

Ecological connectivity in Austria

Activities, legal status and future trends

Roland Grillmayer, Environment Agency Austria
AT-CZ Transnational workshop, 31 May 2022

Habitat Networking - Definition

Habitat corridors:

Landscape sections in Austria that **still have a high connectivity potential** (= have high structural connectivity).

- Landscape areas in which **animals can move** (= migration)
- Landscape areas in which **plants can spread** (= dispersal)
- Valuable **habitats** for small mammals | insects | amphibians | ...

Characteristic:

- Landscape areas that are largely **free from built-up areas**
- Landscape areas (regions) which **still have high habitat quality and connectivity** for **woodland and grassland**

Habitat Networking - Objectives

Habitat Networking:

- **Visualization** and/or **safeguarding** of habitat corridors in Austria
- **Establish wildlife crossing aids** where roads and railroads dissect habitat corridors
- **Establish a data base** for prioritizing ecological compensation areas/restoration/...

What do we mean by safeguarding?

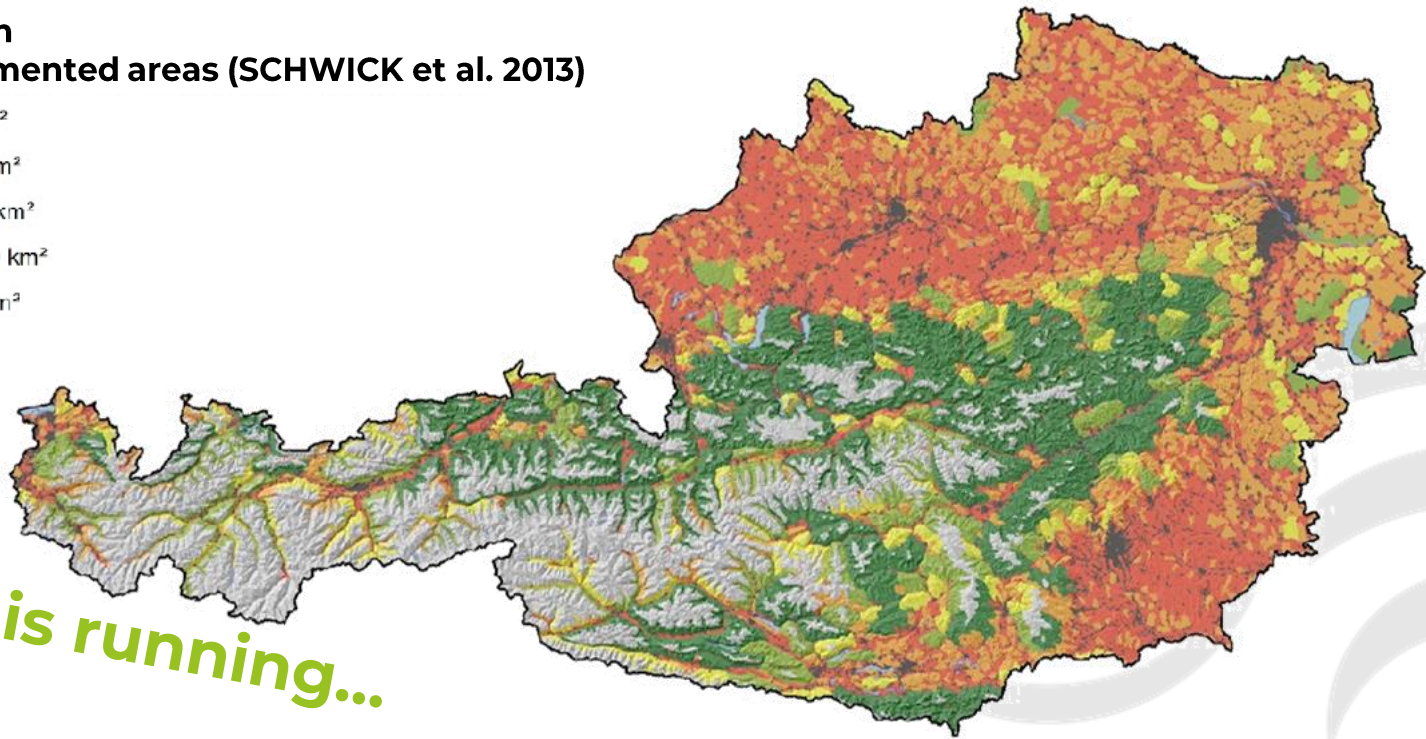
- **First premise:** Keep clear of building development!
 - **No restrictions** of any kind **on traditional agricultural management** practices within the corridor areas
 - Qualitative improvement of habitat connectivity through measures such as:
 - Improving landscape structure and increasing the number of landscape elements with positive effects on habitat connectivity
 - Promotion of certain management practices
 - etc.
- must be carried out **on a voluntary basis by landowners.**

What do we mean by safeguarding?

- **Political decision-makers** are required to **develop appropriate incentive systems**
 - **Regionalization** of Austrian Agri-environmental Programme (ÖPUL) **subsidies**
 - Account for **compensation areas**: assign **higher value to areas** that fulfill **multiple ecological functions**

Situation in Austria?

Dissection Non-fragmented areas (SCHWICK et al. 2013)



Time is running...

Situation in Austria?

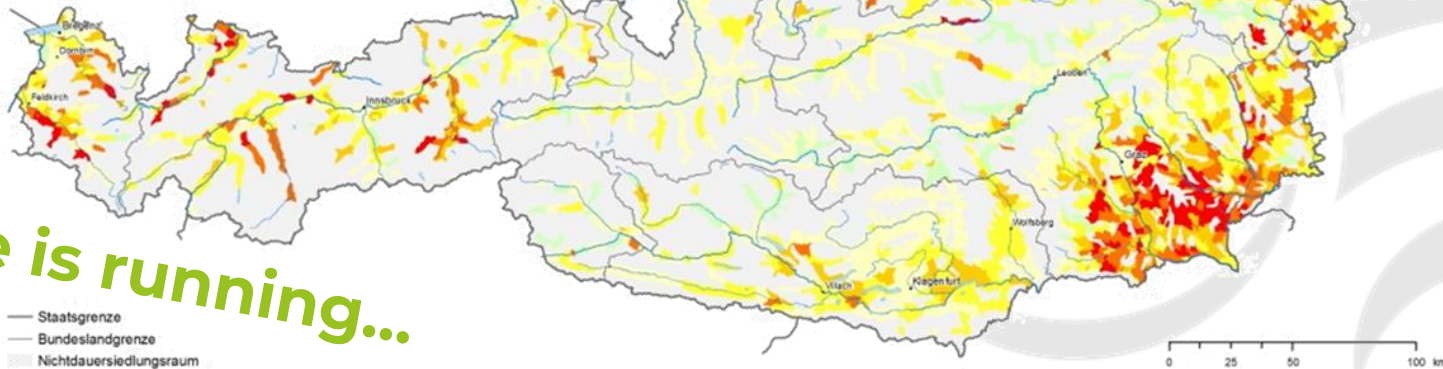
Change of building and traffic area in permanent settlement area in %.

- Stagnant
- Increase up to 10 percent
- Increase between 10 to 20 percent
- Increase between 20 to 30 percent
- Increase between 30 to 50 percent
- Increase more than 50 percent

*) Kategorien nach Grundstücksdatenbank (GDB):

Bau- und Verkehrsfläche: Benützungarten „Baufläche“ mit allen Nutzungen und „Sonstige“ mit den Nutzungen „Straßenanlagen“ und „Bahnanlagen“

Dauersiedlungsraum: Benützungarten „Baufläche“ und „Gärten“ (jeweils mit allen Nutzungen), „landwirtschaftlich genutzte Flächen“, „Weingärten“, „Sonstige“ (mit den Nutzungen „Straßenanlagen“, „Bahnanlagen“, „Abbauflächen“ und „nicht näher unterschieden“).

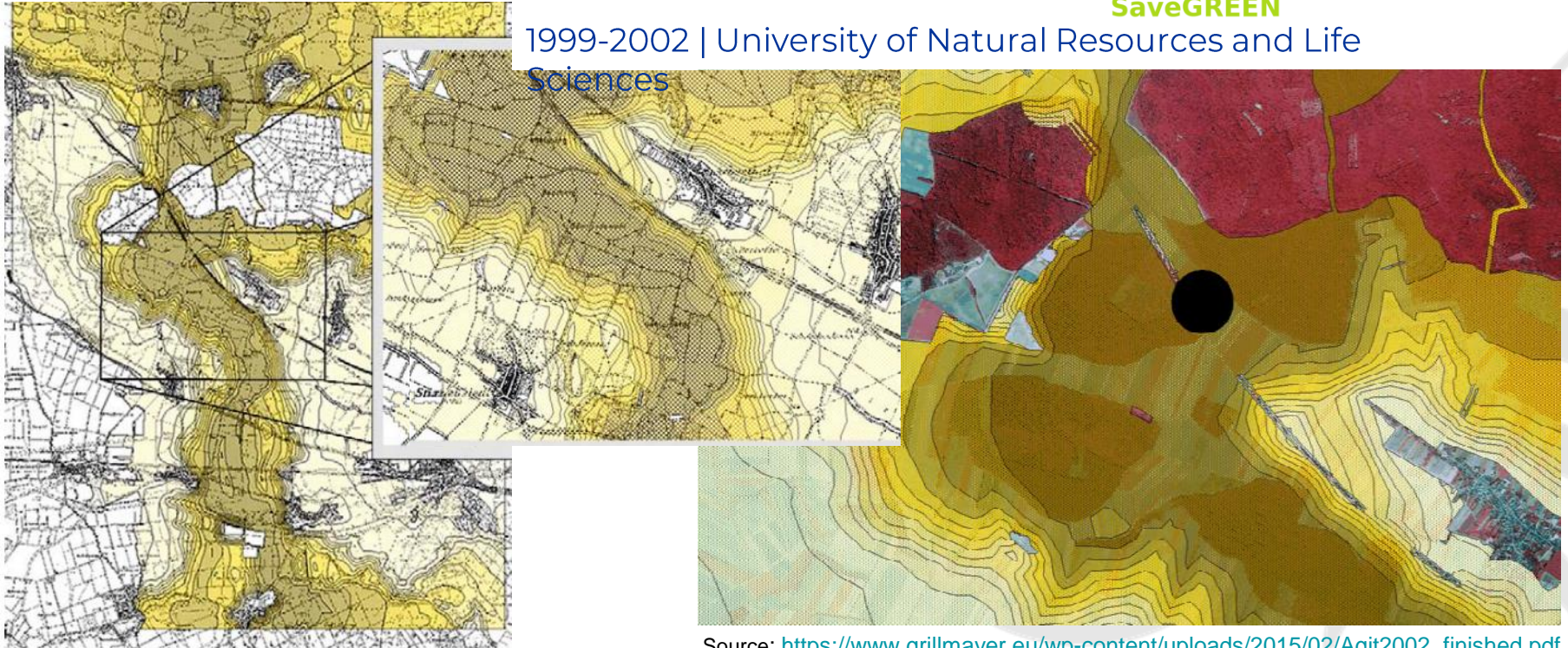


Time is running...

Project „Wildlife corridors“

A long time ago...

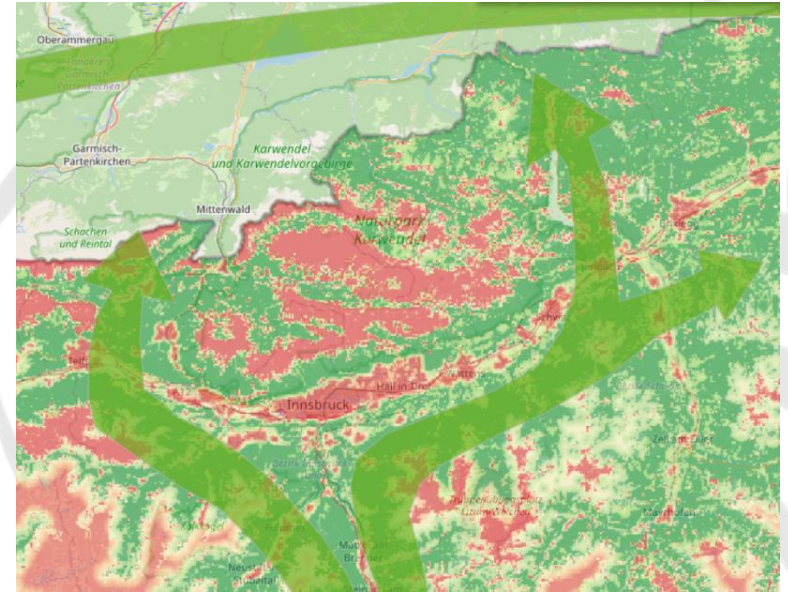
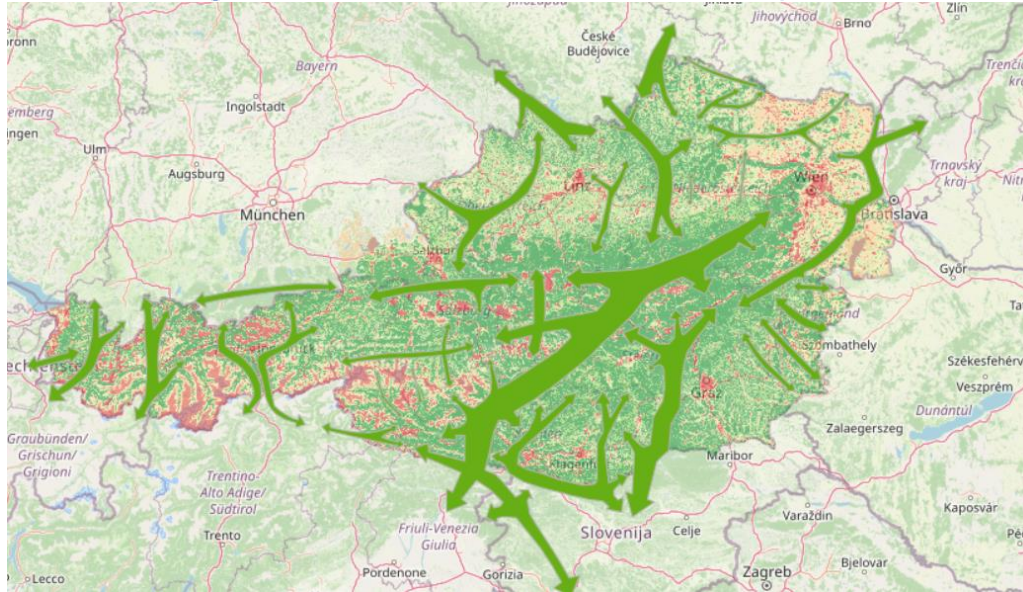
1999-2002 | University of Natural Resources and Life Sciences



Source: https://www.grillmayer.eu/wp-content/uploads/2015/02/Agit2002_finished.pdf

Project „Habitat networking in Austria“

2005 | GIS modeling of mobility resistance values for forest-preferring wild large mammals in Austria | DI Clemens Köhler



Source: https://www.wildkatze-in-oesterreich.at/paees_file/de/14/DA_Clemens_Koehler.pdf

Directive „Habitat networking wildlife“



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GZ. BMVIT-300.040/0002-II/ST-ALG/2006

Bitte Antwortschreiben unter Anführung der Geschäftszahl
(wenn möglich) an die oben angeführte e-mail-Adresse richten.

ASFINAG
Rotenturmstraße 5-9
1011 Wien



*Bundesministerium
für Verkehr,
Innovation und Technologie*

Infrastruktur

Source:

<https://www.bmk.gv.at/dam/jcr:e766ccb1-7178-4694-89d6-59c3575fe3a4/wildtiere.pdf>

2005 | Federal Ministry for Transport, Innovation and Technology >
ASFINAG - Motorway and Expressway Financing Joint-Stock Company

3. Nachrüstungen an Bestandsstrecken

Fachliche Grundlage bilden die Ergebnisse des Forschungsprojektes zum Thema "Kostenreduktion bei Grünbrücken durch deren rationellen Einsatz" (VÖLK et. al., 2001; Straßenforschung, Heft 513, dort insbesondere die Auflistung der Nachrüstungsvorschläge in Tabelle 16, Seite 63).

Gemäß Umsetzungskonzept des WWF „Strategische Planung für die Lebensraumvernetzung in Österreich – Prioritätensetzung für Nachrüstungsvorschläge für Grünbrücken über Autobahnen und Schnellstraßen“ (PROSCHEK, 2005) für die Errichtung von überregional bedeutsamen Wildquerungshilfen (WQH, Kategorie A) an Bestandsstrecken sind die darin beurteilten **20 Bauwerke bis zum Jahr 2027 zu realisieren**. Dadurch soll die Lebensraumvernetzung für großräumig lebende Wildtierarten langfristig gesichert werden.

Um Fehlinvestitionen zu vermeiden, ist die **jeweils aktuelle raumplanerische Situation im Umfeld der zu planenden WQH** hierbei zu berücksichtigen, da durch Umwidmungen von Grünland in beispielsweise Betriebsgebiet die Korridore beidseits der WQH für Wildtiere unterbrochen werden können und somit die Funktionsfähigkeit der WQH nicht mehr gegeben wäre.

Die RVS 04.03.12 „Wildschutz“ ist bei der Planung und Ausführung der Bauwerke anzuwenden.

Retrofitting on existing roads

- 20 building structures to be realized by 2027
- taking into account the current spatial planning situation in the vicinity of the wildlife crossing aid to be planned

Source: <https://www.bmk.gv.at/dam/jcr:e766ccb1-7178-4694-89d6-59c3575fe3a4/wildtiere.pdf>

Prioritization of green bridges



Strategische Planung für die Lebensraumvernetzung in Österreich

Prioritätensetzung für Nachrüstungsvorschläge
für Grünbrücken über Autobahnen und
Schnellstraßen



Strategic planning for habitat networking in Austria

Prioritization of proposals for
retrofitting of green bridges over
motorway and expressways

Source: Proschek, M. (2005). Strategische Planung für die Lebensraumvernetzung in Österreich.
Prioritätensetzung für Nachrüstungsvorschläge für Grünbrücken über Autobahnen und Schnellstrassen, Wien.

Prioritization of green bridges



Evaluated retrofit proposals for green bridges in the superordinate road network in Austria.



Source: Proschek, M. (2005). Strategische Planung für die Lebensraumvernetzung in Österreich. Prioritätensetzung für Nachrüstungs-vorschläge für Grünbrücken über Autobahnen und Schnellstraßen, Wien.

RVS 04.03.12 wildlife protection



Die Österreichische Forschungsgesellschaft Straße - Schiene - Verkehr hat im Zusammenwirken mit dem Bundesministerium für Verkehr, Innovation und Technologie, der ASFINAG und den Landesbaudirektionen der Bundesländer



RVS 04.03.12
Umweltschutz
Flora und Fauna an Verkehrswegen
Wildschutz
(Ausgabe 1. September 2007)

ausgearbeitet, die ab sofort im Bereich der Bundesstraßen anzuwenden ist.

Diese RVS stellt den Stand der Technik in dem oben angeführten Fachbereich dar. Eine Anwendung auch außerhalb des Bundesstraßenbereiches wird angeregt.

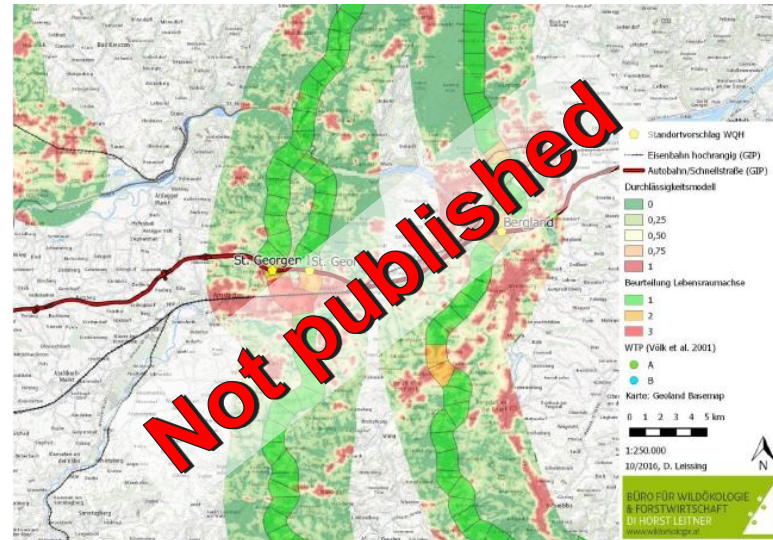
Diese RVS stellt nach Richtlinie 98/34/EG kein Handelshemmnis dar und ist daher keinem Notifikationsverfahren zu unterziehen.



Update on the study for the prioritization of green bridges

Evaluation of 20 green bridge sites and their associated transregional habitat corridors in Austria (2016)

Further development of methods for an Austria-wide designation and evaluation of habitat axes



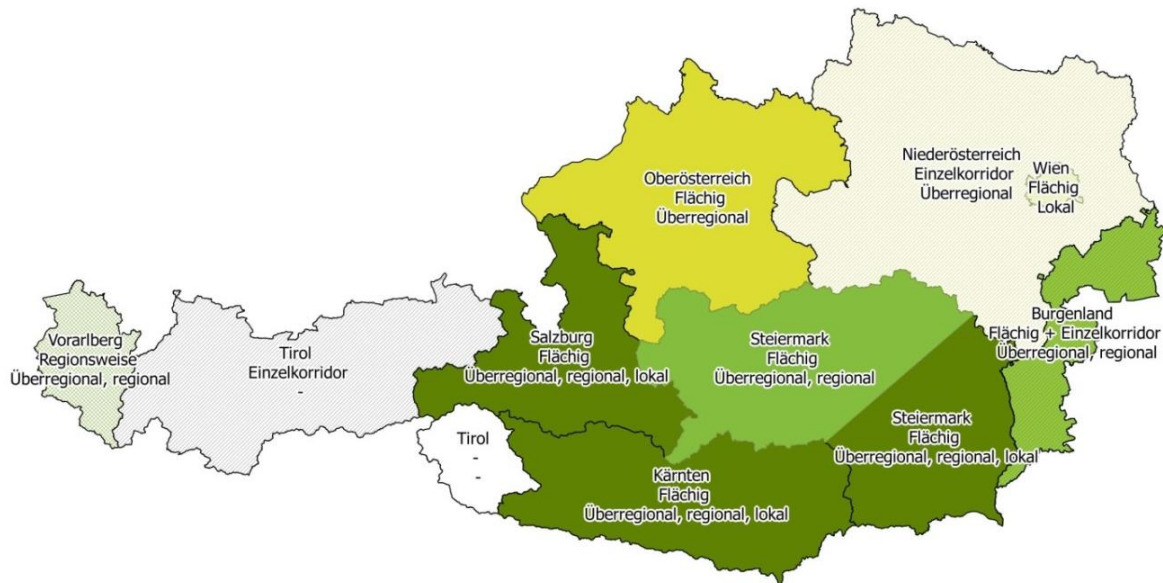
Development of thematic focus: Habitat networking in Austria

Status quo on habitat connectivity in Austria (2016-2017)

- Data collection and **publication** of all **existing designations** of habitat corridors in Austria
- Overview of the **current protection of habitat corridors** in Austria by different **spatial planning instruments** in Austria
- Derivation of **fields of action**

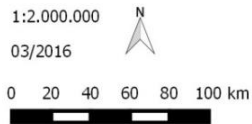
COMPLETED

Status quo on habitat connectivity



Data basis from scientific and public sector projects

Very different forms of implementation in the various federal states



Project „Habitat networking“

Validation of existing data sets

- Upper Austria ✓
- Carinthia ✓
- Styria ✓
- Salzburg ✓

- Burgenland ✓
- Lower Austria ✗
- Vorarlberg ✓
- Tyrol ✗
- Vienna ✗



LVN Kärnten

LEBENSRAUMKORRIDORE IN KÄRNTEN



LVN Steiermark

LEBENSRAUMKORRIDORE IN DER STEIERMARK



LVN Oberösterreich

WILDTIERKORRIDORE OBERÖSTERREICH



LVN Salzburg

LEBENSRAUMKORRIDORE IN SALZBURG

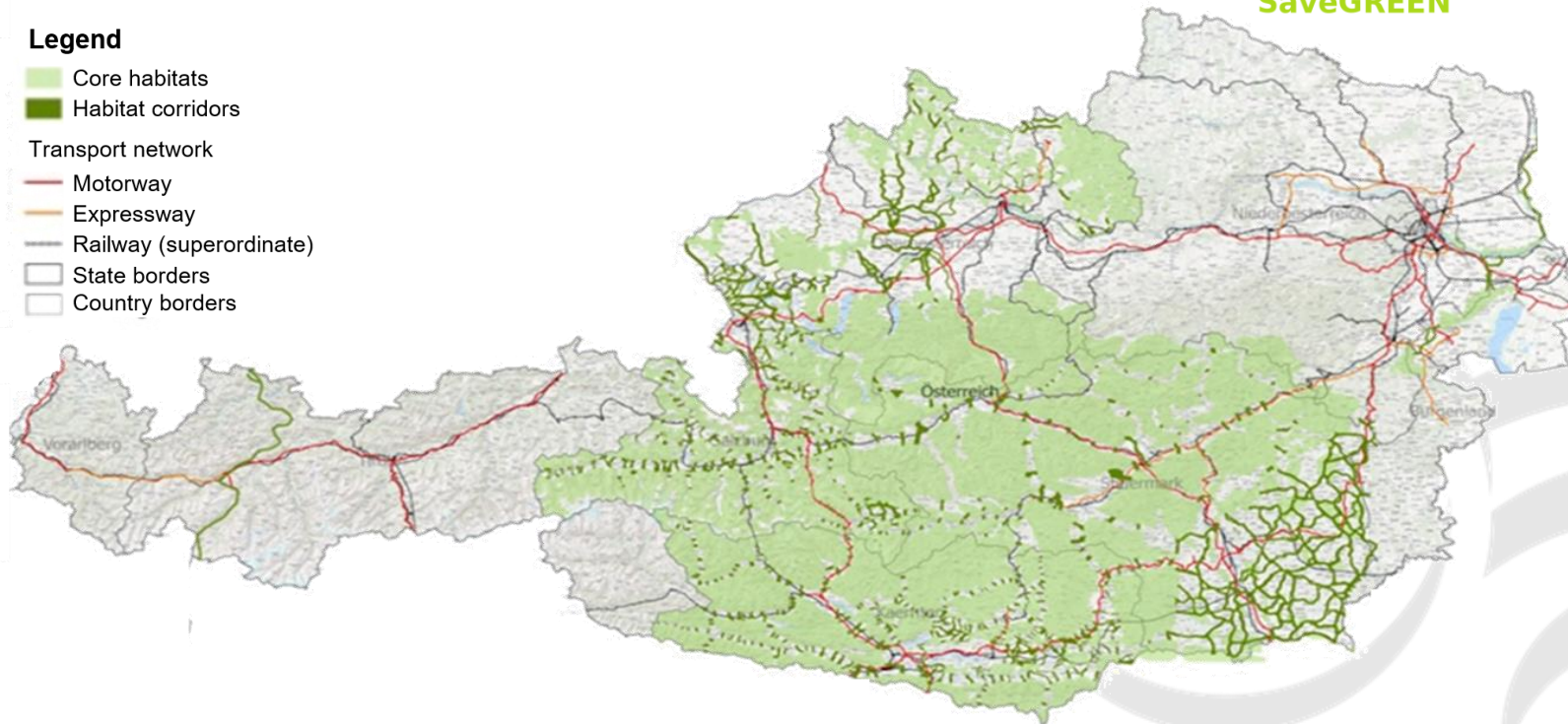
Data basis from scientific and public sector projects

Creating an Austria-wide harmonized data basis

Project „Habitat networking“

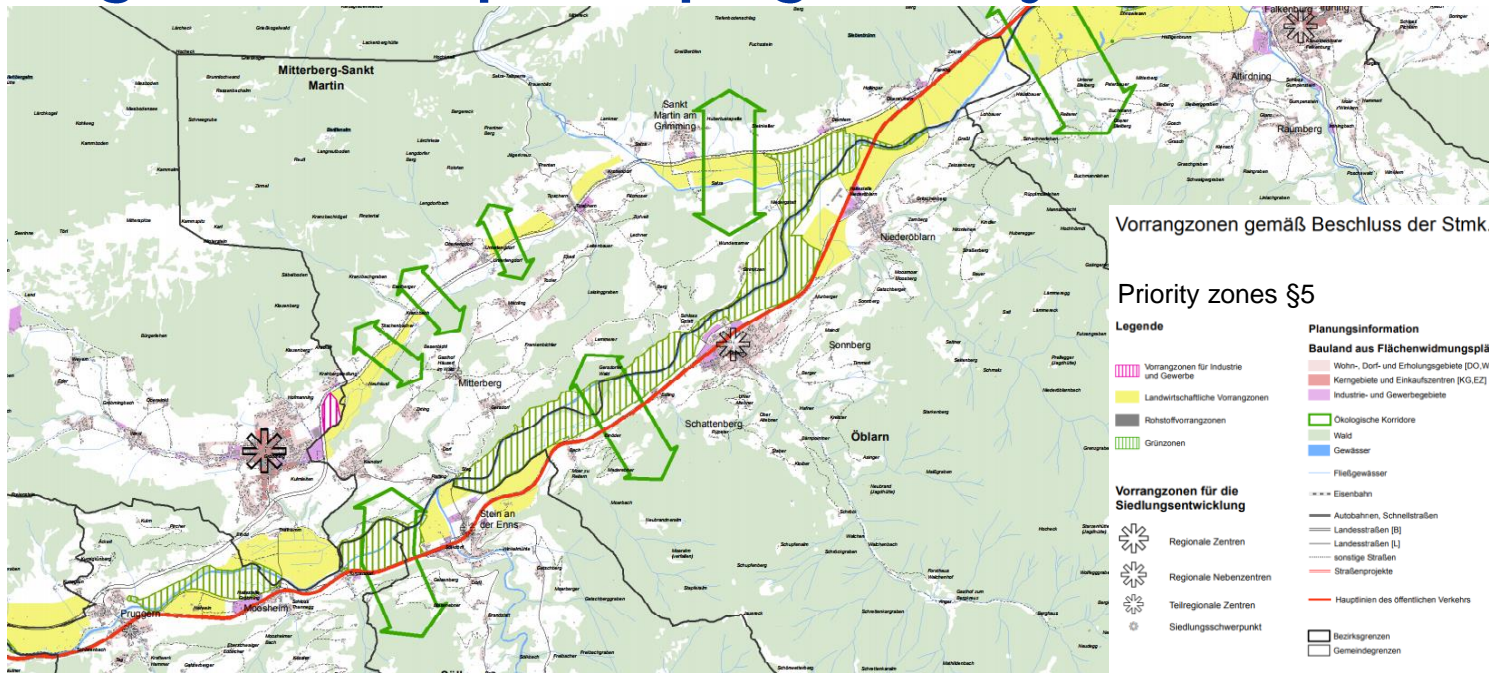
Legend

-  Core habitats
-  Habitat corridors
- Transport network
 -  Motorway
 -  Expressway
 -  Railway (superordinate)
-  State borders
-  Country borders



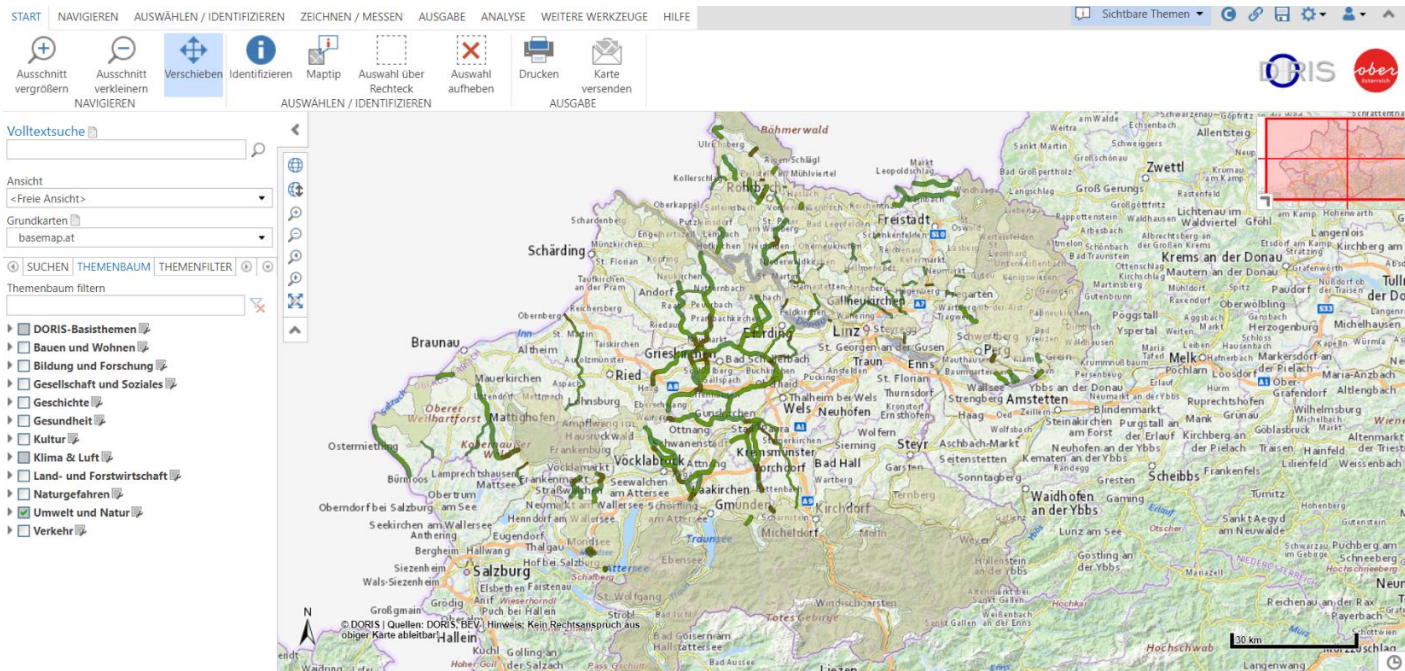
Safeguarding in spatial planning

Regional development programs Styria



Visualization in federal GIS systems

e.g. Upper Austria: “DORIS”

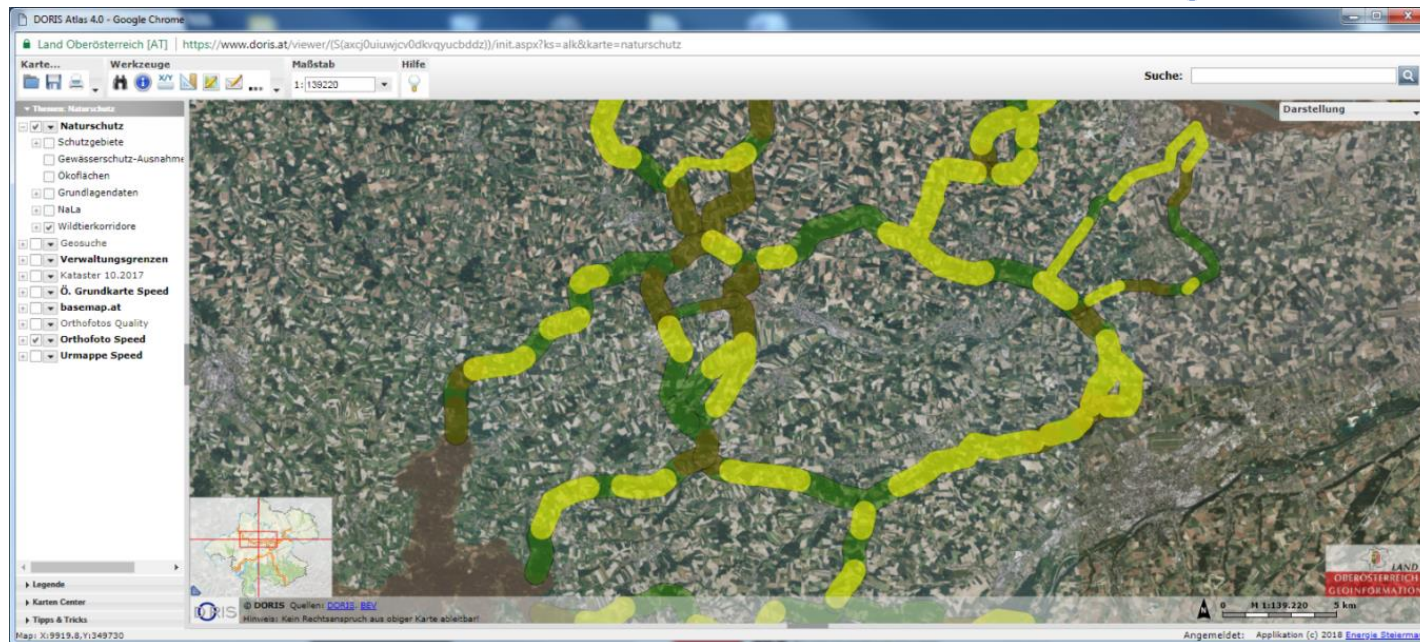


The screenshot displays the DORIS GIS interface. At the top, there is a navigation bar with options: START, NAVIGIEREN, AUSWÄHLEN / IDENTIFIZIEREN, ZEICHNEN / MESSEN, AUSGABE, ANALYSE, WEITERE WERKZEUGE, and HILFE. Below this is a toolbar with icons for zooming, moving, identifying, and printing. The main area shows a map of Upper Austria with a green highlighted region. On the left, there is a search bar and a list of themes to filter the map content. The themes include:

- DORIS-Basisthemen
- Bauen und Wohnen
- Bildung und Forschung
- Gesellschaft und Soziales
- Geschichte
- Gesundheit
- Kultur
- Klima & Luft
- Land- und Forstwirtschaft
- Naturgefahren
- Umwelt und Natur
- Verkehr

Definitions & objectives of habitat networking

e.g. Upper Austria: visualization of wildlife ecological corridors



Source: [https://www.doris.at/viewer/\(S\(axcJ0uiuwjcv0dkvqyucbddz\)\)/init.aspx?ks=alk&karte=naturschutz](https://www.doris.at/viewer/(S(axcJ0uiuwjcv0dkvqyucbddz))/init.aspx?ks=alk&karte=naturschutz)

Development of thematic focus: Habitat networking in Austria

Habitat networking in Austria as a contribution to safeguarding biodiversity (2018-2019)

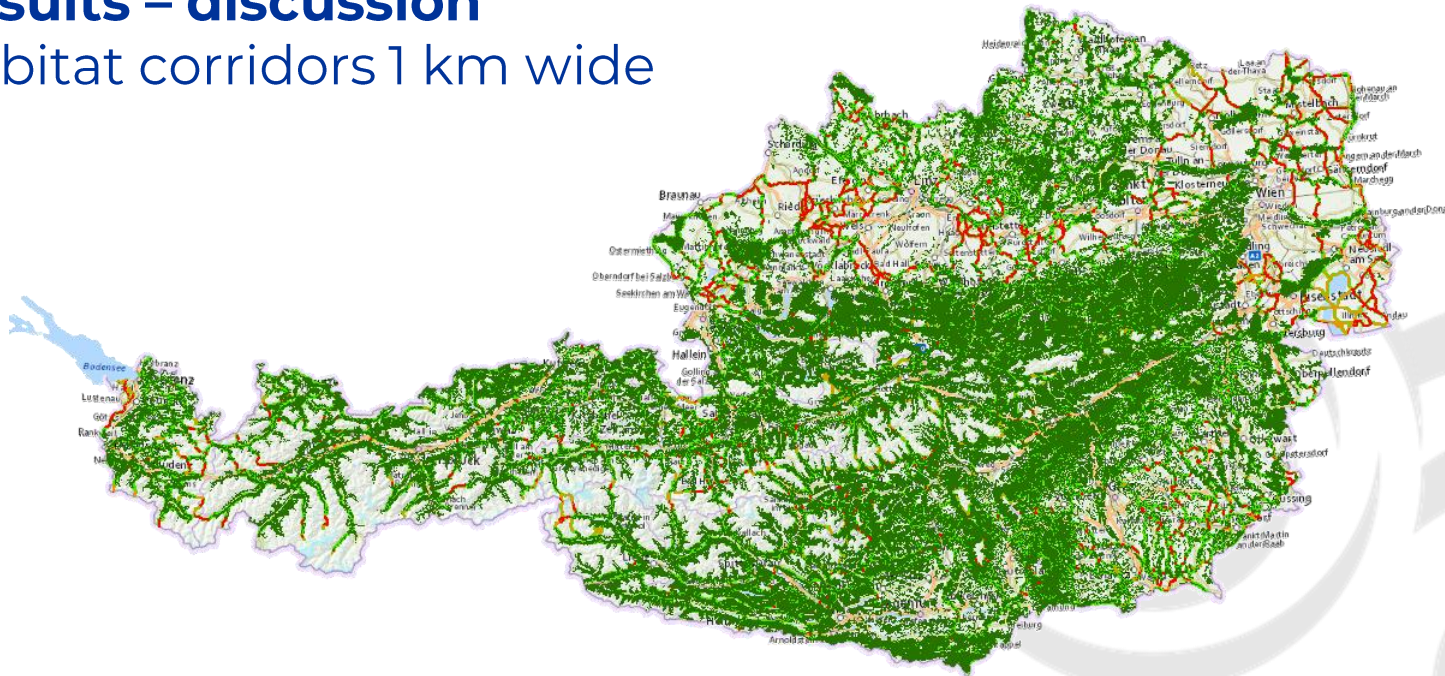
- **Uniform designation** of the **most important supra-regional habitat corridors** in Austria
= **minimum configuration** of supra-regional/national habitat corridors to **safeguard and restore habitat connectivity** and to ensure the coherence of the protected area network

COMPLETED

Austria-wide uniform designation of habitat corridors

Results – discussion

Habitat corridors 1 km wide







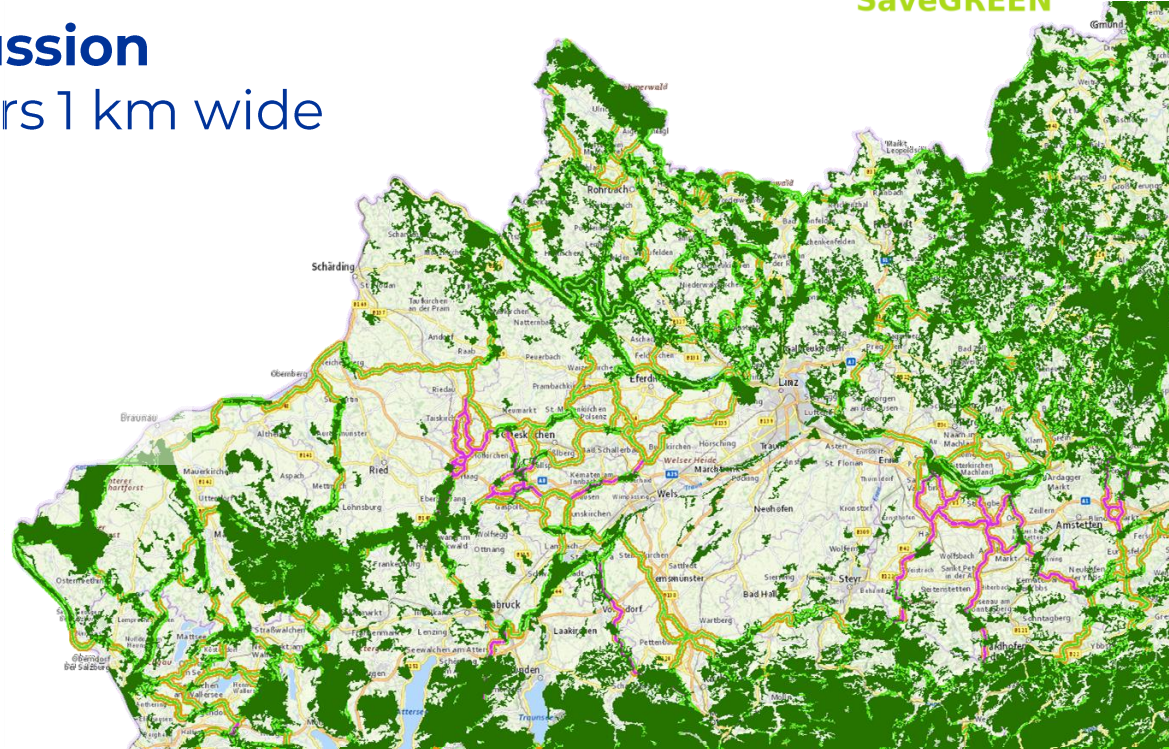
Austria-wide uniform designation of habitat corridors

Results – discussion

Habitat corridors 1 km wide

Legend

-  Within woodland
-  Outside of woodland
-  Impermeable
-  Permeable



Online portal ecological corridors

www.lebensraumvernetzung.at

www.lebensraumvernetzung.at

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Willkommen bei www.lebensraumvernetzung.at

Das Informationsportal zum Thema Lebensraumvernetzung in Österreich und den Nachbarstaaten

[Weitere Informationen](#)

Development of thematic focus: Habitat networking in Austria

Habitat networking for insects (2020-2021)

- Further development of the topic of habitat networking from **structural connectivity** to a designation of **functional connectivity**
- Habitat corridors as habitat for insects

WORK IN PROGRESS



General overview of projects

1	Analysis of habitat suitability and favorable landscape structure for insects
2	Creation of an area-wide overview of the functional connectivity of habitat corridors in Austria
3	Guideline for the assessment of regional permeability
4	Awareness raising measures for regional stakeholders
5	Visualization of the Austrian habitat corridors in the Forest Development Plan (WEP)
6	Thematic coordination center for habitat connectivity
7	Final reporting
8	Project management

Guideline for the assessment of regional permeability

- Development of a **guideline for assessing regional permeability**
 - Requested by the agricultural sector to increase planning security

Contents:

- Definition of corridor types and their main functions
- Handling of construction sites within the corridor areas
- Removal of landscape elements such as woodlots and field margins
- Fencing problematic
 - which fence types are allowed
 - duration of fencing
- Guidelines will be developed in cooperation with representatives of the Austrian Chamber of Agriculture

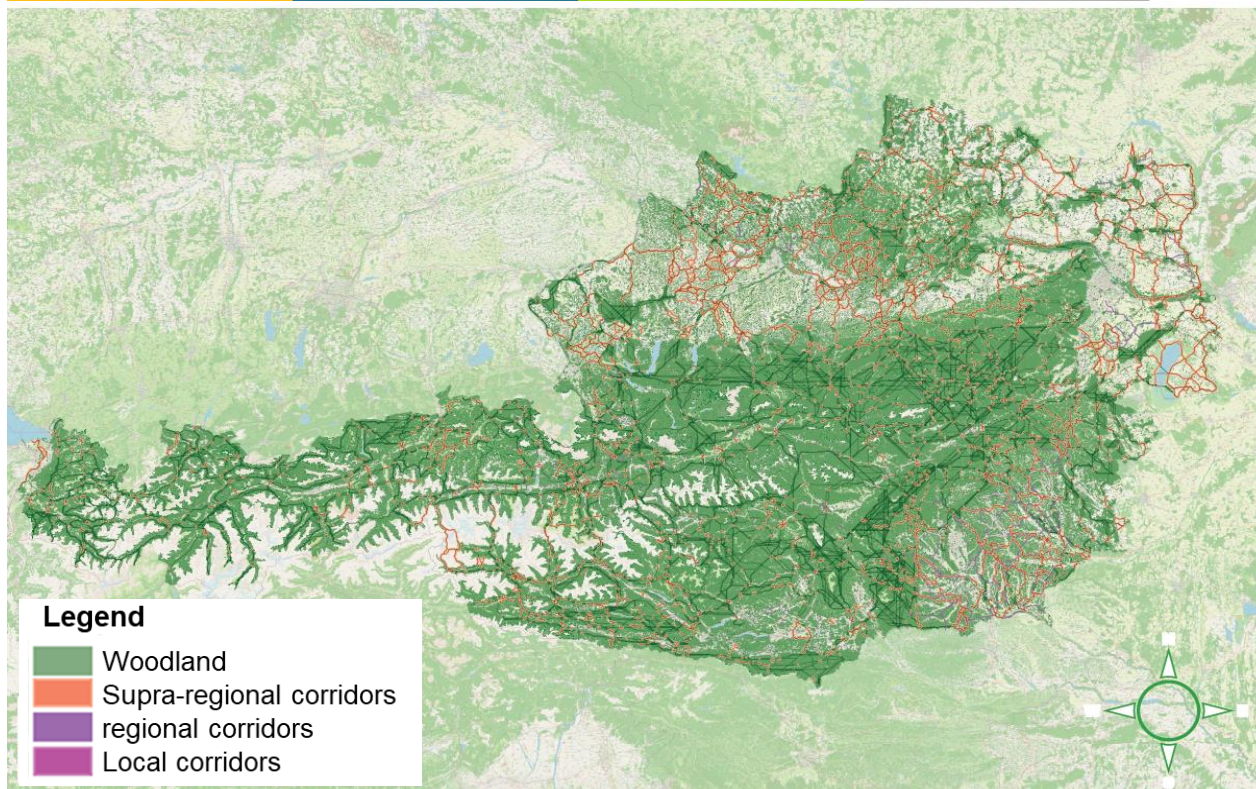
Guideline for the assessment of regional permeability

- The developed guideline provides an **important basis** for the assessment of project proposals and their impact on regional permeability, especially for **civil engineers** in the context of their
 - expertise activities (environmental impact assessments (EIA),
 - Environmental impact statements (EIS),
 - revision of zoning plans

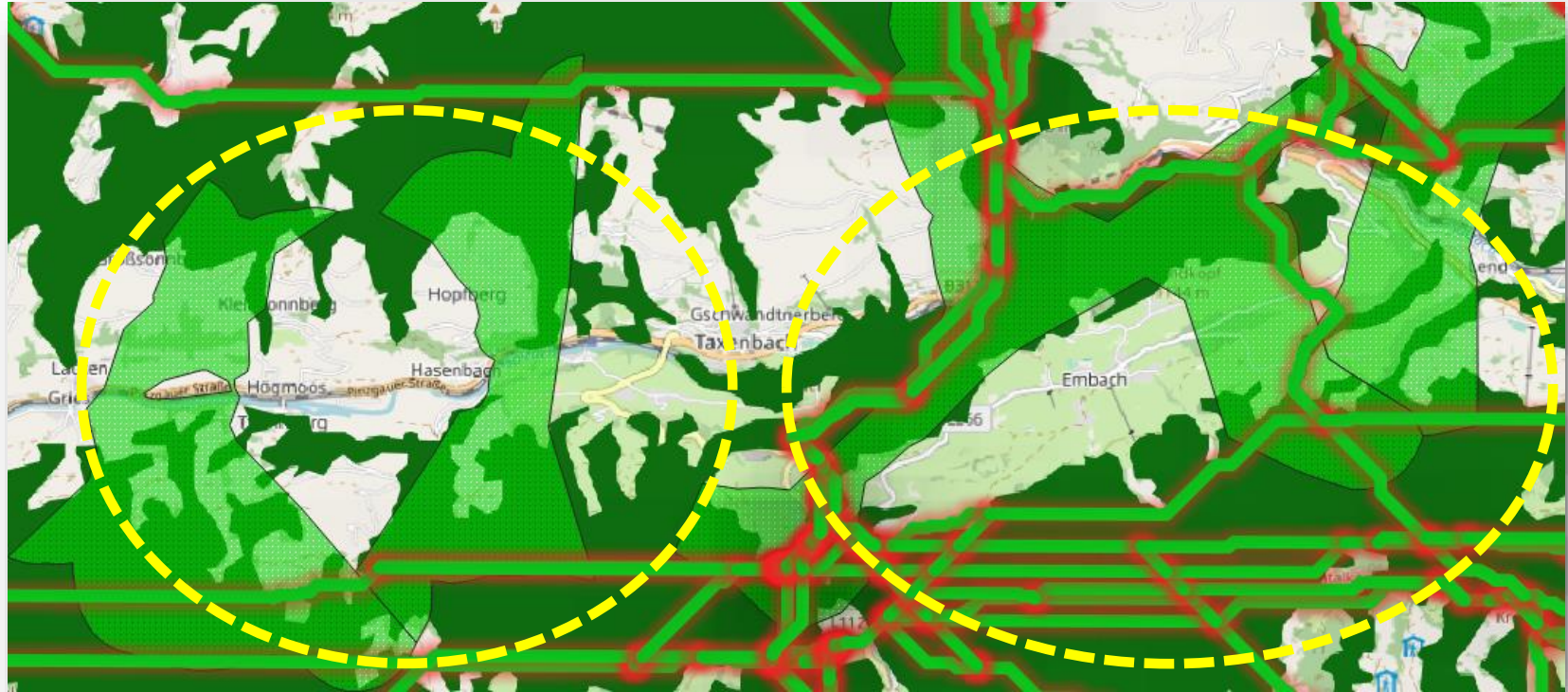
and should contribute to **objectification and transparency** of the expert opinions.

DATASET I: Integral dataset for habitat networking in Austria

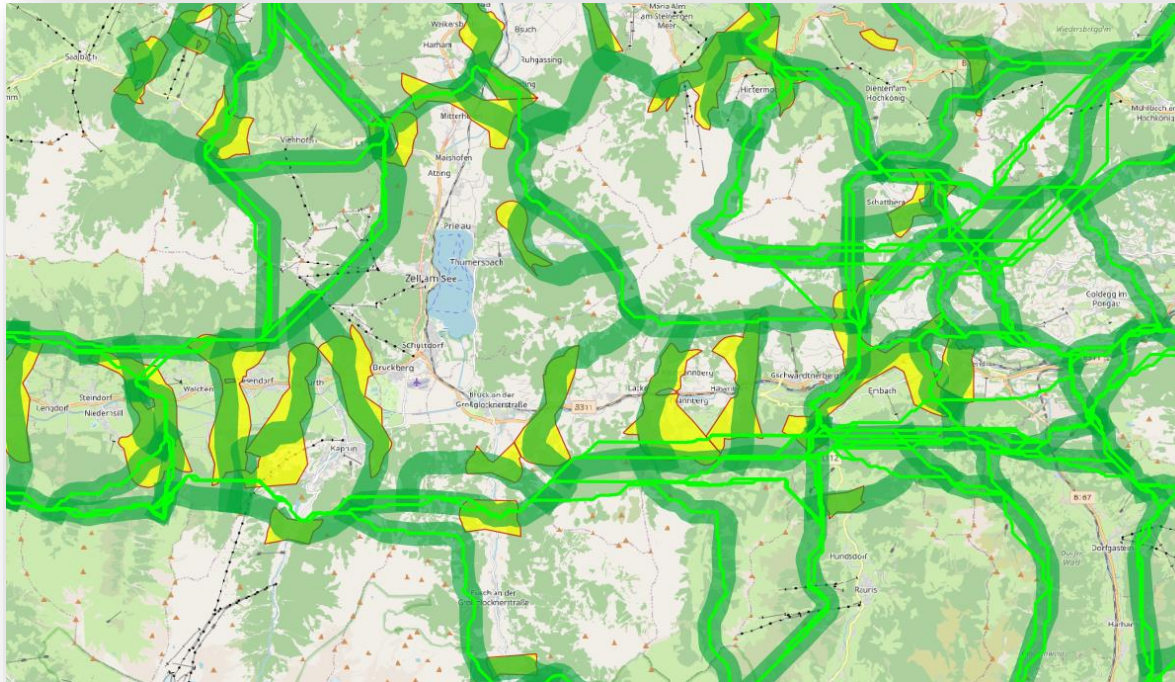
Habitat corridors Austria Current state 2022



DATASET I: Integral dataset for habitat networking in Austria

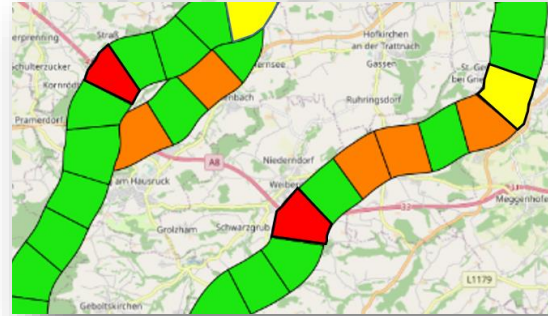
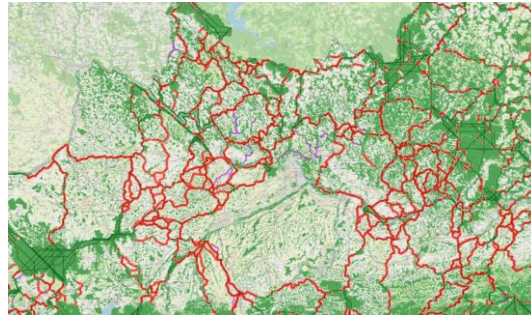


DATASET I: Integral dataset for habitat networking in Austria



DATASET II: Assessment of landscape structure and connectivity of habitat corridors Austria

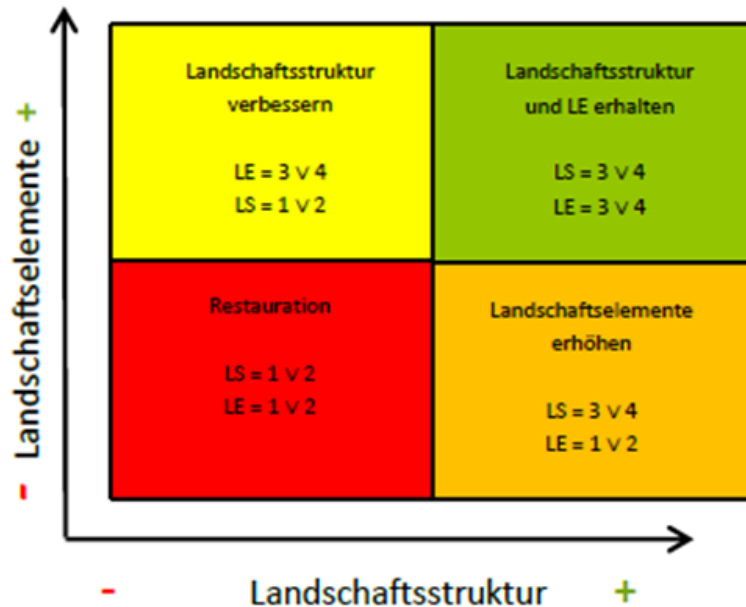
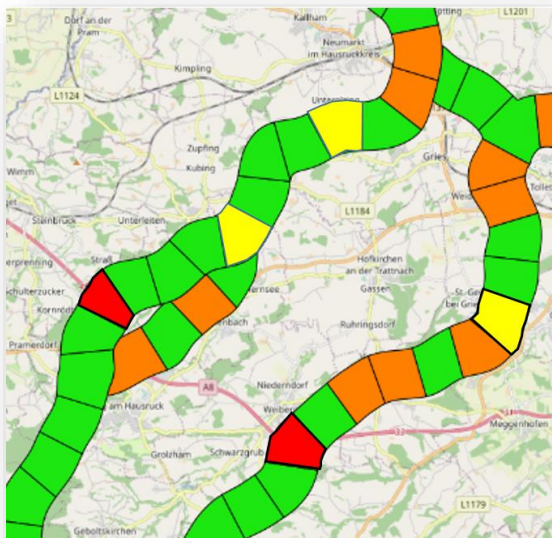
- Creation of a **comprehensive overview of the landscape structure quality and the quantity and quality of landscape elements** within the ecological corridors in Austria
 - Restoration of ecologically valuable landscape areas and habitats
 - Indication for the prioritization of compensation and replacement areas
- The developed methodology can be applied for a **cost-efficient, area-wide monitoring of functional connectivity** in Austria



Evaluation of the respective **corridor section** with regard to **permeability** (spatial structure) and the **quantitative and qualitative provision** with landscape elements

- Analysis of the landscape structure based on the **resistance values** in the respective corridor section (LS value between 0-4)
 - Calculation of resistance model based on current LC classification Sentinell II satellite image data
- Analysis of the number and quality of landscape elements in the respective corridor section (LE value between 0-4)

DATASET II: Methodology



DATASET III: Special maps on habitat networking for the Forest Development Plan Austria (WEP)

Examples from Styria

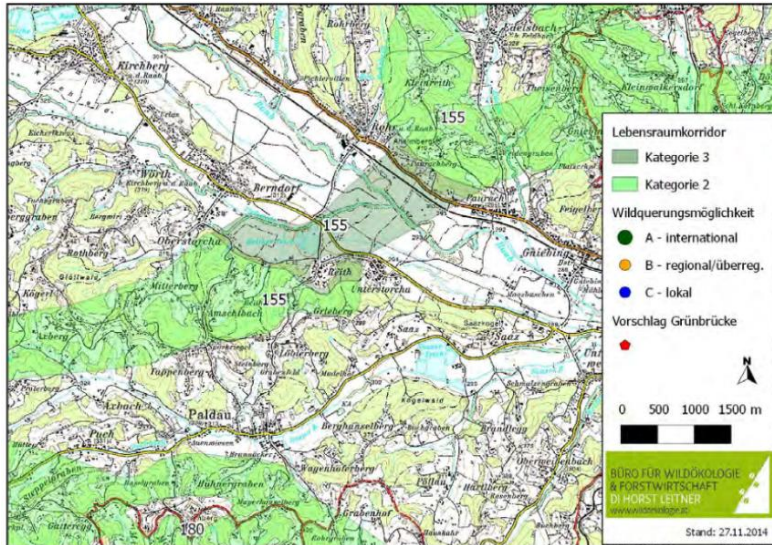


Abbildung 3-6 Lebensraumkorridor Nr. 155

Lebensraumkorridor: Kategorie 3 = sehr hoher Schutzbedarf, Kategorie 2 = hoher Schutzbedarf; Wildquerungsmöglichkeit an Autobahnen und Schnellstraßen: A = international, B = regional/überregional, C = lokal (VÖLK ET AL. 2001); Standortvorschlag für Grünbrückennachrüstung (VÖLK ET AL. 2001)

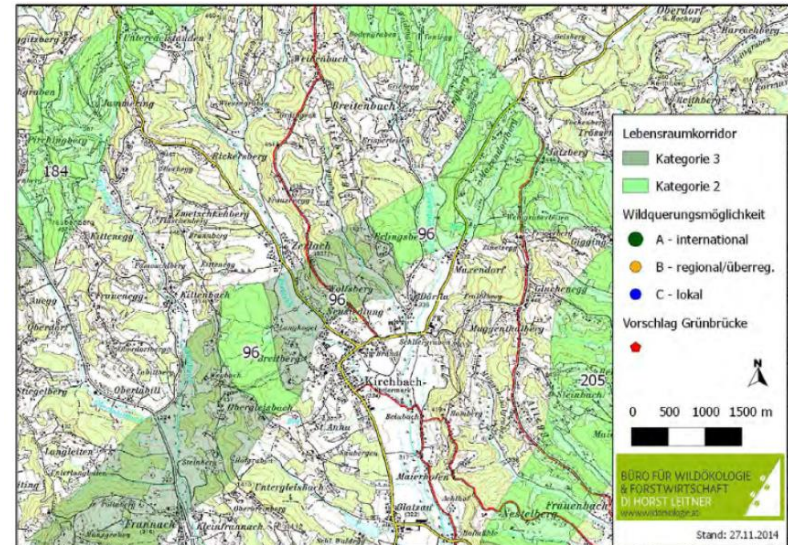
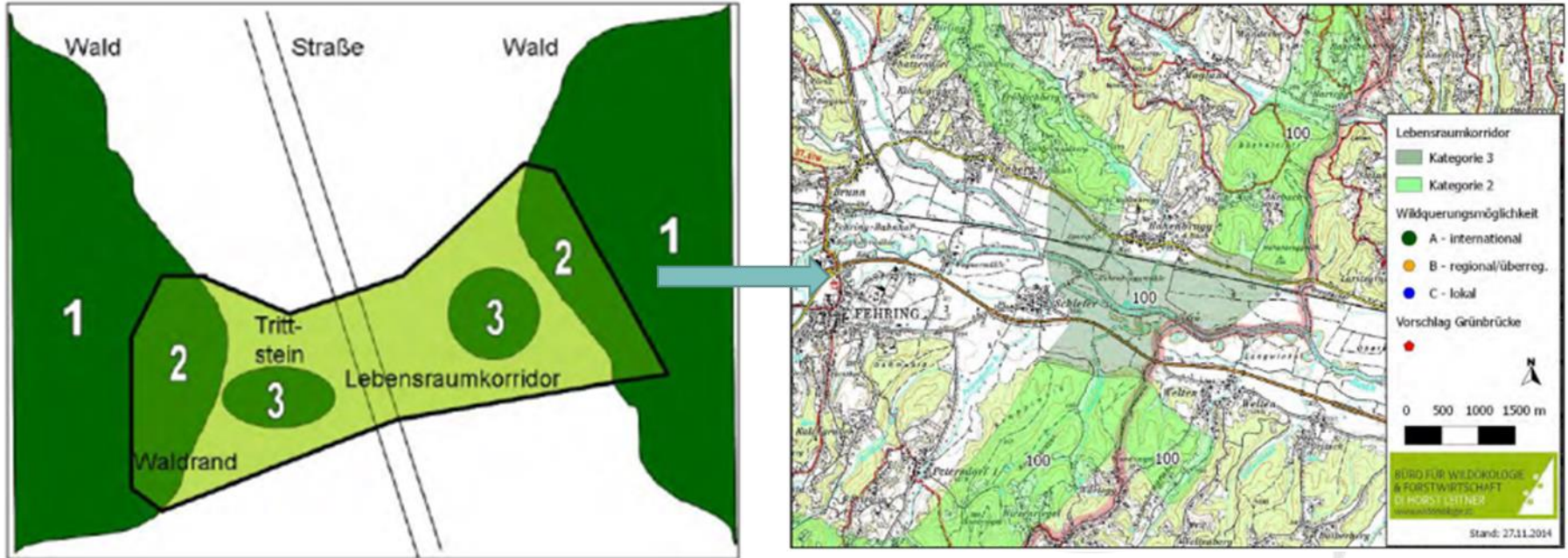


Abbildung 3-7 Lebensraumkorridor Nr. 96

Lebensraumkorridor: Kategorie 3 = sehr hoher Schutzbedarf, Kategorie 2 = hoher Schutzbedarf; Wildquerungsmöglichkeit an Autobahnen und Schnellstraßen: A = international, B = regional/überregional, C = lokal (VÖLK ET AL. 2001); Standortvorschlag für Grünbrückennachrüstung (VÖLK ET AL. 2001)

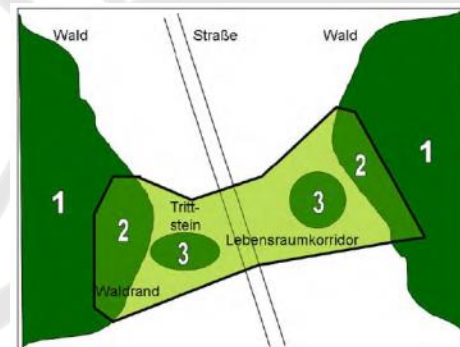
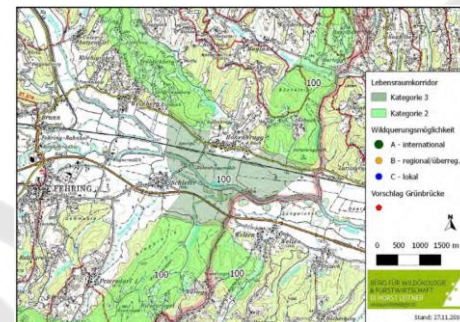
Visualization of Austrian habitat corridors in the Forest Development Plan (WEP)

Cartographic processing and automation



Habitat corridors as a special map

- Protection need for Habitat Connectivity:
 - **Category 3** - very high protection needs: bottlenecks, forest islands, stepping stone biotopes, incl. non-forest areas
 - **Category 2** - high need for protection: forest edge areas
 - **Category 1** - need for protection: forest areas outside the corridor area
- Non-forest areas
 - Part of the corridor
 - Categorized in the same way as forest areas
 - Potential replacement afforestation areas (§ 18 FG)



Source: H. Leitner (2014)

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