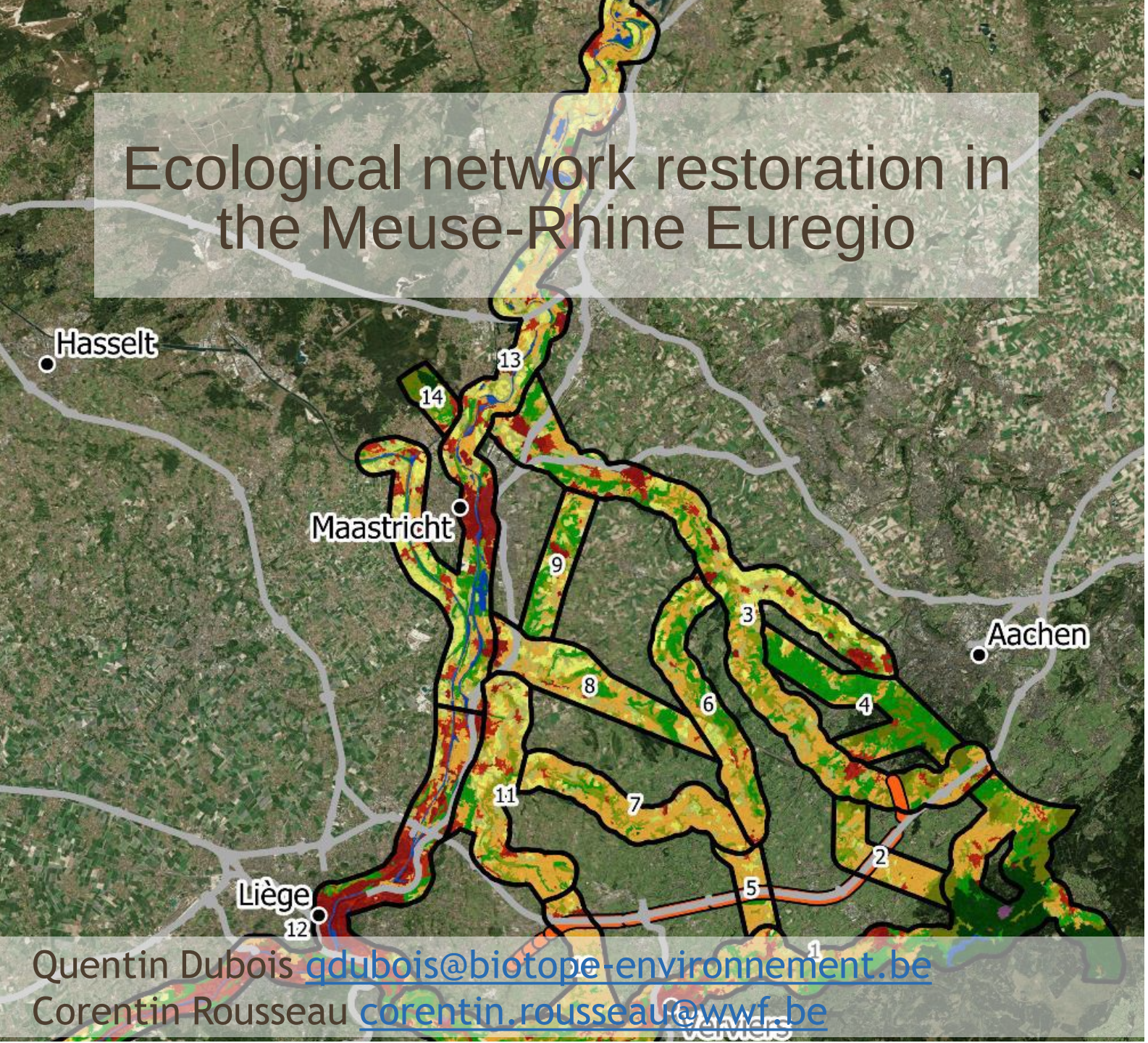
Ecological network restoration in the Meuse-Rhine Euregio



Quentin Dubois qdubois@biotope-environnement.be
Corentin Rousseau corentin.rousseau@wwf.be

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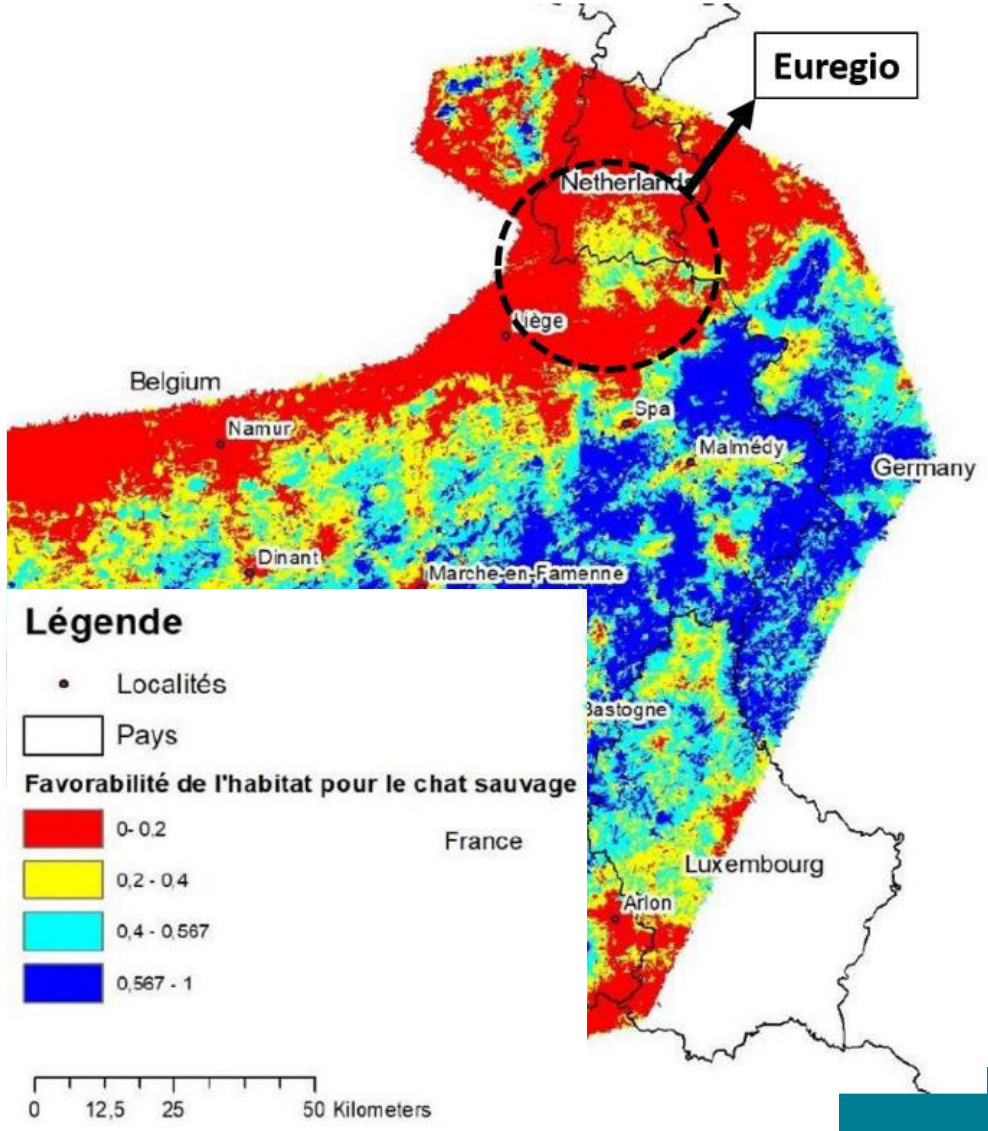
Introduction

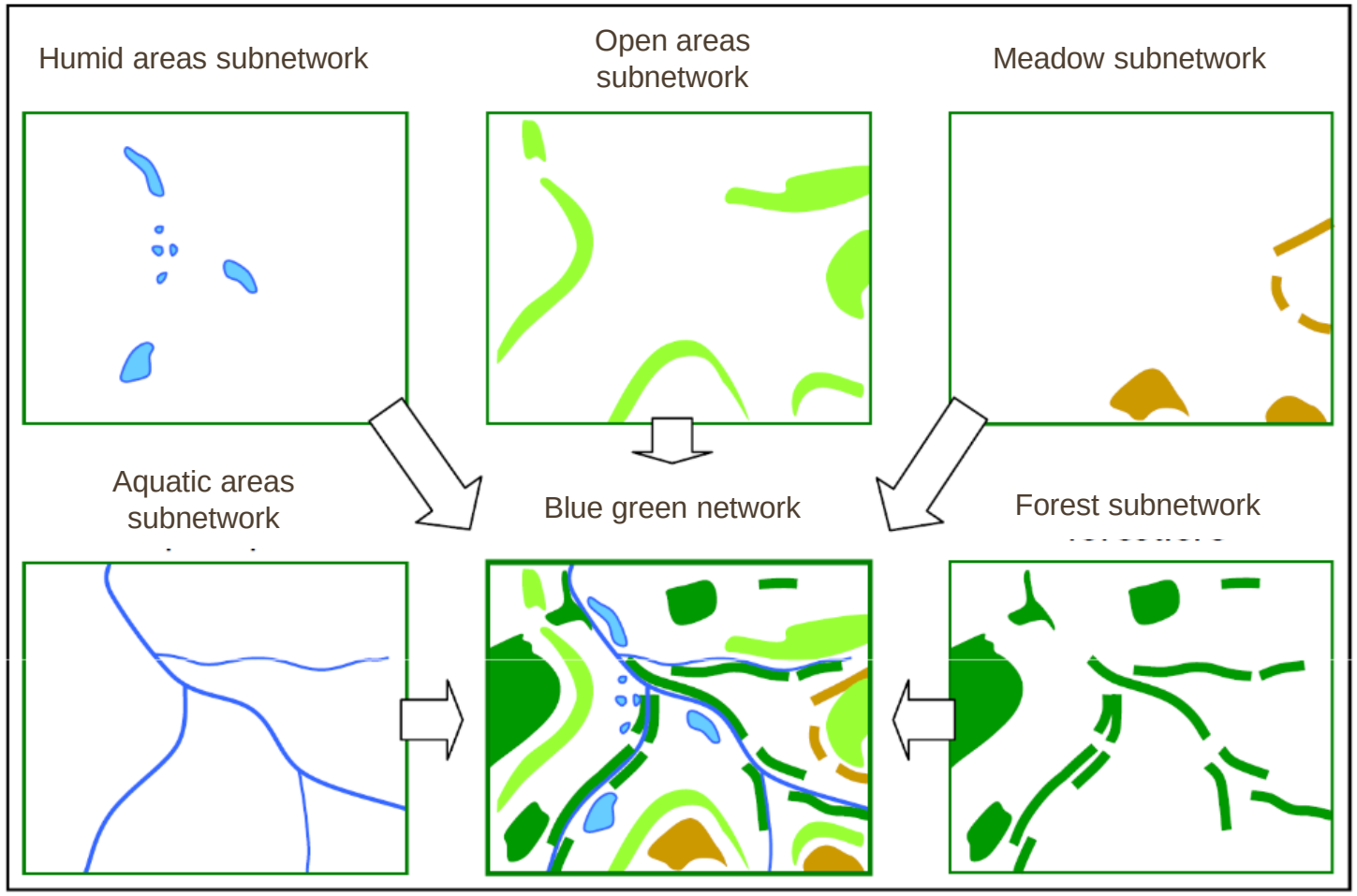
- WWF Belgium - return of wildlife in a highly fragmented context by protecting and restoring connectivity
- Euregio crucial for otter and wildcat conservation → the region is strategically located
- Euregio - between Aachen, Hasselt, Liège and Maastricht
- Main threats to biodiversity include urbanization, agricultural intensification and industrial development

- **Our aim was to provide a decision-making tool associated with connectivity**



Modified from Delangre et al. 2019

Ecological network



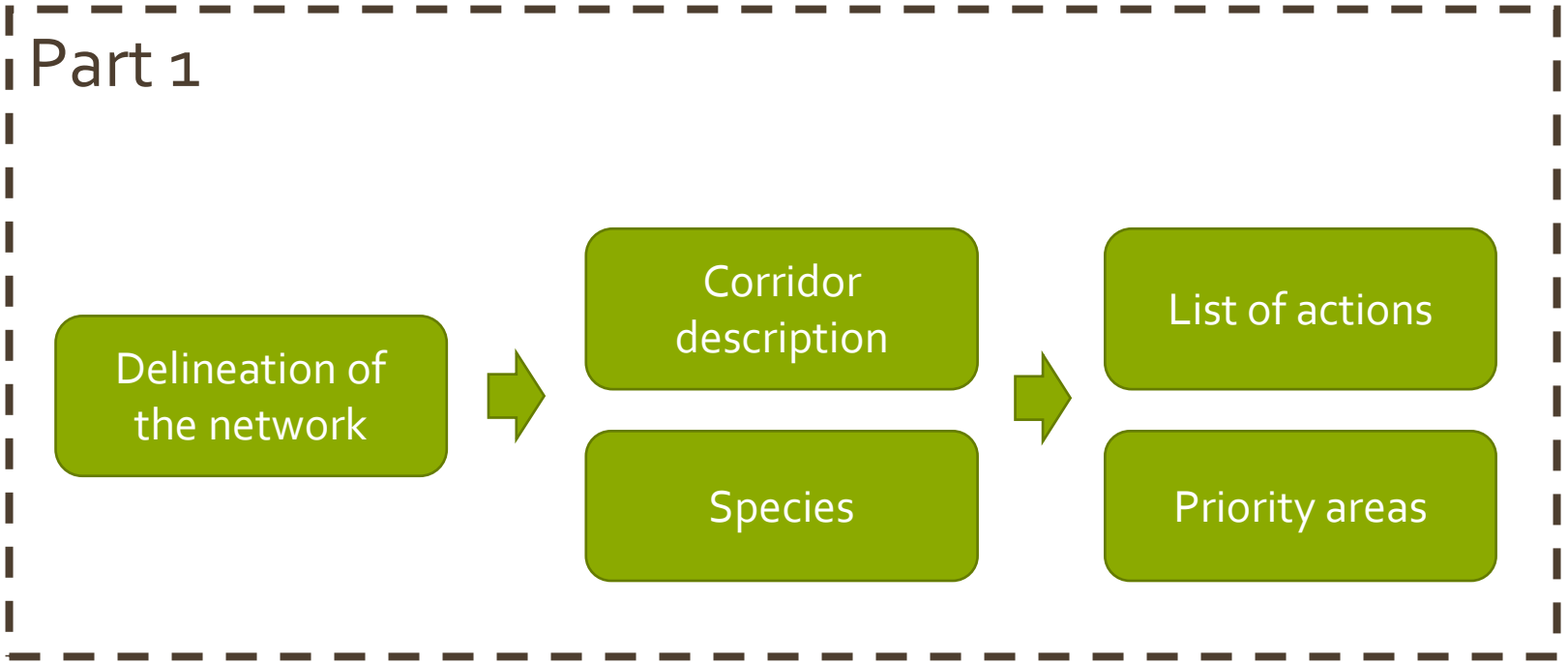
Translated from Allag-Dhuisme et al. 2010

General approach

Workshop – 3 Countries Park

General approach

Workshop – 3 Countries Park



General approach

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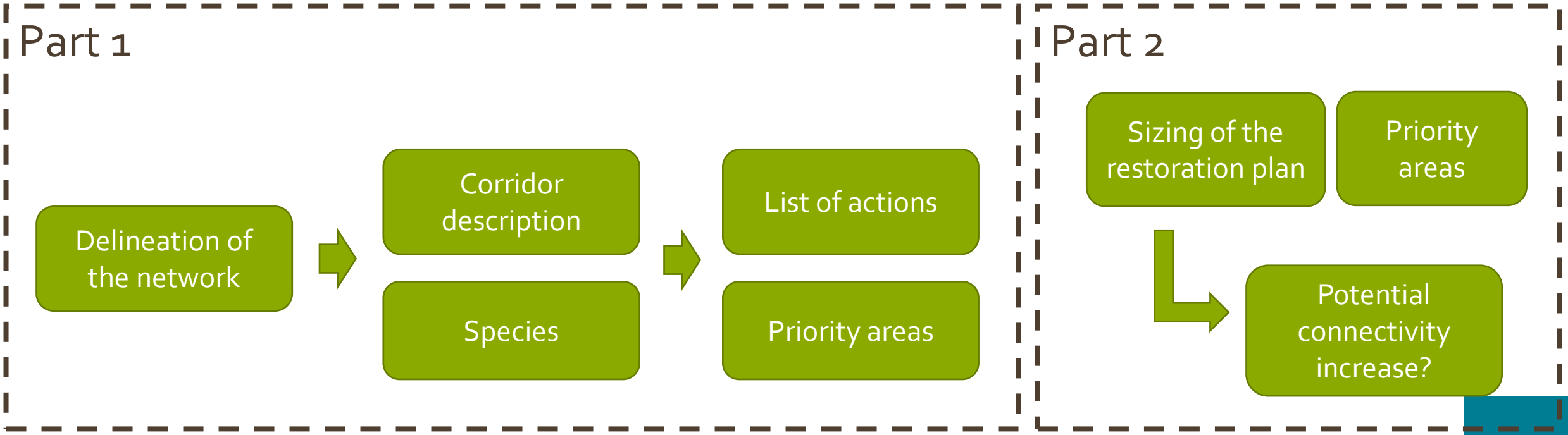

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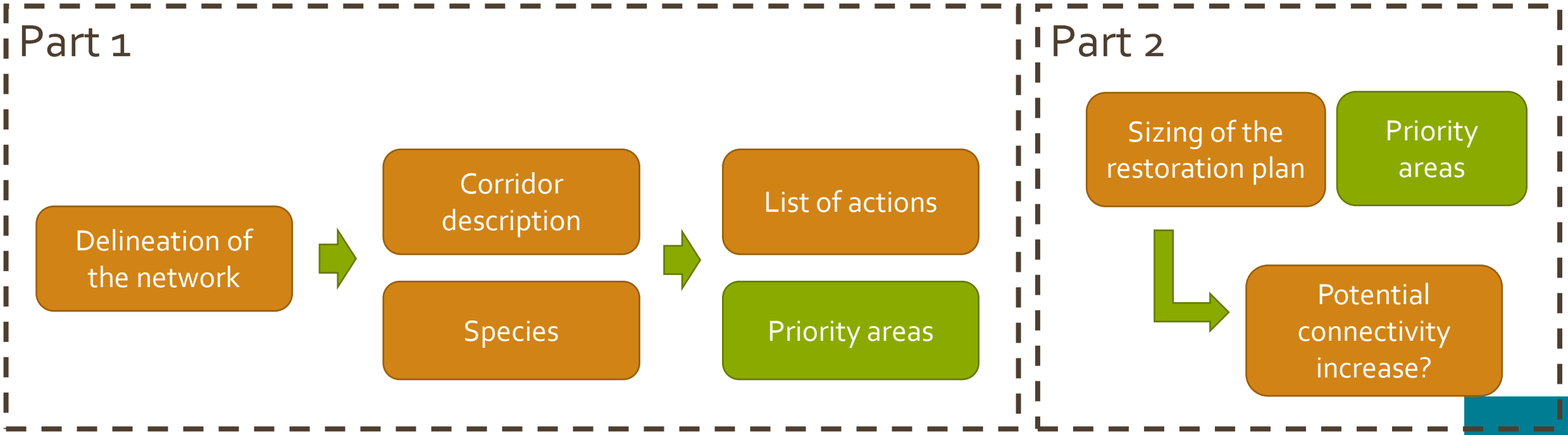
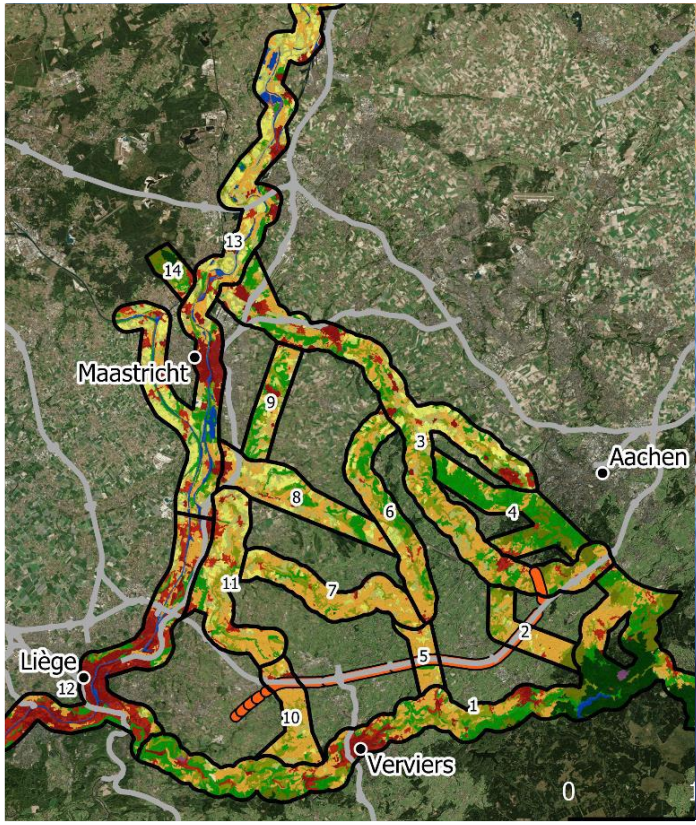


Ecological network construction and description



Ecological network

- Main guidelines
  - **Backbone is the blue sub network**
  - **Build the green subnetwork around it**
  - **Integrate results of previous studies on the wildcat**
  - **Integrate N2000 as much as possible**

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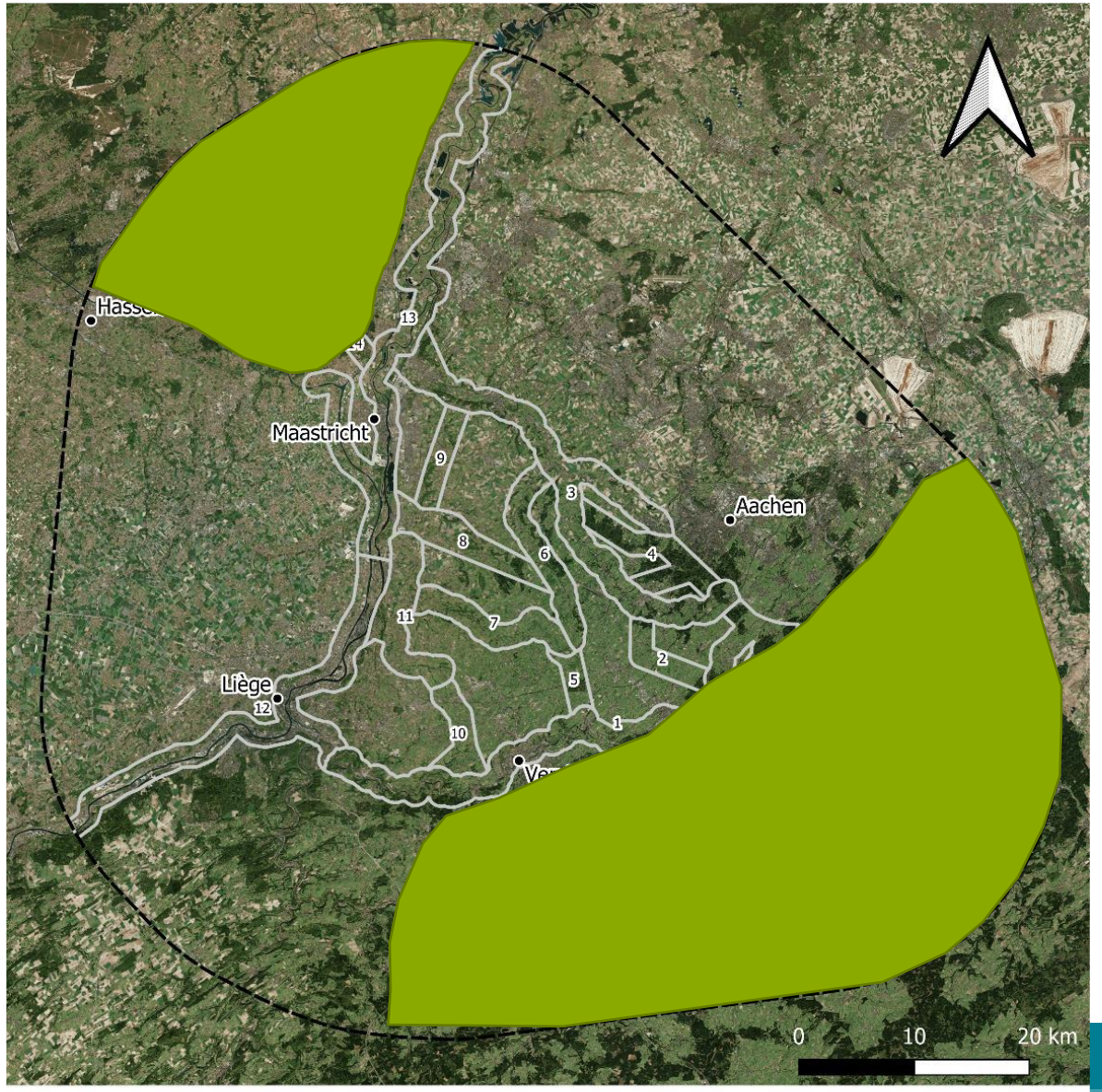

Source: aerial pictures : Bing ; Map creation : Biotope Environnement, 2020

Ecological network

- Main guidelines
  - **Backbone is the blue sub network**
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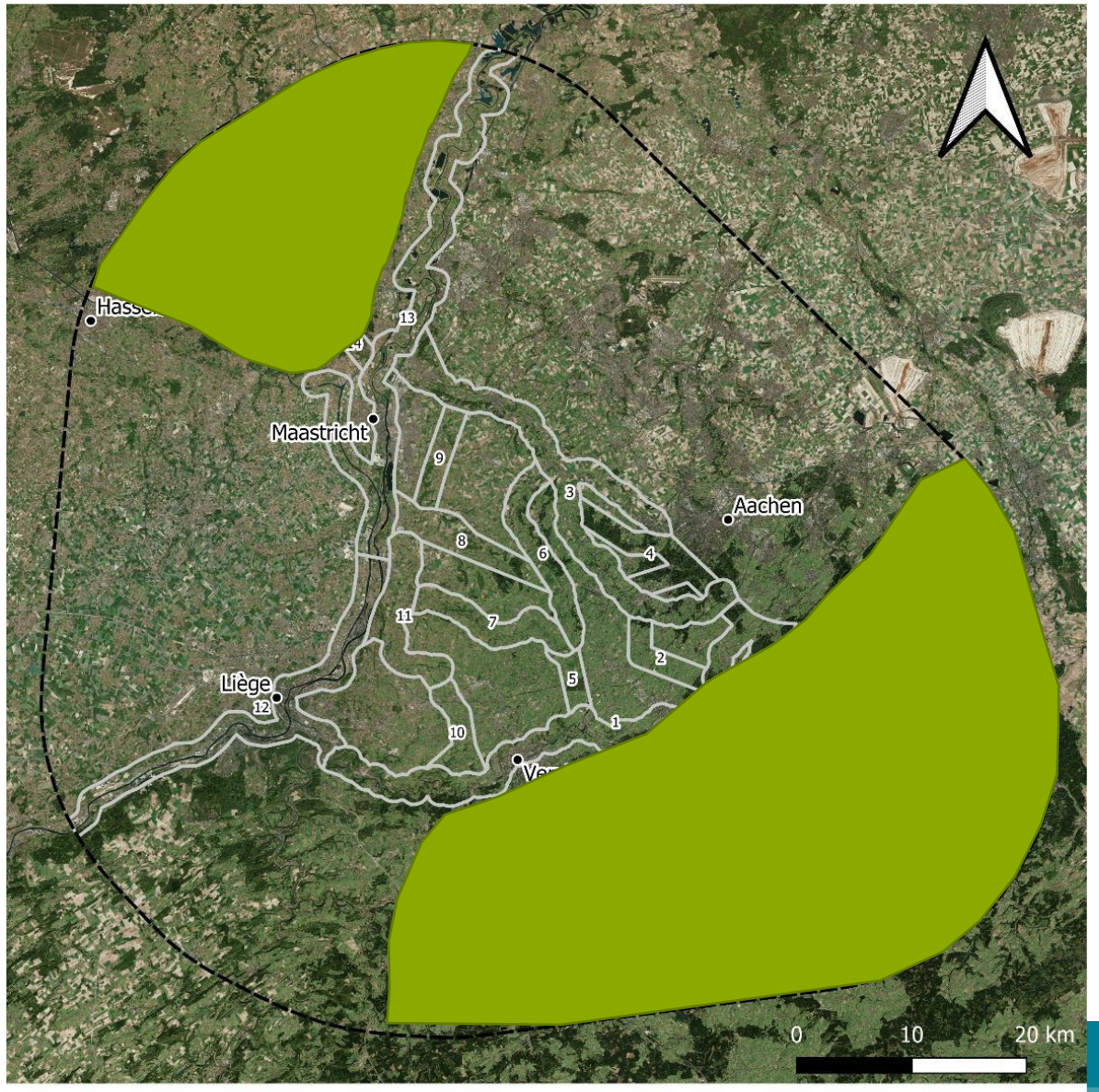
- Ecopatches used to describe the main soil occupancy categories



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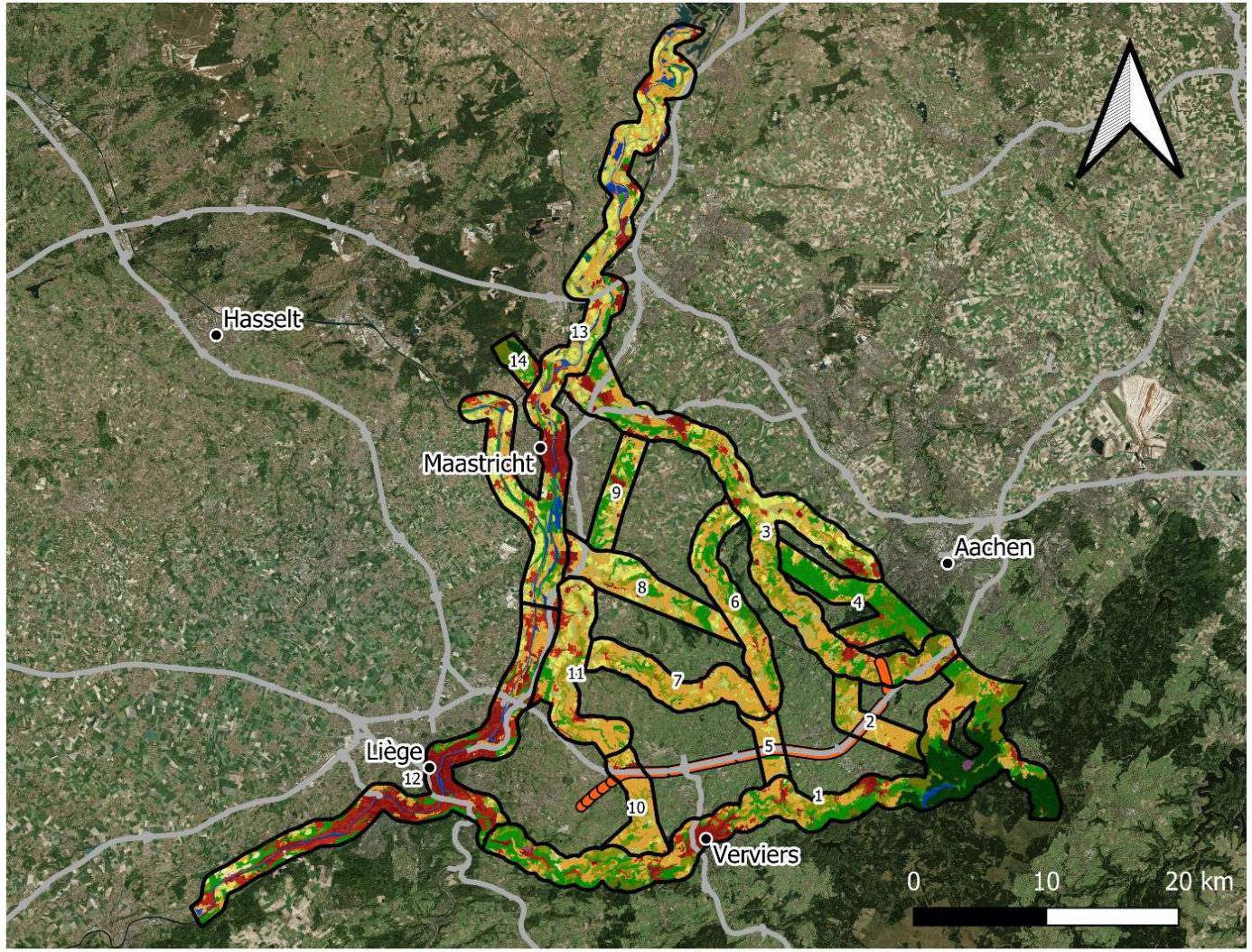
Ecological network



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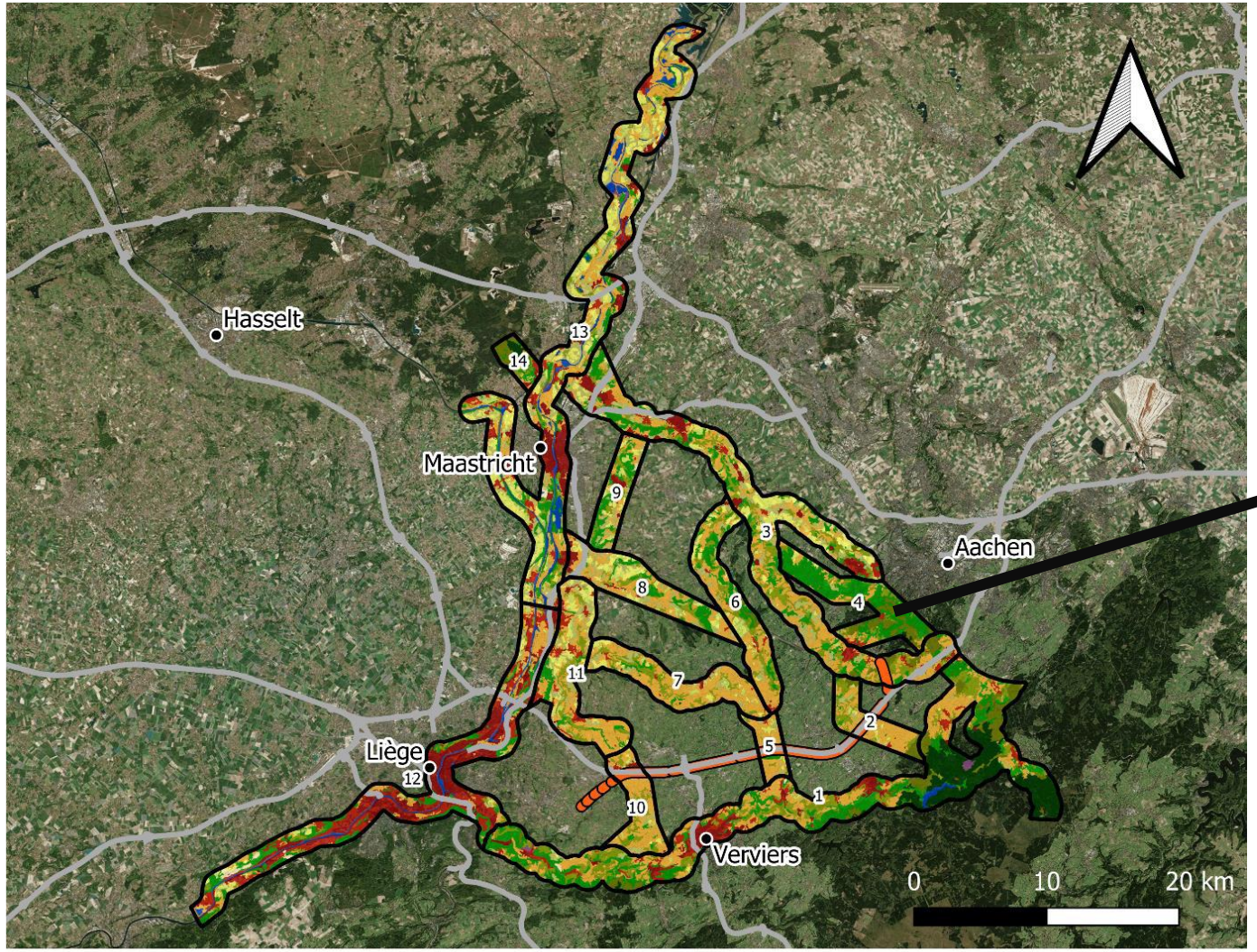
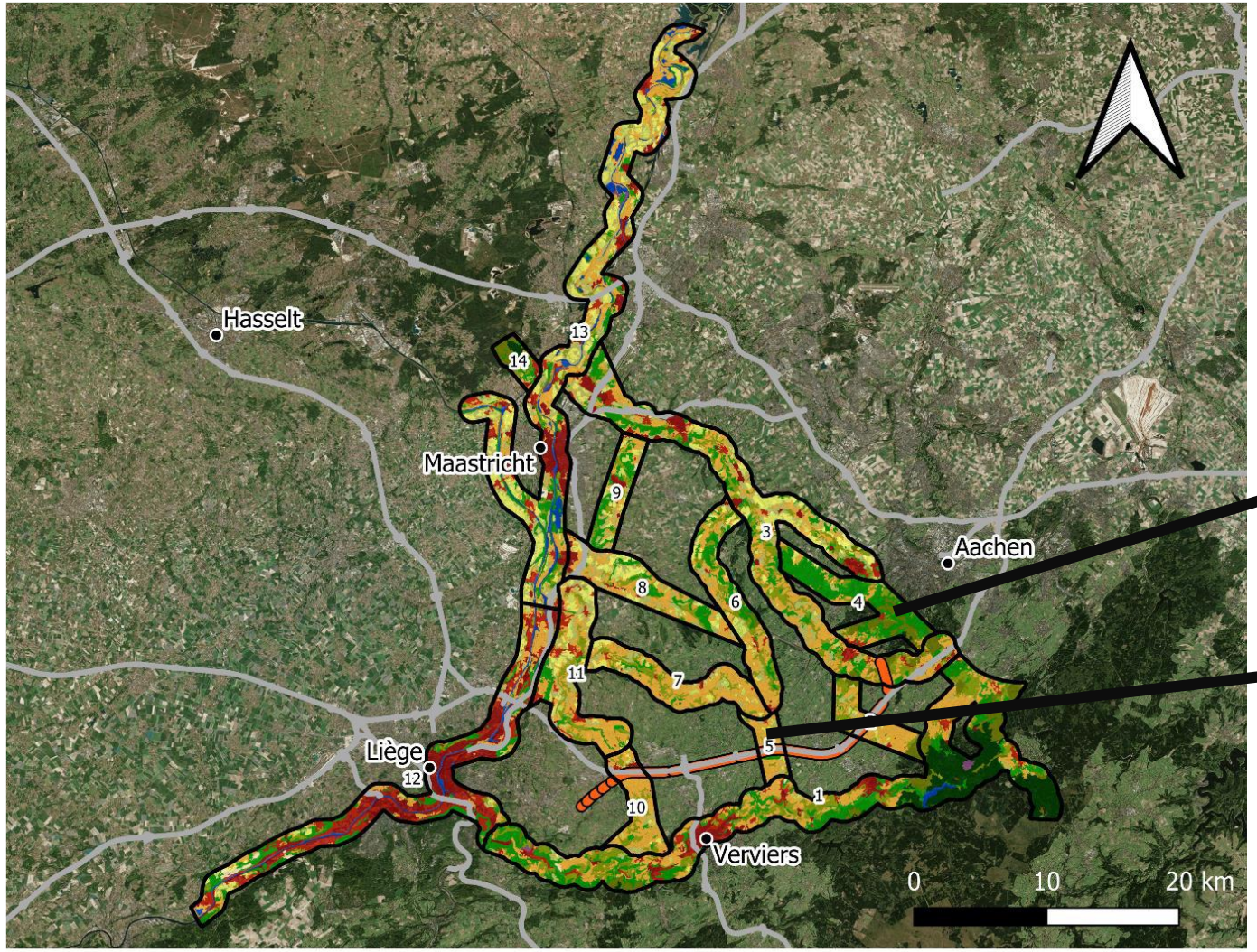
Ecological network



LifeWatch BELGIUM ➡ Ecopatche

Mainly forested

Ecological network



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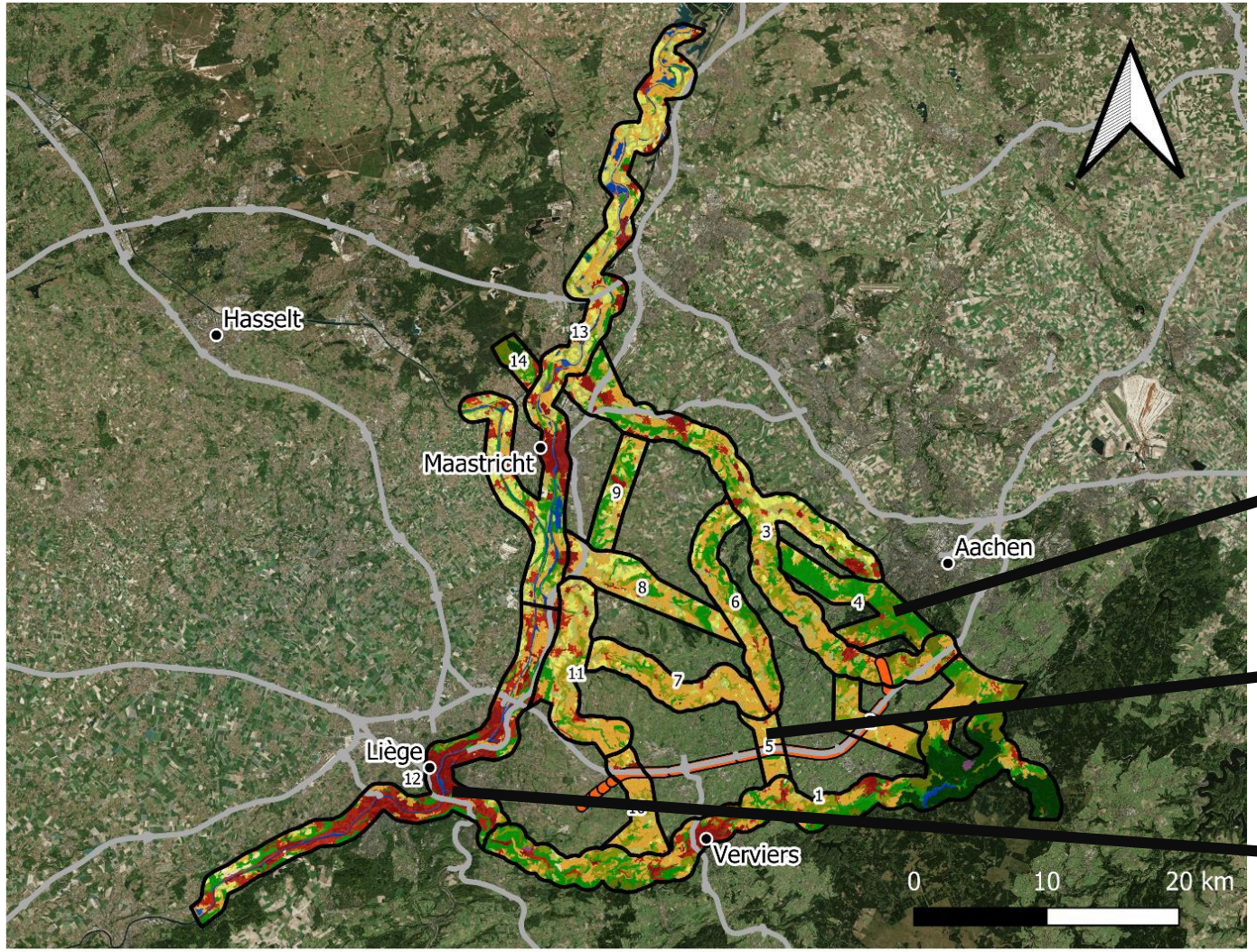
Mainly forested

Mainly agricultural

Ecological network



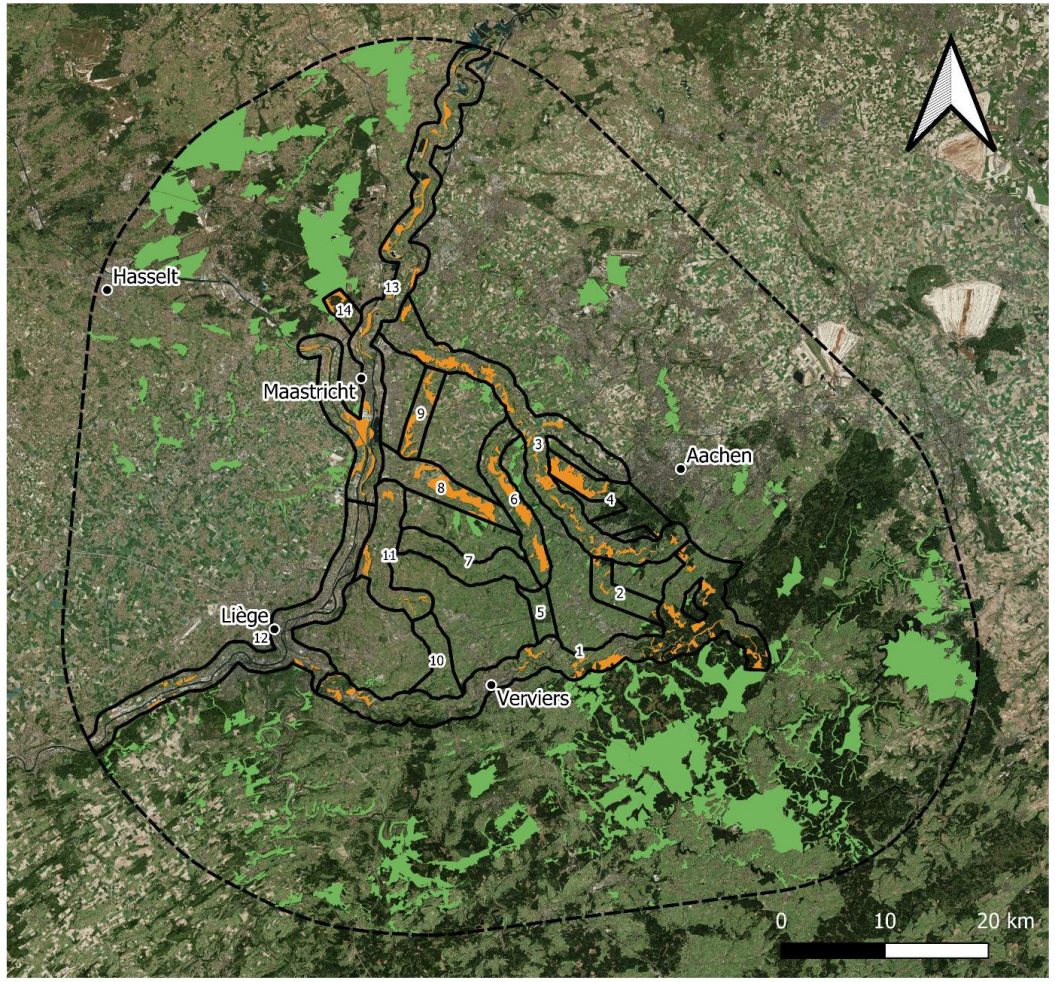
LifeWatch BELGIUM ➡ Ecopatche

Mainly forested

Mainly agricultural

Densily urbanized

Which species of Community interest might benefit form this network?



Euregio
Ecological corridors
Natura 2000 sites (inside the network)
Natura 2000 sites (outside the network)

Source: aerial pictures : Bing ; Map creation : Biotope Environnement, 2020

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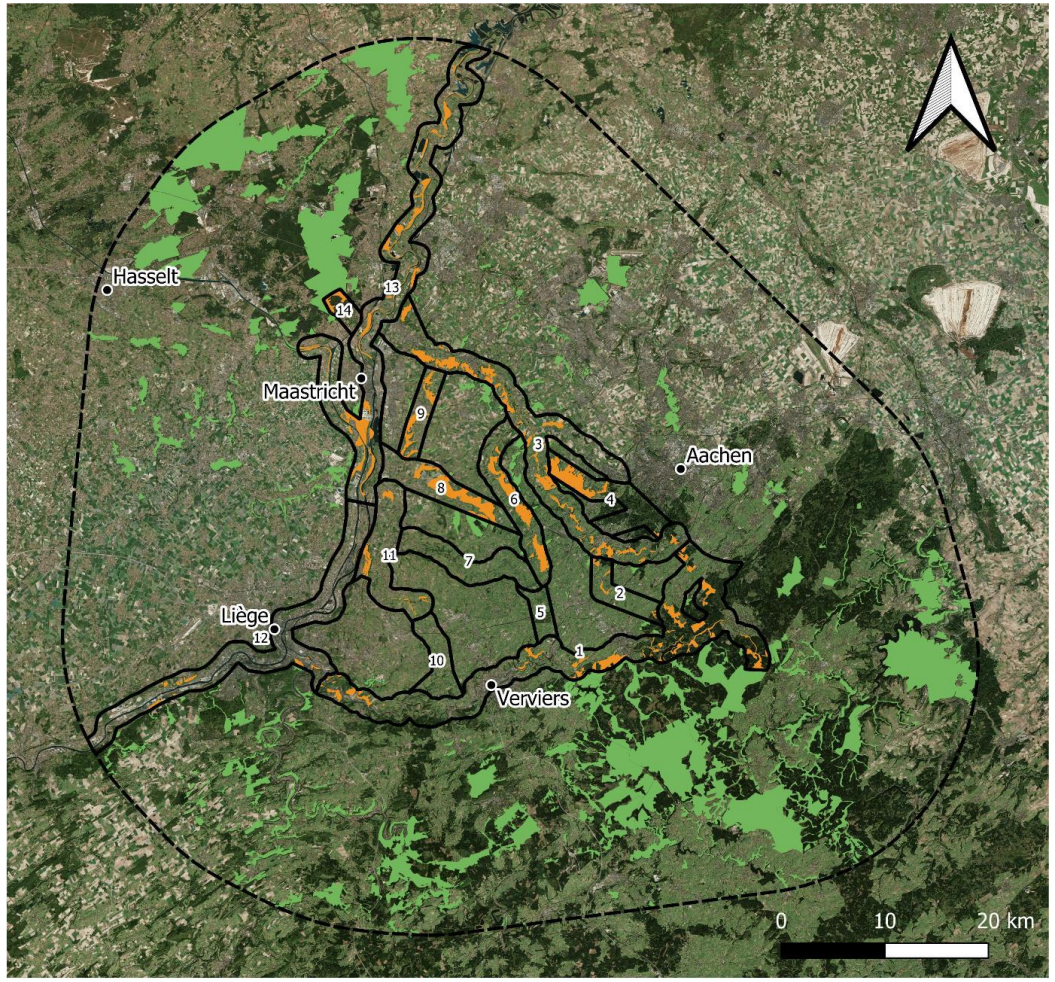


Euregio
Ecological corridors
Natura 2000 sites (inside the network)
Natura 2000 sites (outside the network)

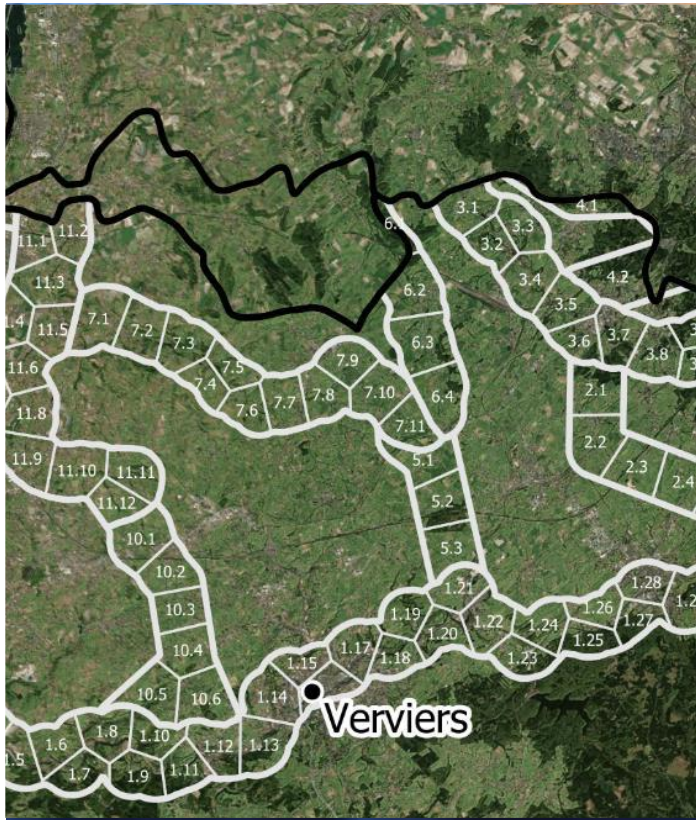
Source: aerial pictures : Bing ; Map creation : Biotope Environnement, 2020

Sub-network	Species (or group)
Rivers and wetlands	Eurasian otter (*Lutra lutra*)
	Crested newt (*Triturus cristatus*)
	European beaver (*Castor fiber*)
	Violet Copper (*Lycaena helle*)
	Common midwife toad (*Alytes obstetricans*)
	Common kingfisher (*Alcedo atthis*)
Woodlands	Wildcat (*Felis silvestris*)
	Stag beetle (*Lucanus cervus*)
	Black stork (*Ciconia nigra*)
	Black woodpecker (*Dryocopus martius*)
Bocage and semi-open habitats	Red-backed shrike (*Lanius collurio*)
	Hazel dormouse (*Muscardinus avellanarius*)
Open habitats	Wood lark (*Lullula arborea*)
	Smooth snake (*Coronella austriaca*)
	European nightjar (*Caprimulgus europaeus*)
General network	Bats (*Myotis* sp.)

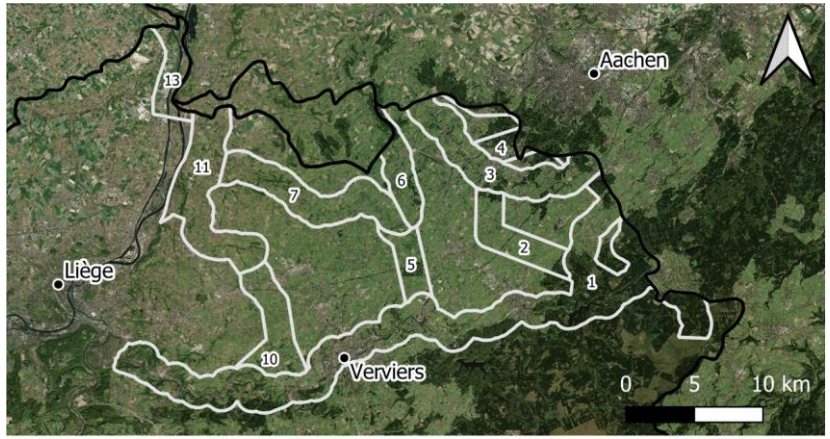
Main proposed actions

- Adapting forest management
- Hedgerow planting
- Pond creation and wetland restoration
- Riverbank restoration
- Highway and railway passages
- Urban green belts
- Restoration of the otter habitat

Towards operationalization



Subdividing the network



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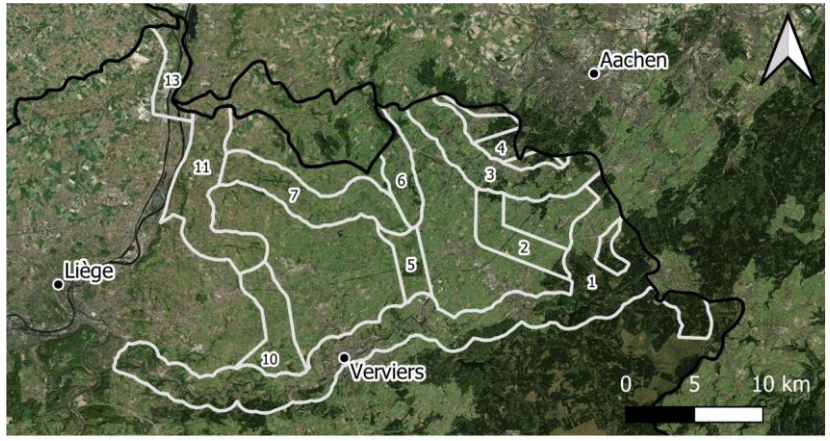

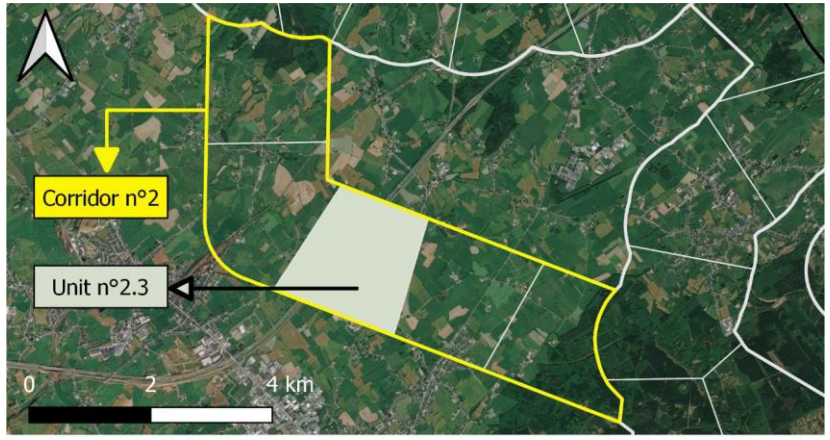

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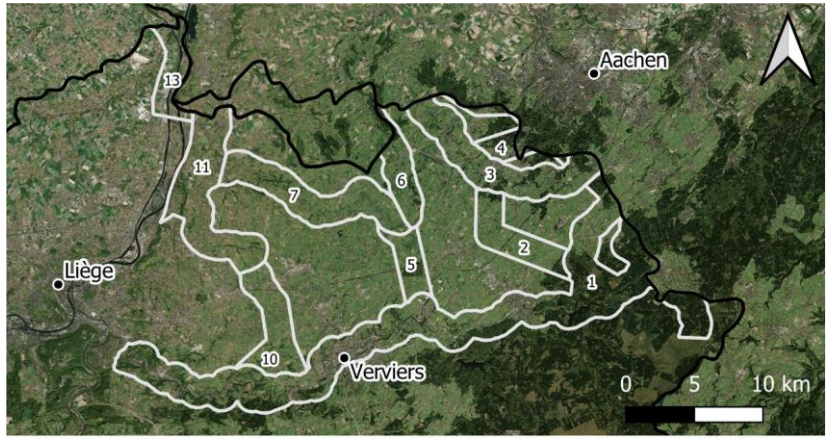

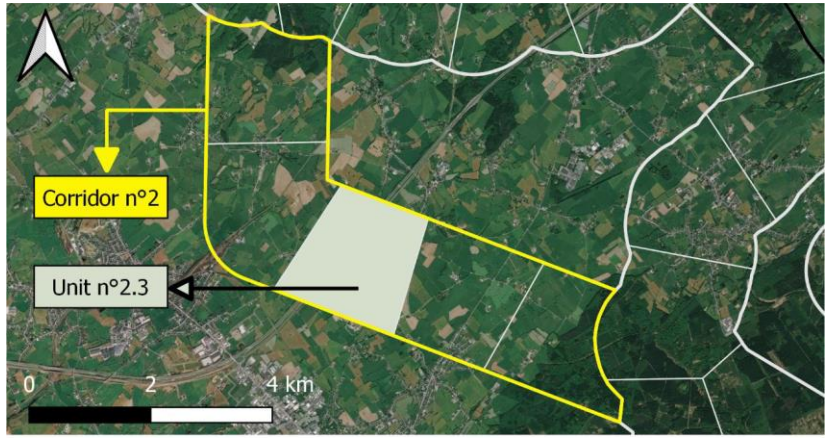

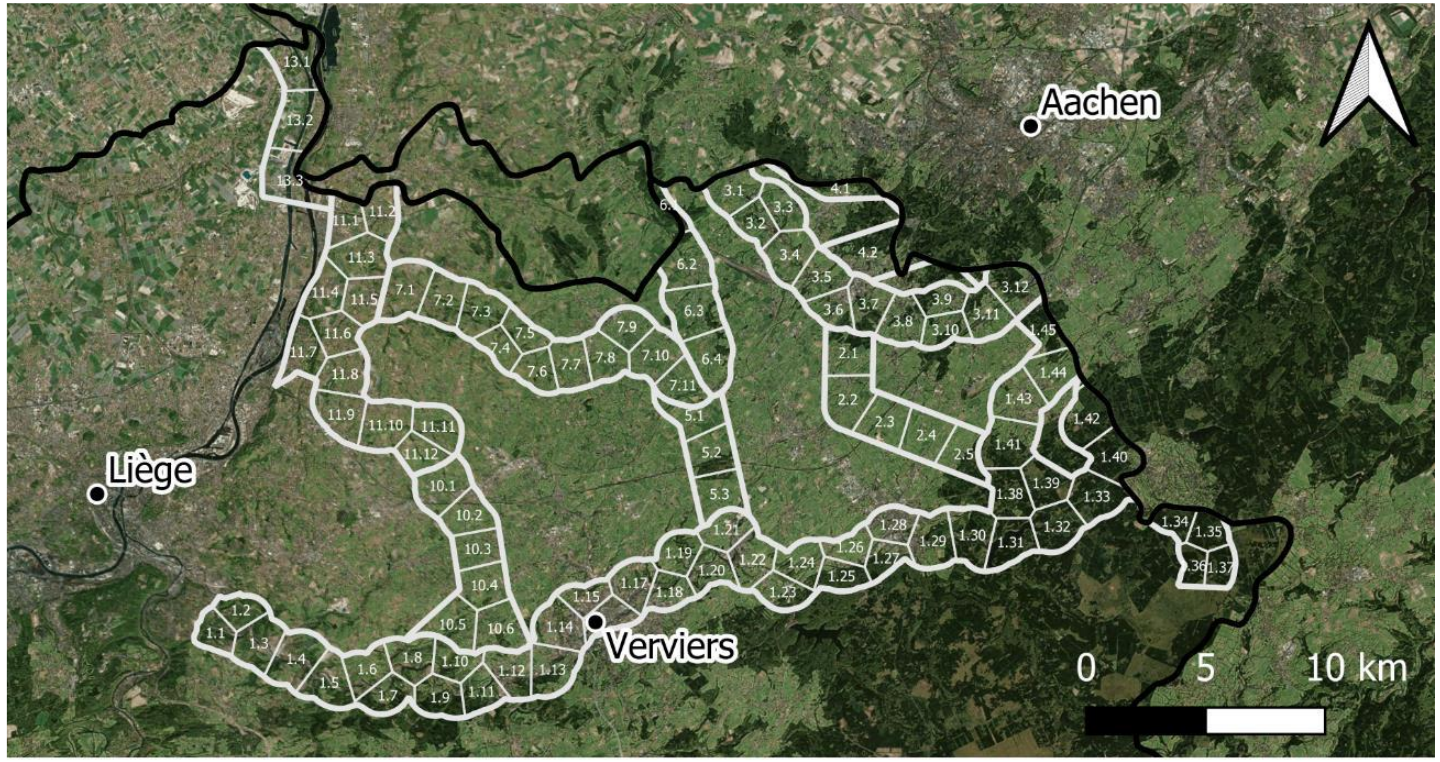

~100 units of approximately 3km²

Study case - Hedgerow

- Wild cat
- Density m/ha (0-30 ; 30-65 ; >65 ; Michel 2008)

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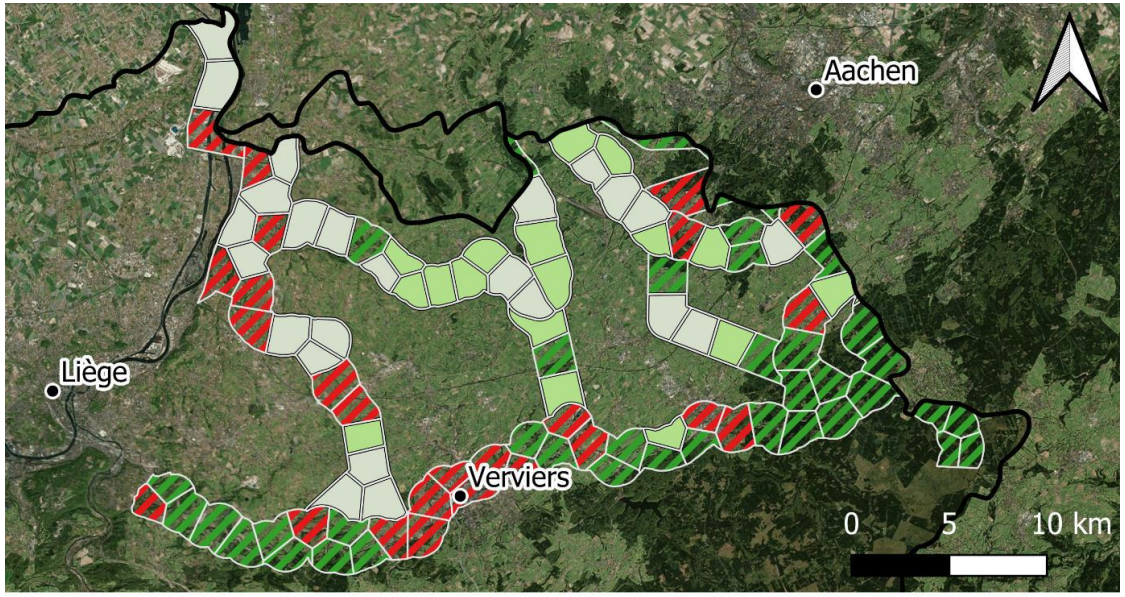

Sources : aerial pictures : Bing ; Map creation : Biotope Environnement, 2020

Unit type

- Wooded (>25% of wooded ecotopes - non-priority)
- Urban (>25% of urban ecotopes - non-priority)
- Open Landscape (<30 m of linear wooded elements/ha)
- Degraded Bocage (between 30 and 65 m of linear wooded elements/ha)
- Bocage (>65 m of linear wooded elements/ha)

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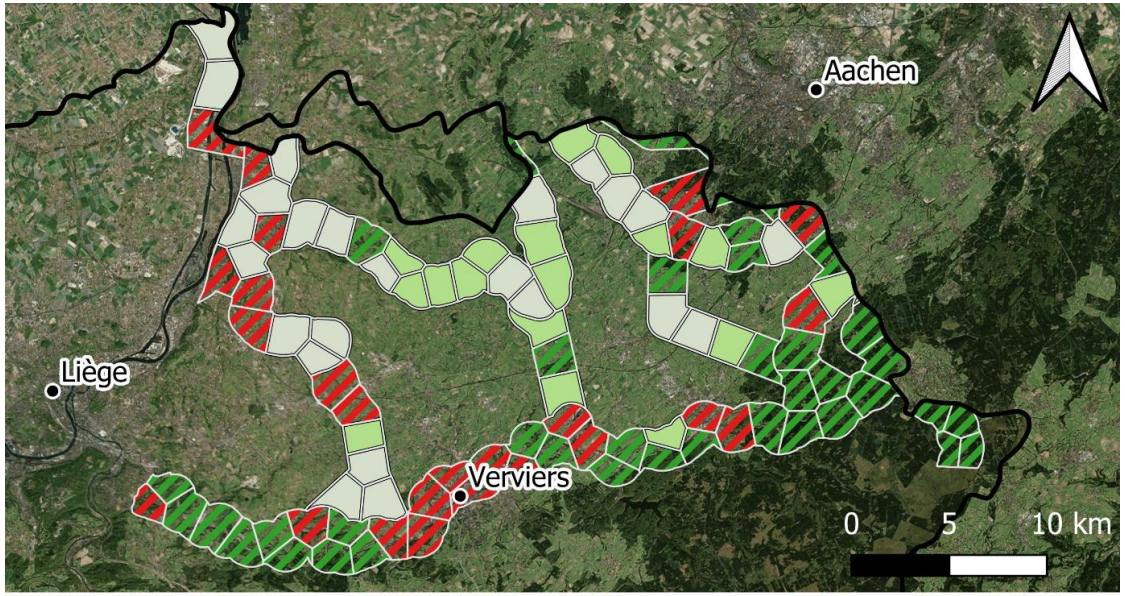

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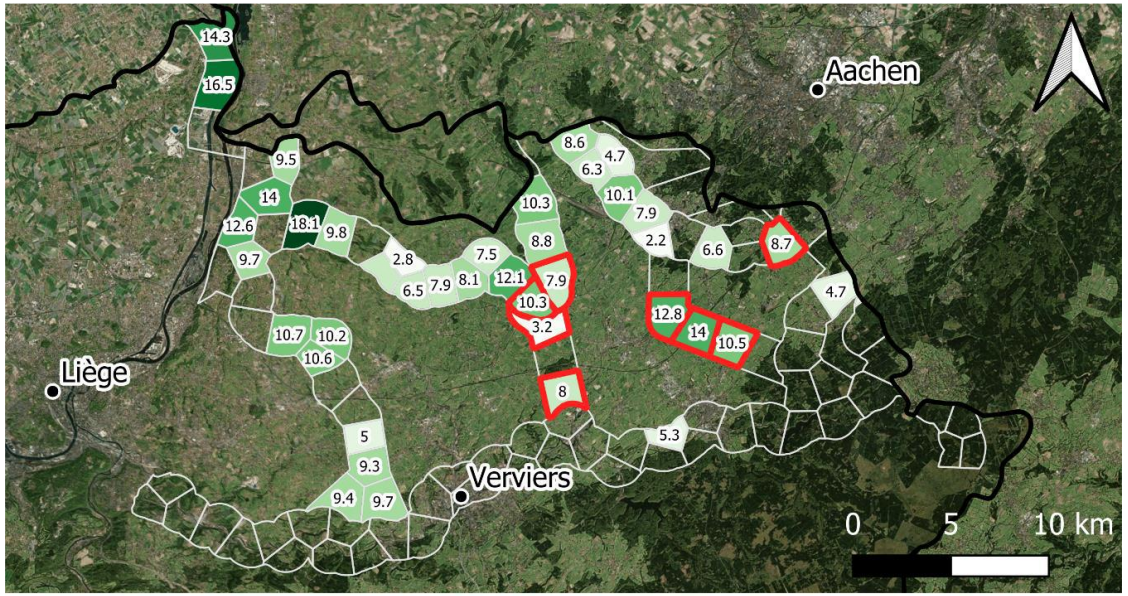

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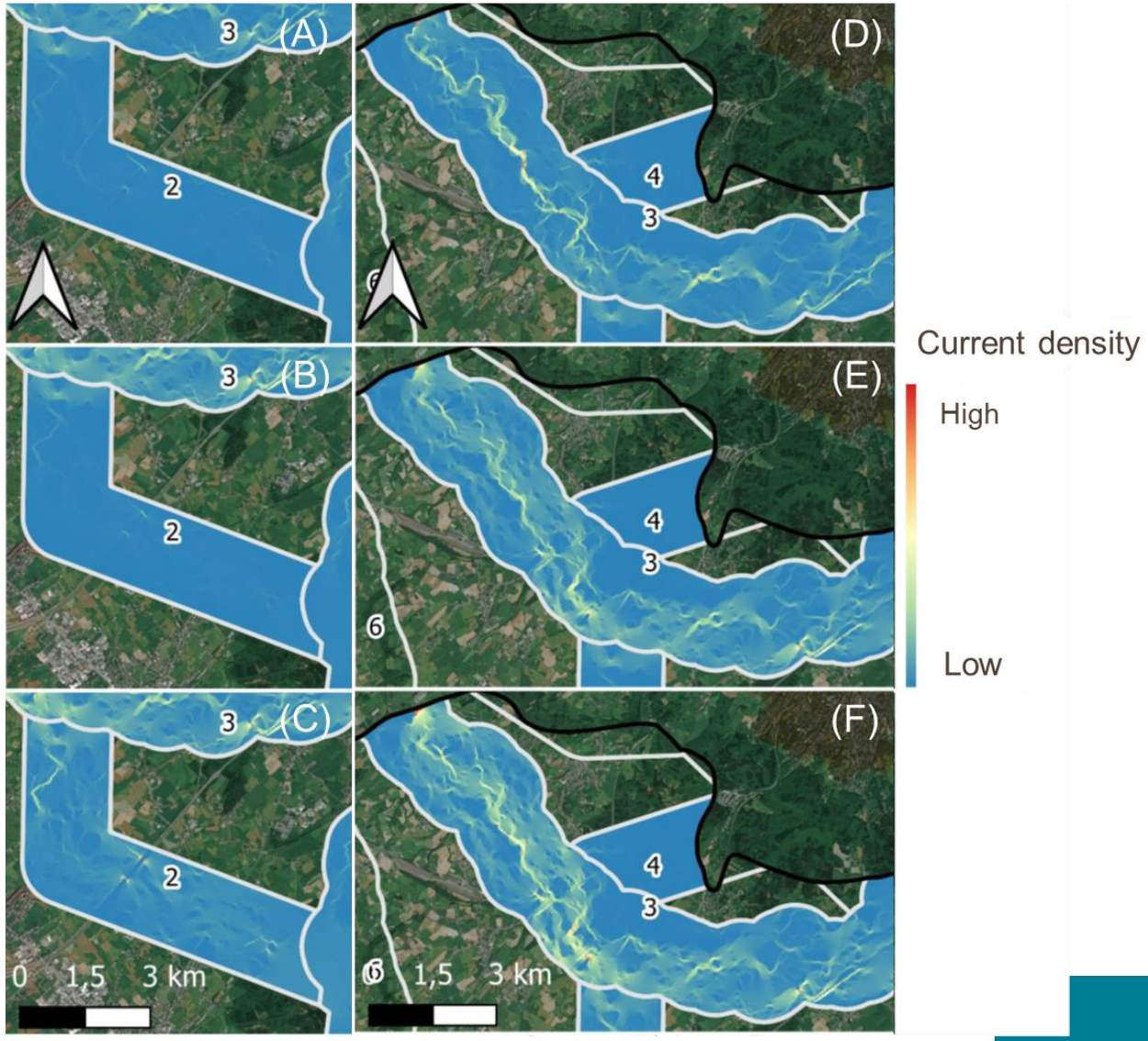
Amount of hedgerows (in km) needed to improve the hedgerow network

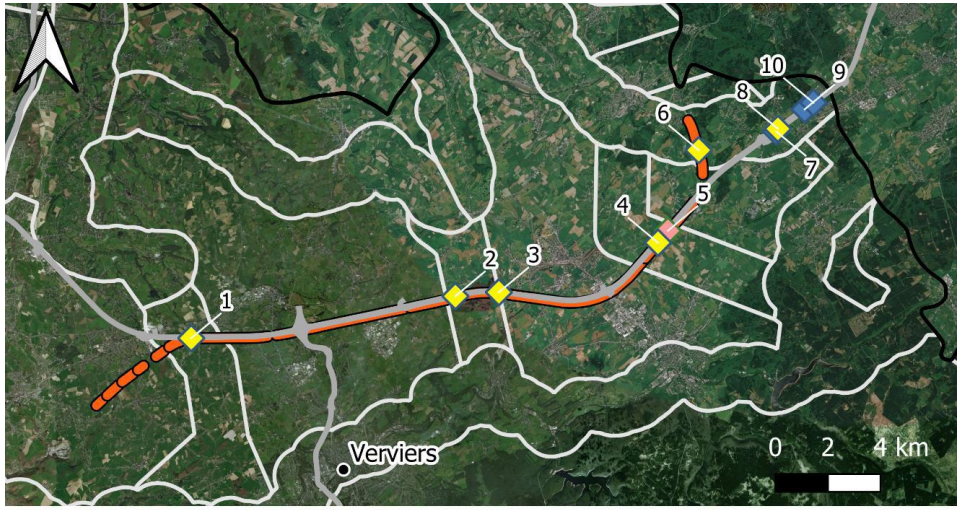
2 - 4 | 4 - 6 | 6 - 8 | 8 - 10 | 10 - 12 | 12 - 14 | 14 - 16 | 16 - 18 | 18 - 19 | Key-Units

Study case - Hedgerow

- Wild cat
- Used Ecotopes to model landscape resistance
- Delangre *et al*. 2019
- Circuitscape (McRae et al. 2008)



Study case - Highway and railway passages



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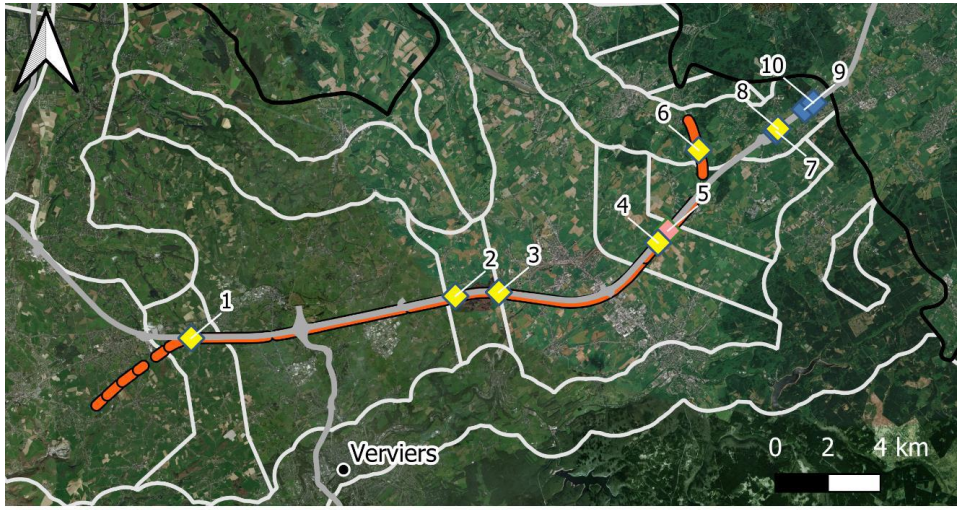
Structure type

Highway | High-speed railway | Culvert | Overpass | Underpass

Study case - Highway and railway passages



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Take home messages

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- The project - Ecological network restoration in the Meuse-Rhine Euregio
  - We provided WWF with a decision-making and communication tool regarding connectivity enhancement in Euregio
  - 7 main actions, with operationalization in Wallonia
  - Prioritization helped by structured information (land use, species, N2000)
  - Focus on three species: wildcat, otter, crested newt

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  - 7 main actions, with operationalization in Wallonia
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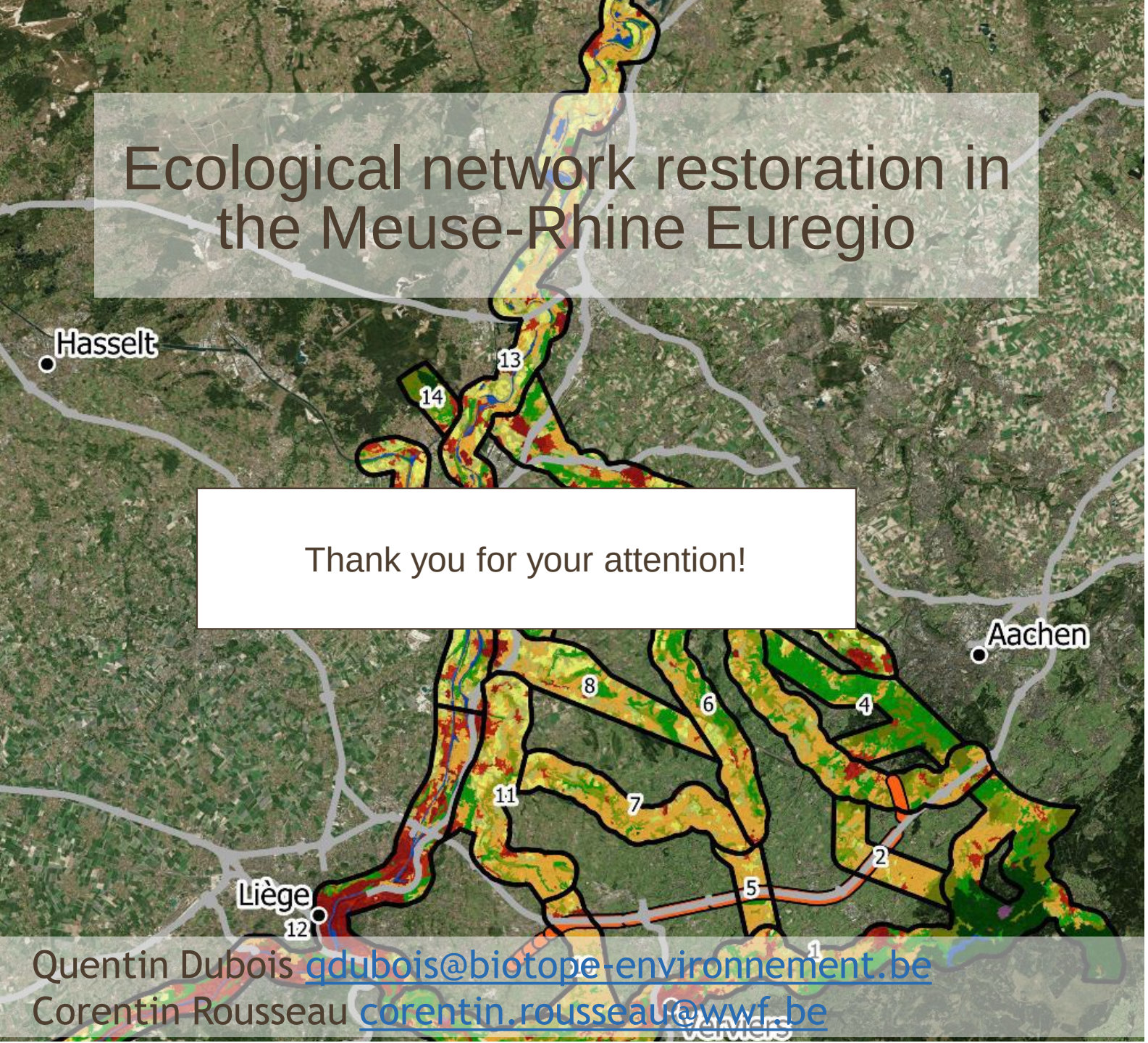
  - Focus on three species: wildcat, otter, crested newt

- How did we used Lifewatch data ?
  - Describe the landscape
  - Help define actions to enhance connectivity
  - Model the landscape

Ecological network restoration in the Meuse-Rhine Euregio



Thank you for your attention!

Quentin Dubois qdubois@biotope-environnement.be
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References

This presentation is based on :

Dubois Q., Kaizer A., Malapert A., Renglet J. (2020) Research study on Ecological Network Restoration in Meuse-Rhine Euregio and Quantification of Restoration Actions in Wallonia. WWF Report, 123 pp.

Cited references

- Allag-Dhuisme F., Amsallem J., Barthod C., *et al*. (2010) Choix stratégiques de nature à contribuer à la préservation et à la remise en bon état des continuités écologiques – premier document en appui à la mise en œuvre de la Trame verte et bleue en France. Proposition issue du comité opérationnel Trame verte et bleue. MEEDDM eds.
- Delangre J., Bourdouxhe A. & Dufrêne M. (2019) Mise en place d'un réseau écologique pour le chat sauvage (*Felis silvestris*, Schreber 1777). WWF report, 27 pp.
- McRae B.H., Dickson B.G., Keitt T.H. & Shah V.B. (2008). Using circuit theory to model connectivity in ecology, evolution, and conservation. Ecology, 89(10), pp. 2712-2724.
- Michel P. (2008) Les linéaires paysagers de Bretagne – Résultats de l'enquête complémentaire TERUTI-LUCAS 2008. AGRESTE Bretagne - Enquête Haies 2008, 79 pp.