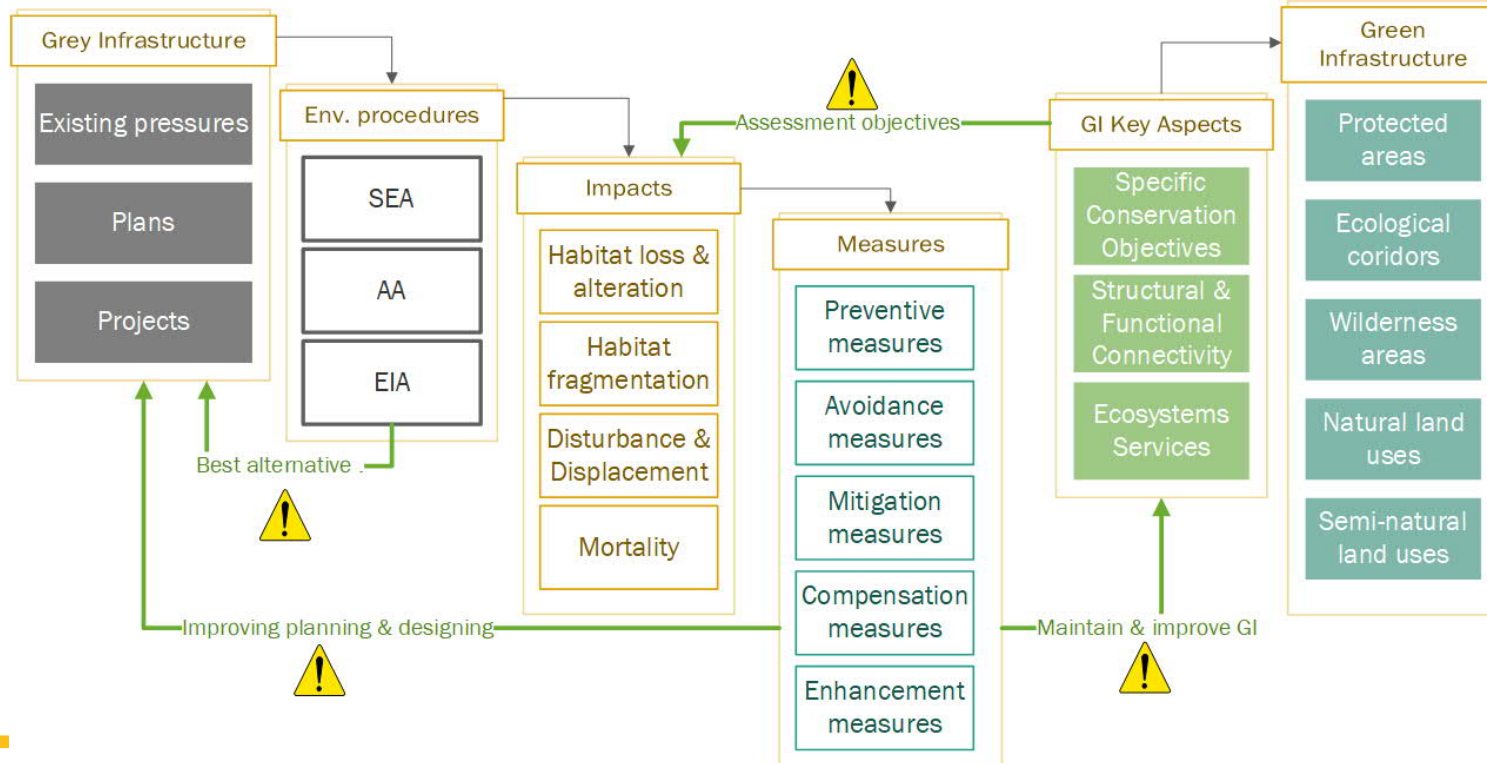
Capacity Building Programme

Questionnaire:

- To understand the uncertainties and training needs of the public authorities;
- To guide the preparation of the toolkits;
- Online format. Structure to be determined with PP.

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Capacity Building Program



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Conclusions & next steps



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