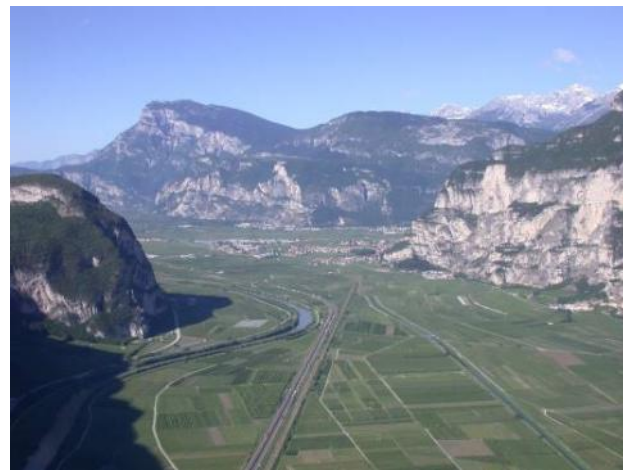


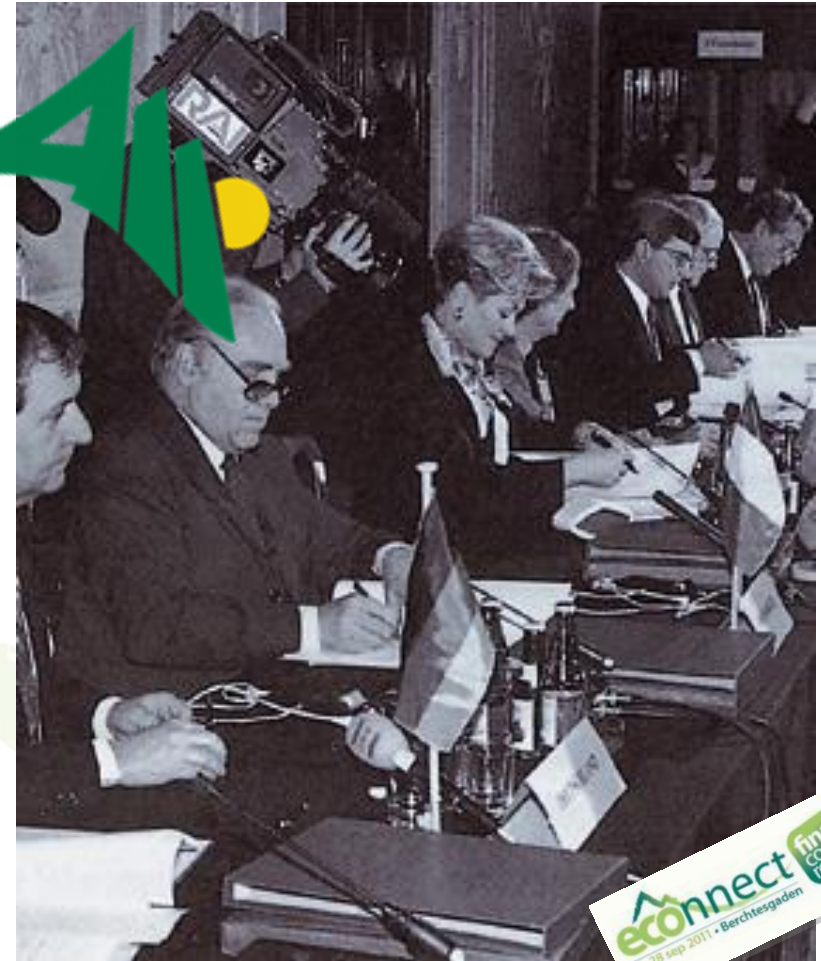
Econnect

Restoring the Web of Life



Protocol “Nature conservation and landscape planning” - Article 12

“The contracting parties take adequate measures to establish a network of existing national and transboundary protected areas, of biotopes and other protected elements or those to be protected. They commit themselves to harmonize the objectives and applicable measures in transboundary protected areas.”



Protected areas in the Alps

Recognize the heterogeneous character of nature

The global - Alpine reality is that most protected areas are isolated from adjacent protected areas or that habitats are located in fragmented landscapes

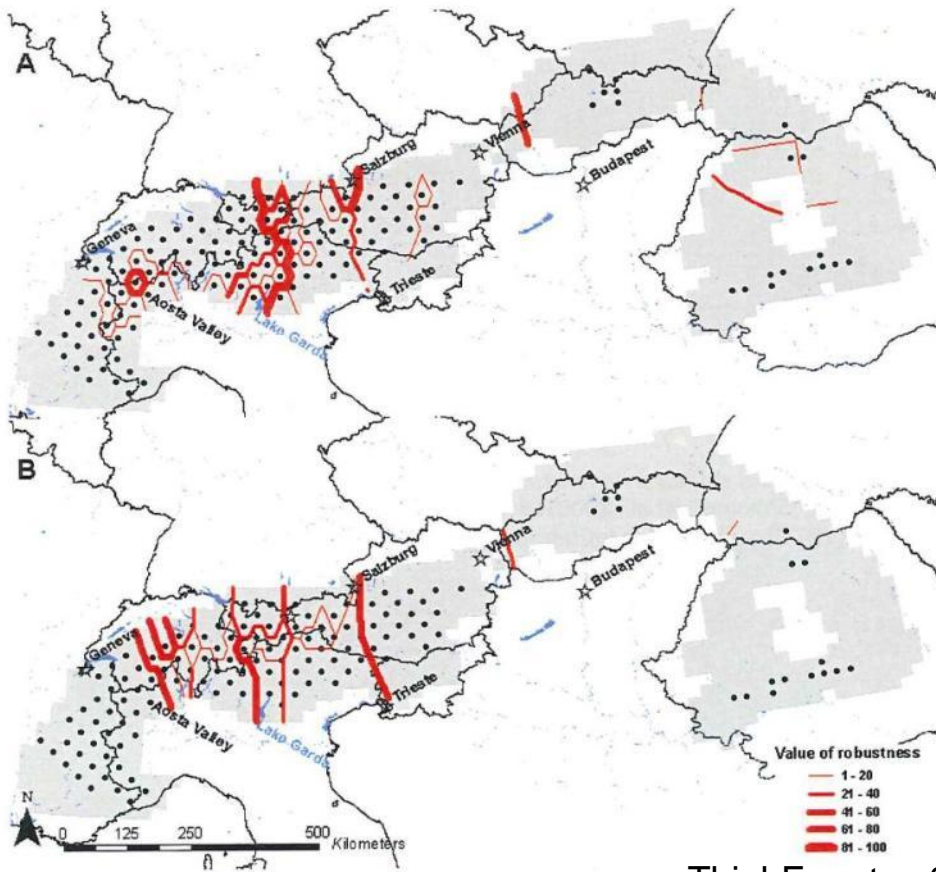


Climate Change and Biodiversity



swisstopo 2011

Genetical differences over the Alps



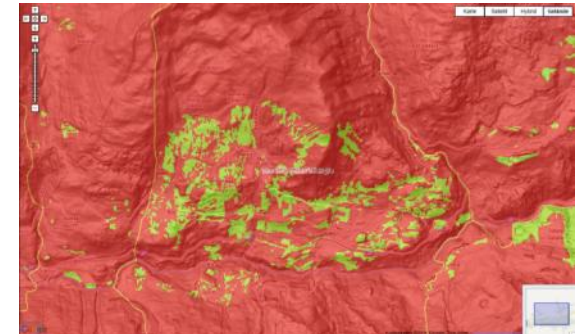
Thiel-Egenter, 2007





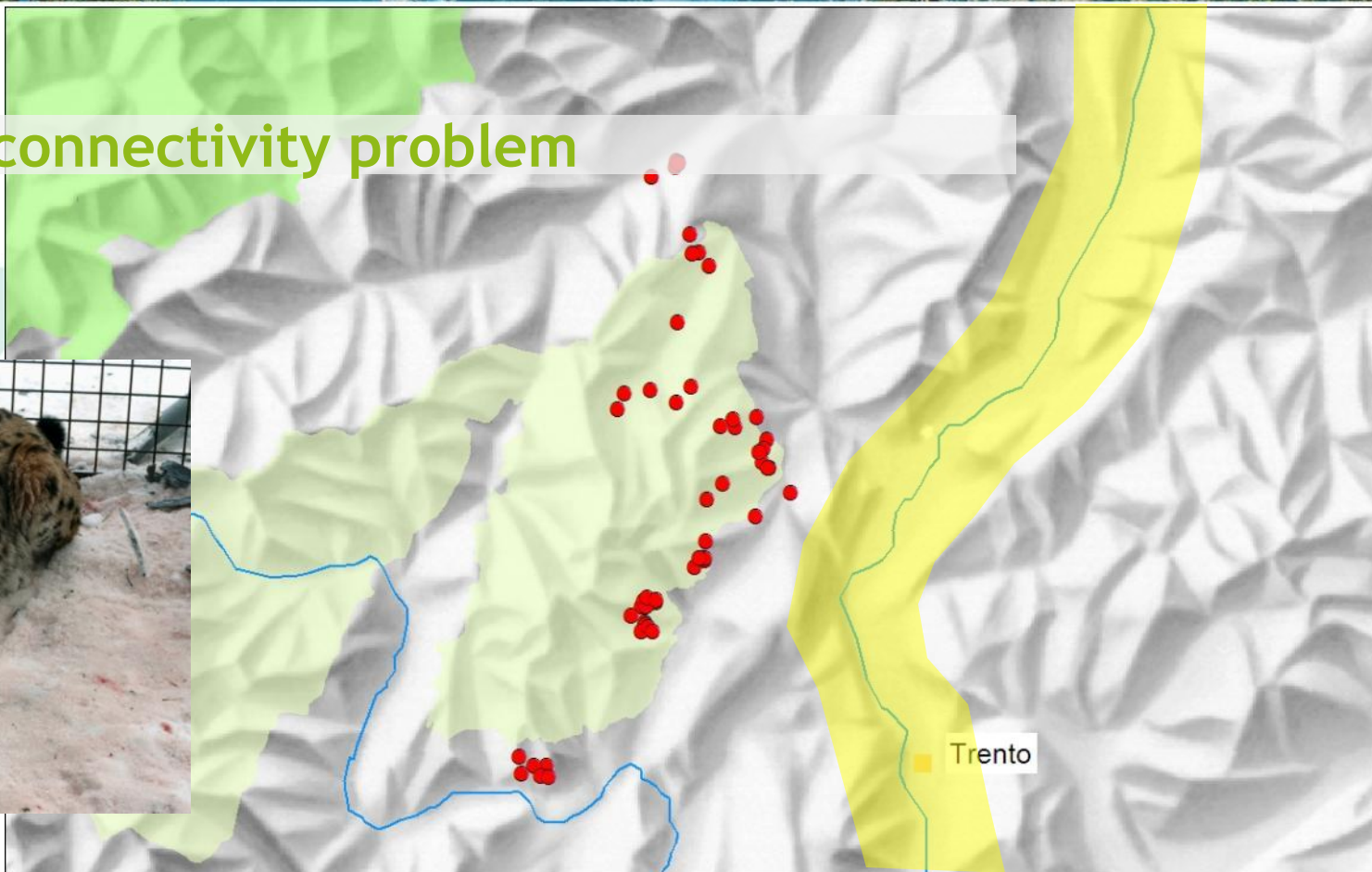
© Angelika Abderhalden

The butterflies' connectivity problem





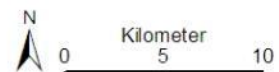
The lynx connectivity problem



● Lokalisationen

■ Parco Nazionale dello Stelvio

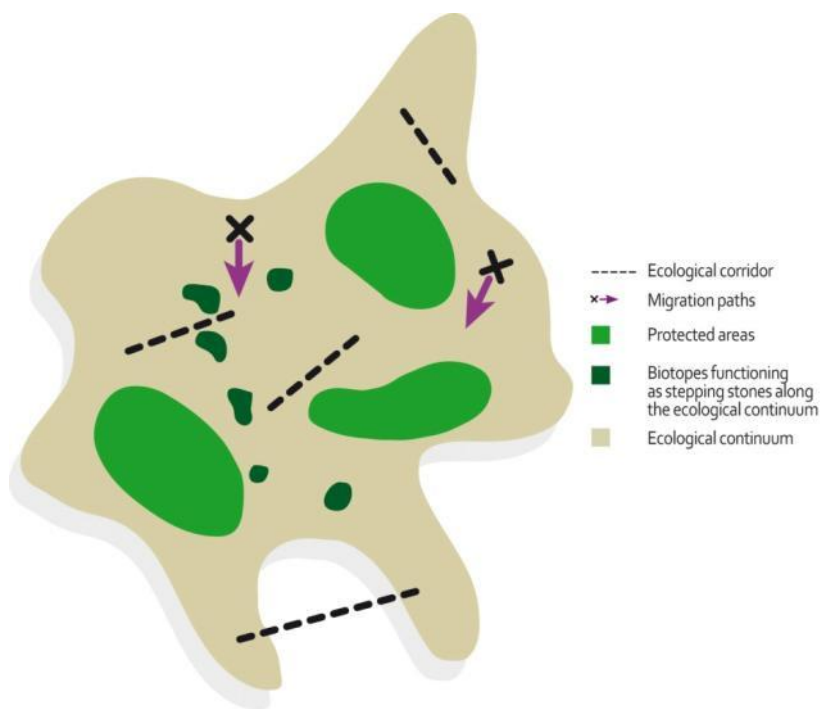
■ Parco Naturale Adamello Brenta



The lynx' connectivity problem



The theory for both species...



<http://www.alpine-ecological-network.org>

Project of ETC Alpine Space Programme and co-funded by ERDF

Total budget: 3.198.240,00€.

The partnership is composed by sixteen partners from six Alpine countries

Austria

- **University of Veterinary Medicine Vienna, Research Institute of Wildlife Ecology (Lead partner)**
- National Park Hohe Tauern
- Federal Environment Agency
- National Park Gesäuse
- University of Innsbruck, Institute for Ecology

Germany

- National Park Berchtesgaden

France

- CEMAGREF
- Council of Department of Isère
- Task Force Protected Areas – Permanent Secretariat of the Alpine Convention

Italy

- Alpe Marittime Nature Park
- Autonomous Region of Valle d'Aosta
- European Academy of Bozen
- Ministry for the Environment
- WWF Italy

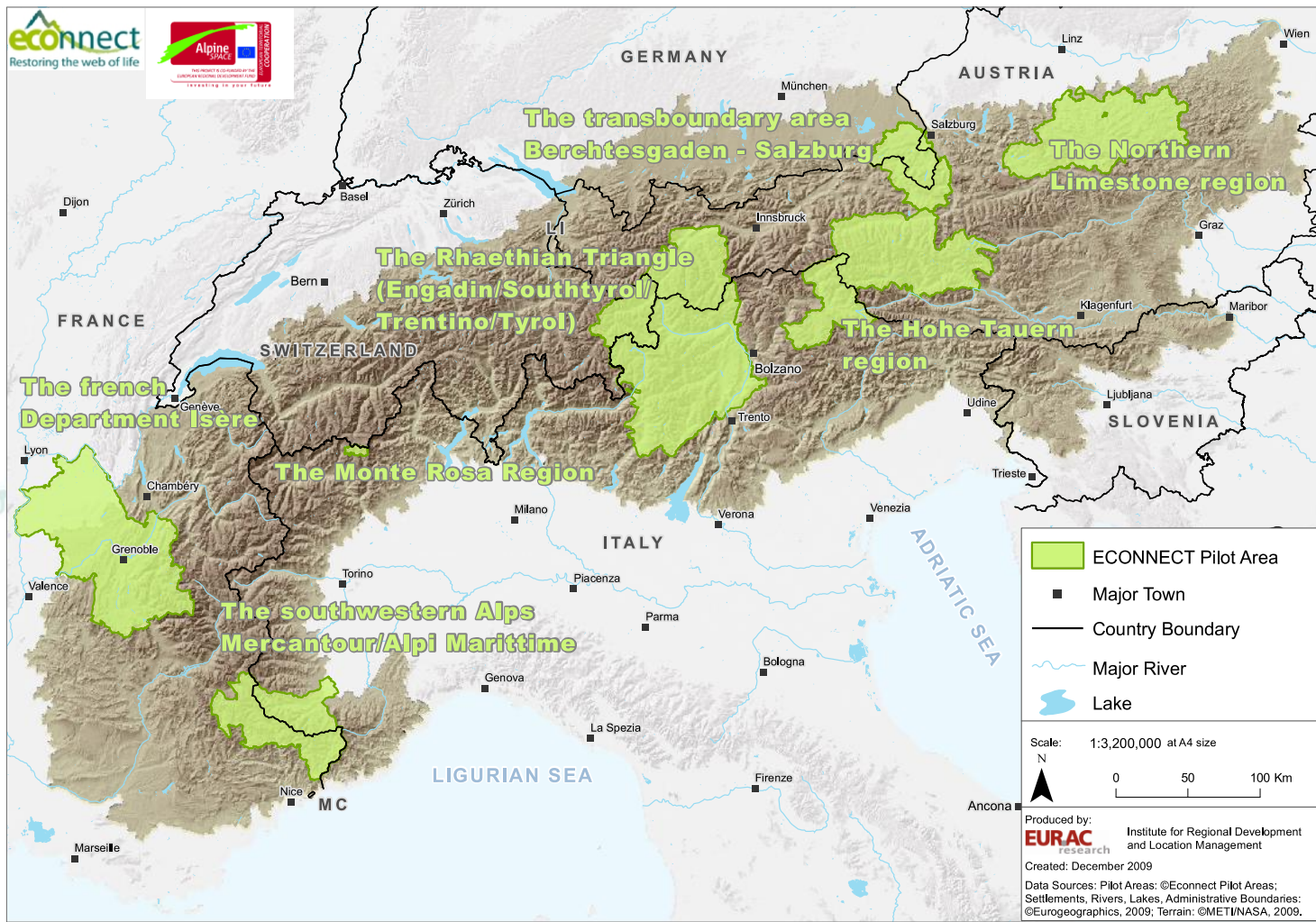
Liechtenstein

- International Commission for the Protection of the Alps (CIPRA)

Switzerland

- Swiss National Park



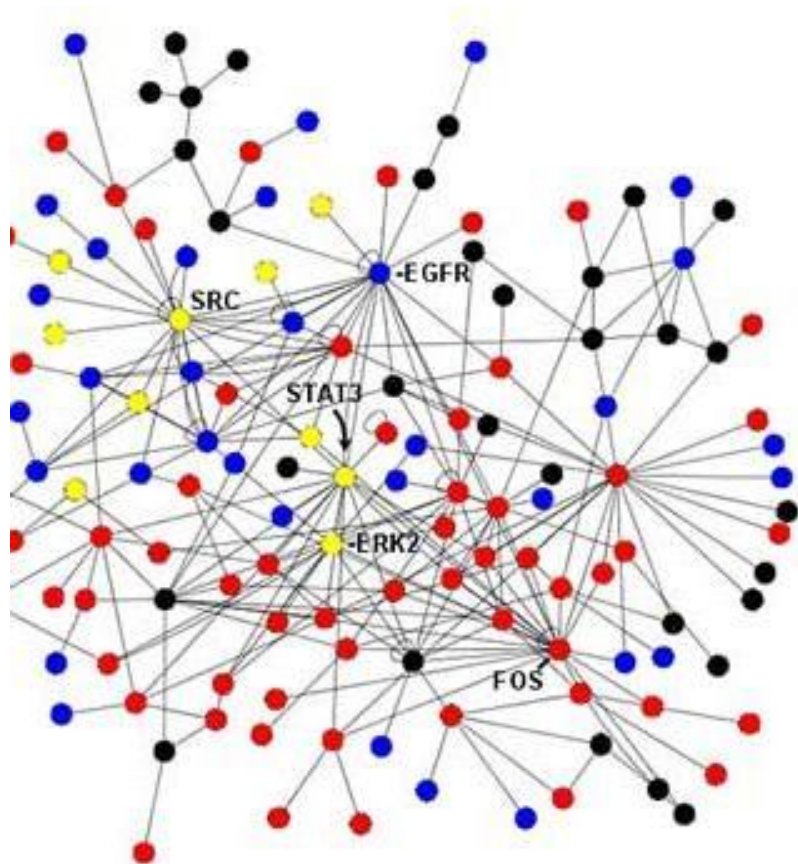


Platform Large Carnivores, Wild Ungulates and Society (WISO)

The Results

1. Vision
2. Pilot Regions
3. Scale
4. Functional and structural connectivity
5. Legal Analysis





Econnect is a network
per se

Local and Alpine-wide

Enhances and extends
existing cooperations



Result

What was the project actually trying to achieve?

Agreement concerning the conservation objectives

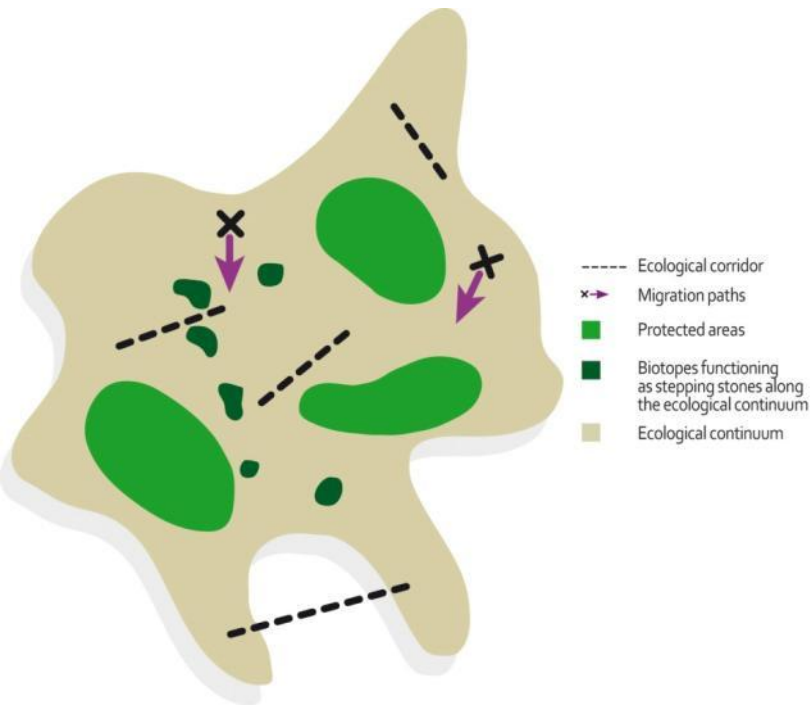


Vision

ECONNECT envisions an enduringly restored and maintained ecological continuum, consisting of interconnected landscapes, across the Alpine Arc region, where biodiversity will be conserved for future generations and the resilience of ecological processes will be enhanced.



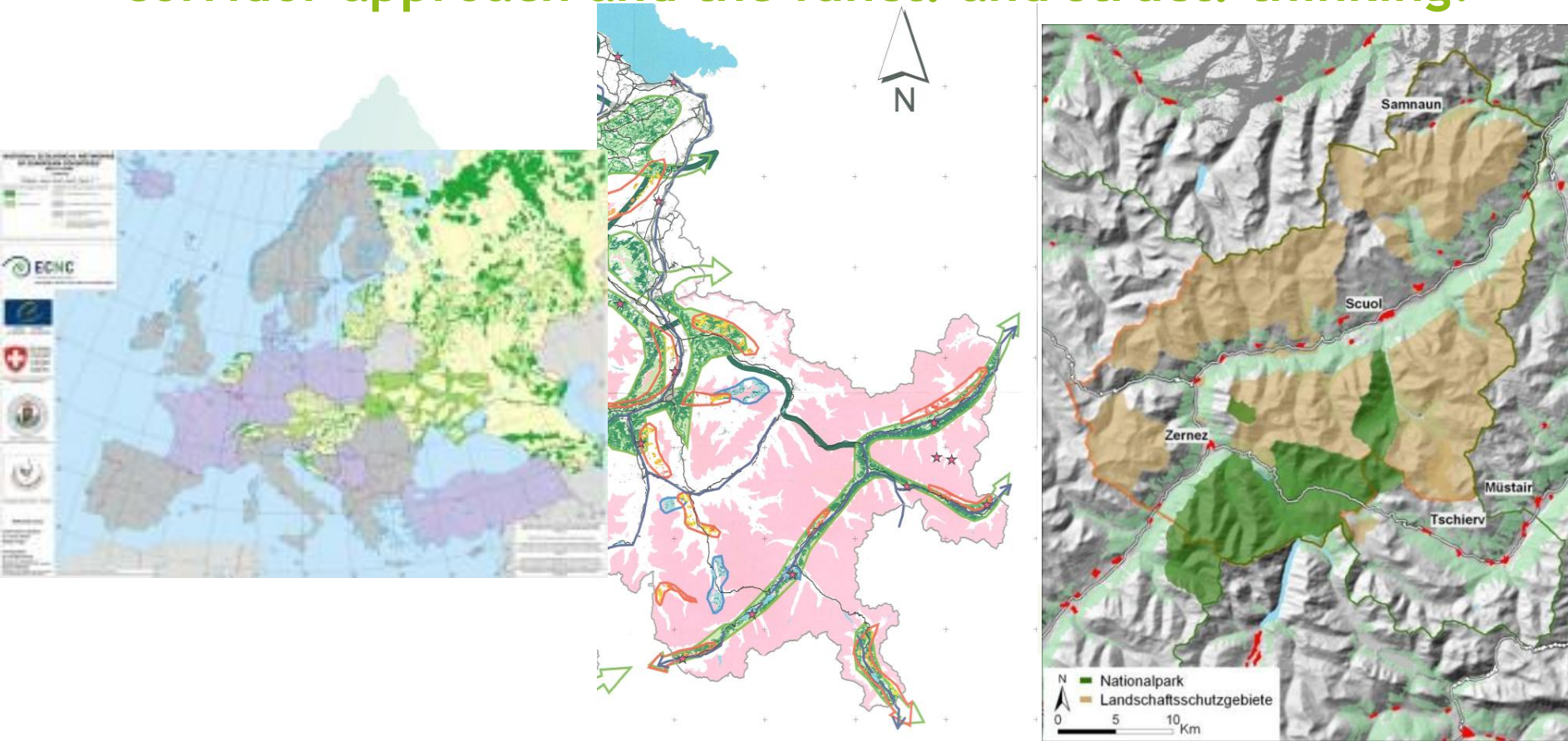
The Econnect's Vision



Active adaptive management and governance of resilience must not be limited to individual elements of an ecological network (corridors, core zones), but must necessarily be applied to the entire territory (matrix) and across all sectors of society, while enabling nonexclusive, multi-functional spaces for sustainable economic and recreational activities Alpine communities.

<http://www.alpine-ecological-network.org>

How to concatenate all spatial levels, overcome the corridor approach and the funct. and struct. thinking?



Functional and structural connectivity



CSI

„The landscape approach“



SMA

„The species approach“



CARL

„The network approach“

Econnect's response to spatial permeability



JECAMI

Joint Ecological Continuum Analysis and Mapping Initiative

A platform to analyze and visualize ecological connectivity in the Alps from local scale to global scale, for functional and structural connectivity and for all parties of the society

„Mapping relevant factors“



CSI

„The landscape approach“



SMA

„The species approach“



CARL

„The network approach“

Objectives of the landscape approach

- General definition of the structure of an **ecological continuum/ the connectivity**
- Defining suitable **criteria** for an assessment of the space
- Definition of the scale: Provide **global**, alpine-wide analysis (>100 km²) as well as **local** analysis(<1 km²) in the municipalities
 - **high spatial precision and resolution** of data is appreciated
- Mapping on the web - broad access for all interested parties without specific and expensive software

10 Indicators

Population

Landuse

Landuse Planning

Altitude and Topography

Fragmentation

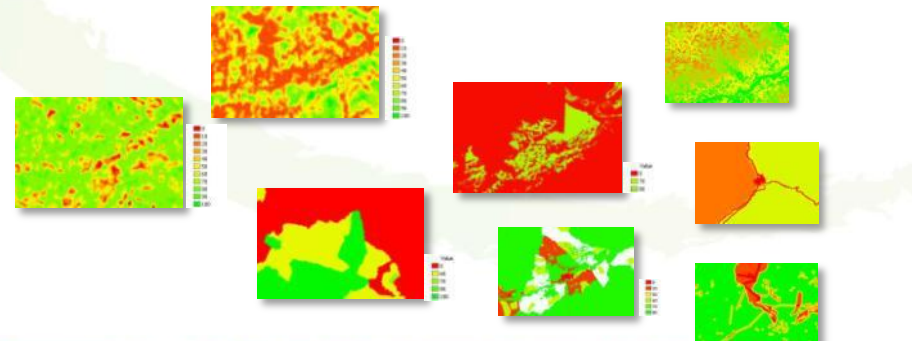
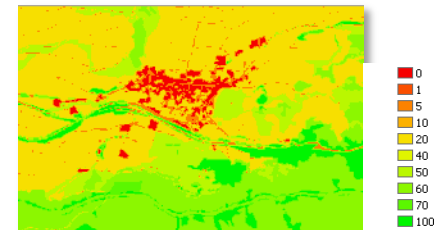
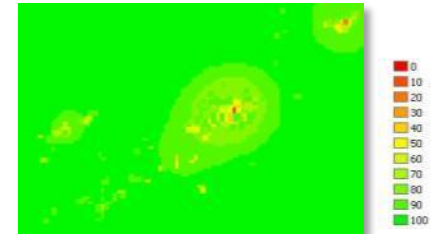
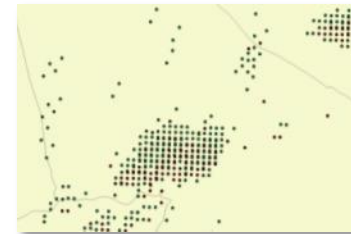
Infrastructure

Landscape Heterogeneity

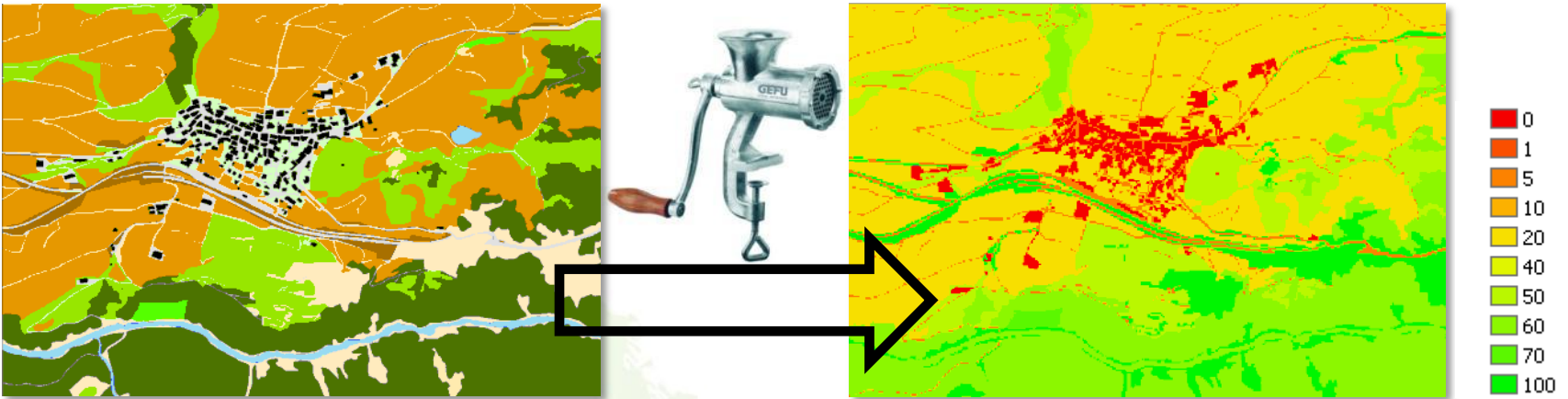
Edge density

International Protected Areas

Ecological Measures



Data processing



7 Pilot regions
 Many Political regions
 A few Coordinate systems
 A bunch of Datasets

1 Coordinate system
 10 Indicators (raster datasets)

Karte **Satellit** **Hybrid** **Gelände**

CSI **SMA** **PAM**

CSI Service (prototyp v.7) [i](#)

Legend

- Pilot areas [i](#)
- Municipality borders [i](#)
- Protected areas [i](#)
- Landuse (LAN) [i](#)
- Landuse Planning (LAP) [i](#)
- Population (POP) [i](#)
- Infrastructure (INF) [i](#)
- Altitude&Topography (TOP) [i](#)
- Fragmentation (FPA) [i](#)
- Patch Cohesion (COH) [i](#)
- Ed. & Urbanization (ENV) [i](#)
- Ecosystem (ECO) [i](#)
- Your uploaded KML-File [i](#)

[i](#) Activate function and display indices by clicking in the map.

Analyse Area

Choose a local datafile (Google Earth *.kml):

Please enter a name:

Launch an HTTP layer in the legend above.

Define manually

Define area by drawing a polygon

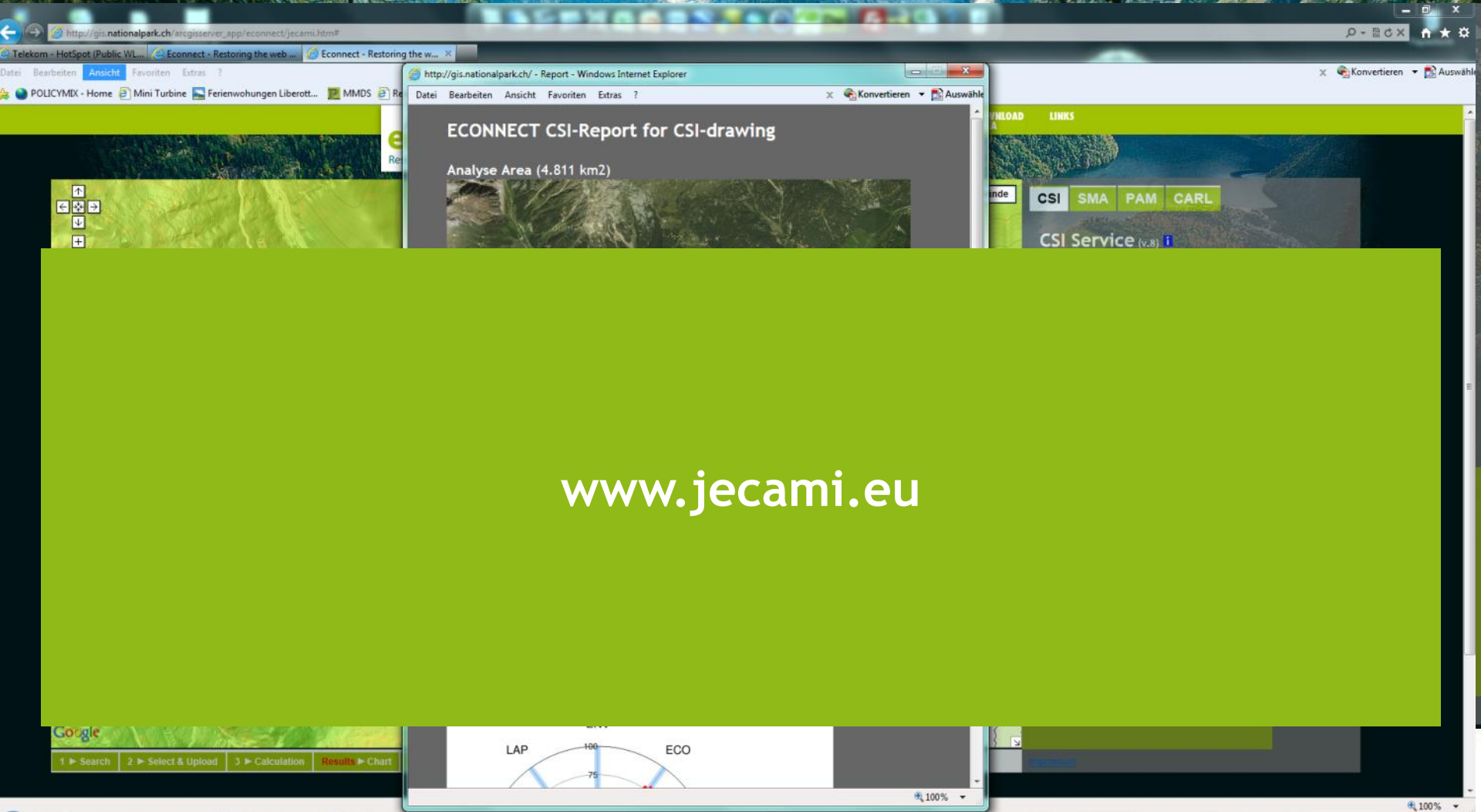
Clear drawings

[Impressum](#)

1 Search 2 Select & Upload 3 Calculation Chart Table Report

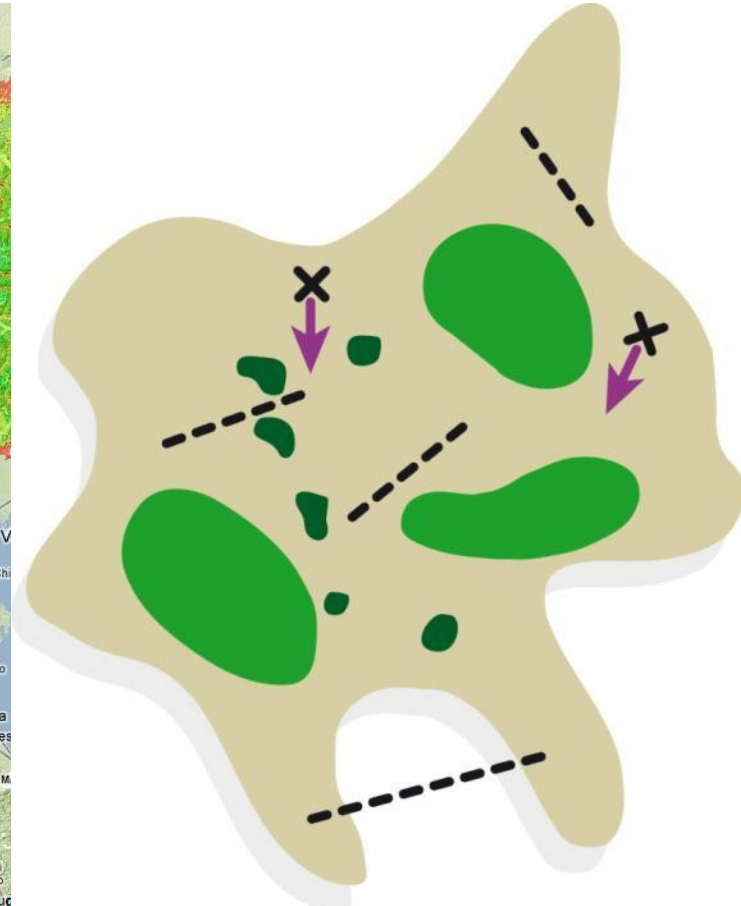
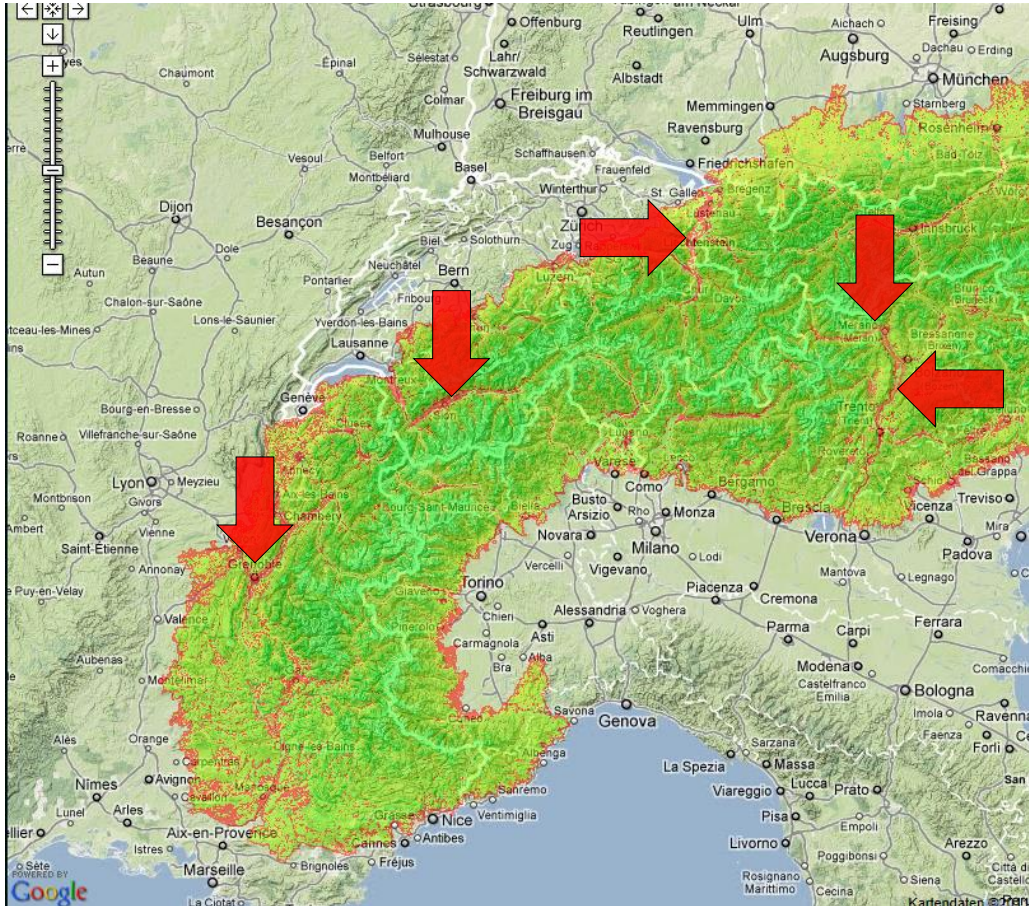
Kartendaten ©2010 Tele Atlas - [Info](#)

The CSI web service



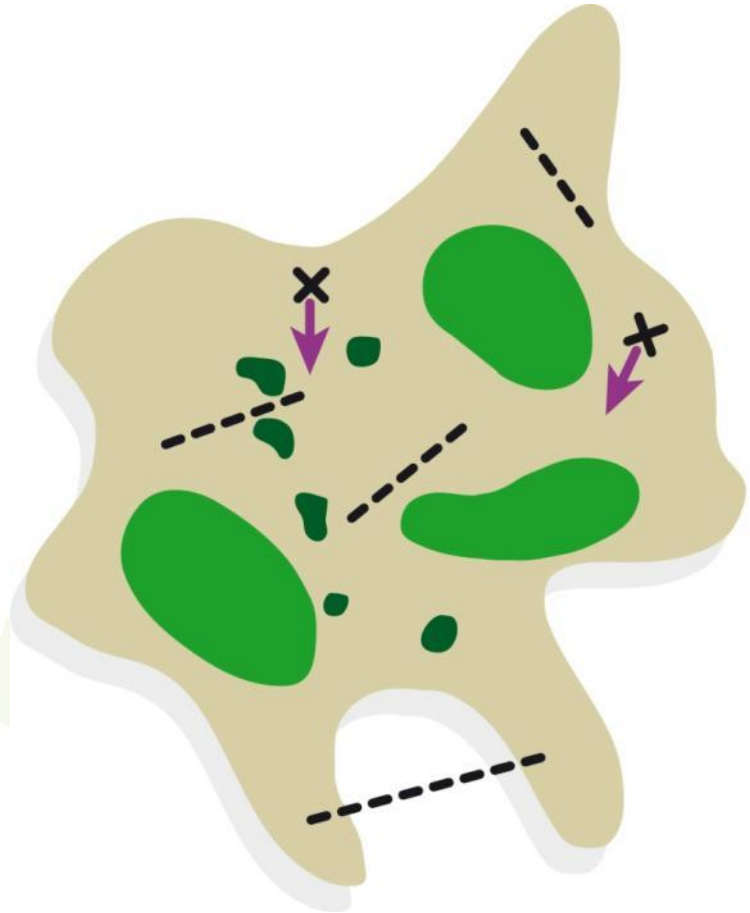
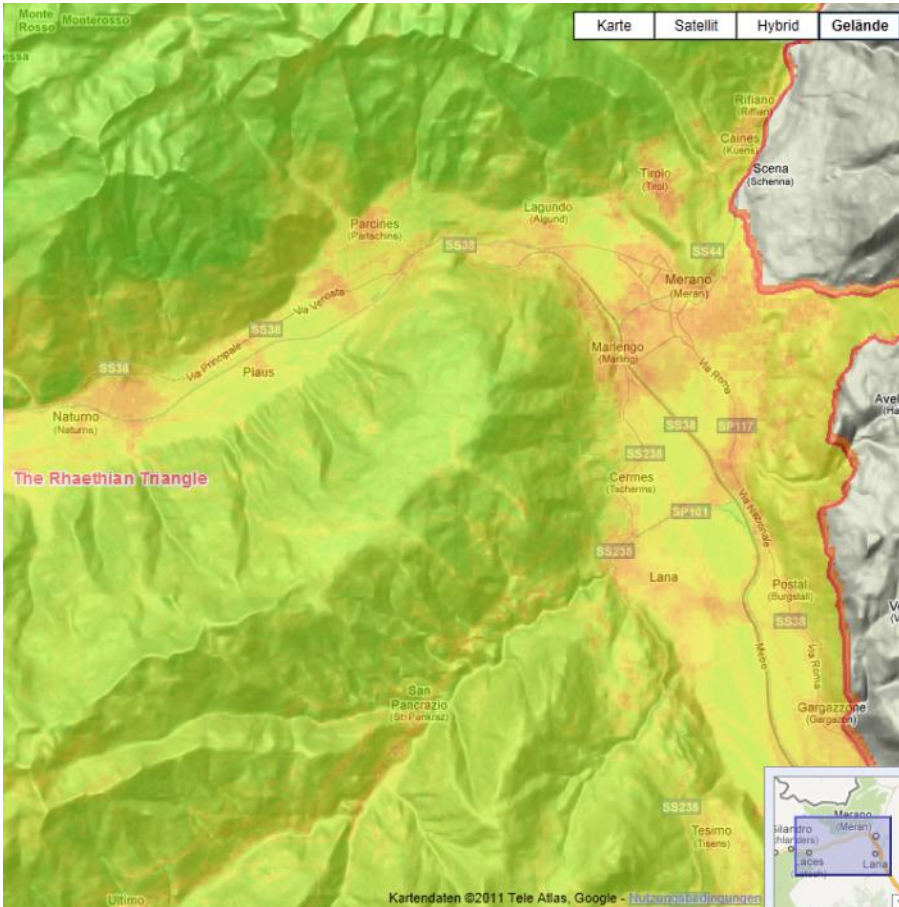
www.jecami.eu

A step into real environments and real scales





A step into real environments and real scales



„Mapping relevant factors“



CSI

„The landscape approach“



SMA

„The species approach“



CARL

„The network approach“

Selected species for terrestrial models

Black grouse



Wolf



Griffon vulture



Lynx



Brown bear



Red deer



Copyright: touristik.freepage.de (grouse), naturschutzbuero-zollernalb.de (vulture), fullmoons.ch (wolf), maxwaugh.com (bear), naturfotografen-forum.de (lynx), new-forest-national-park.com (red deer)

Workflow:

Identification of habitat needs, search for observation records and/or species specific models



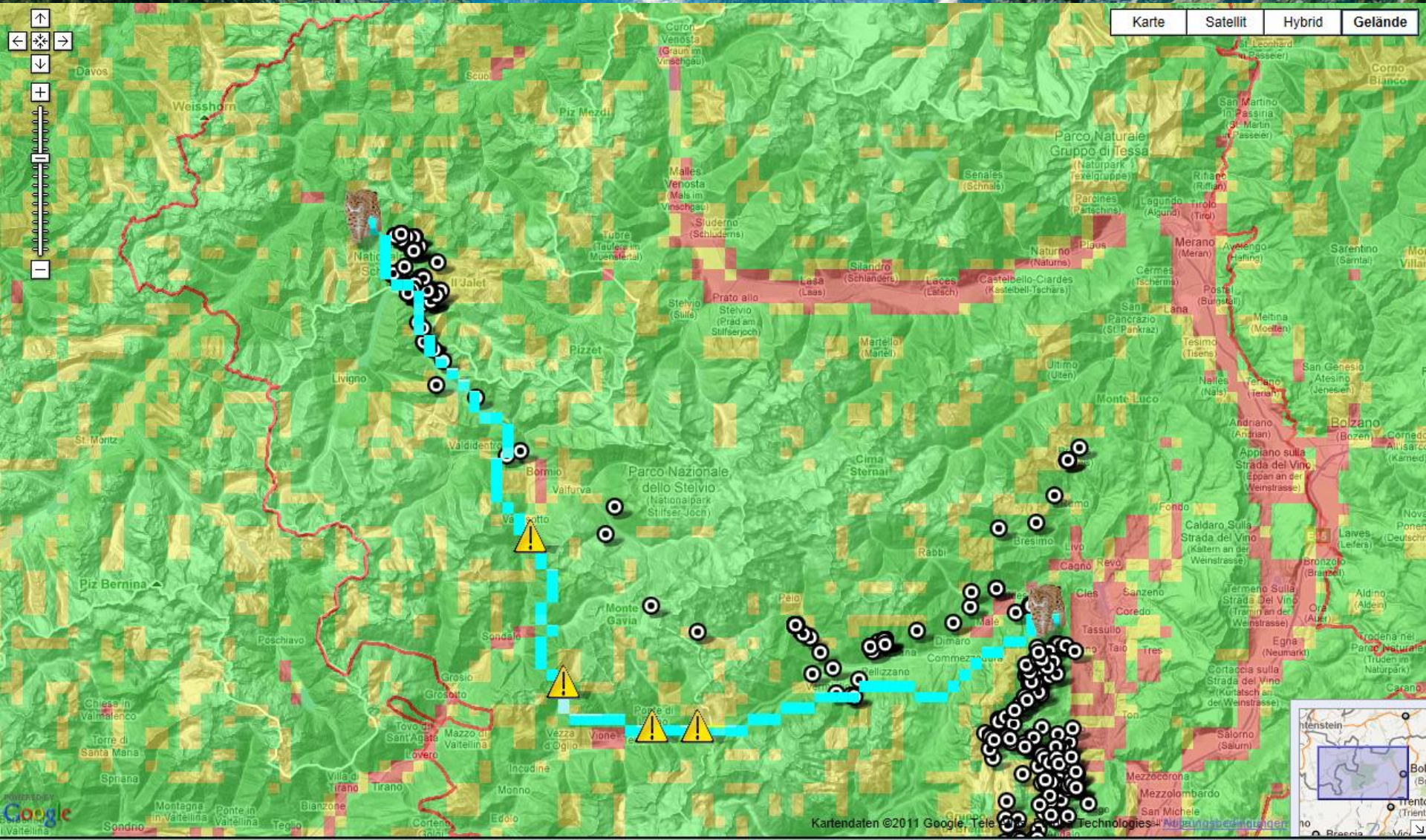
Identification of habitat suitability (Maps of potential distribution)



Categorisation of Habitat into Core area, corridors and isolated habitat patches (morphological spatial pattern analysis, MSPA, Software GUIDOS)

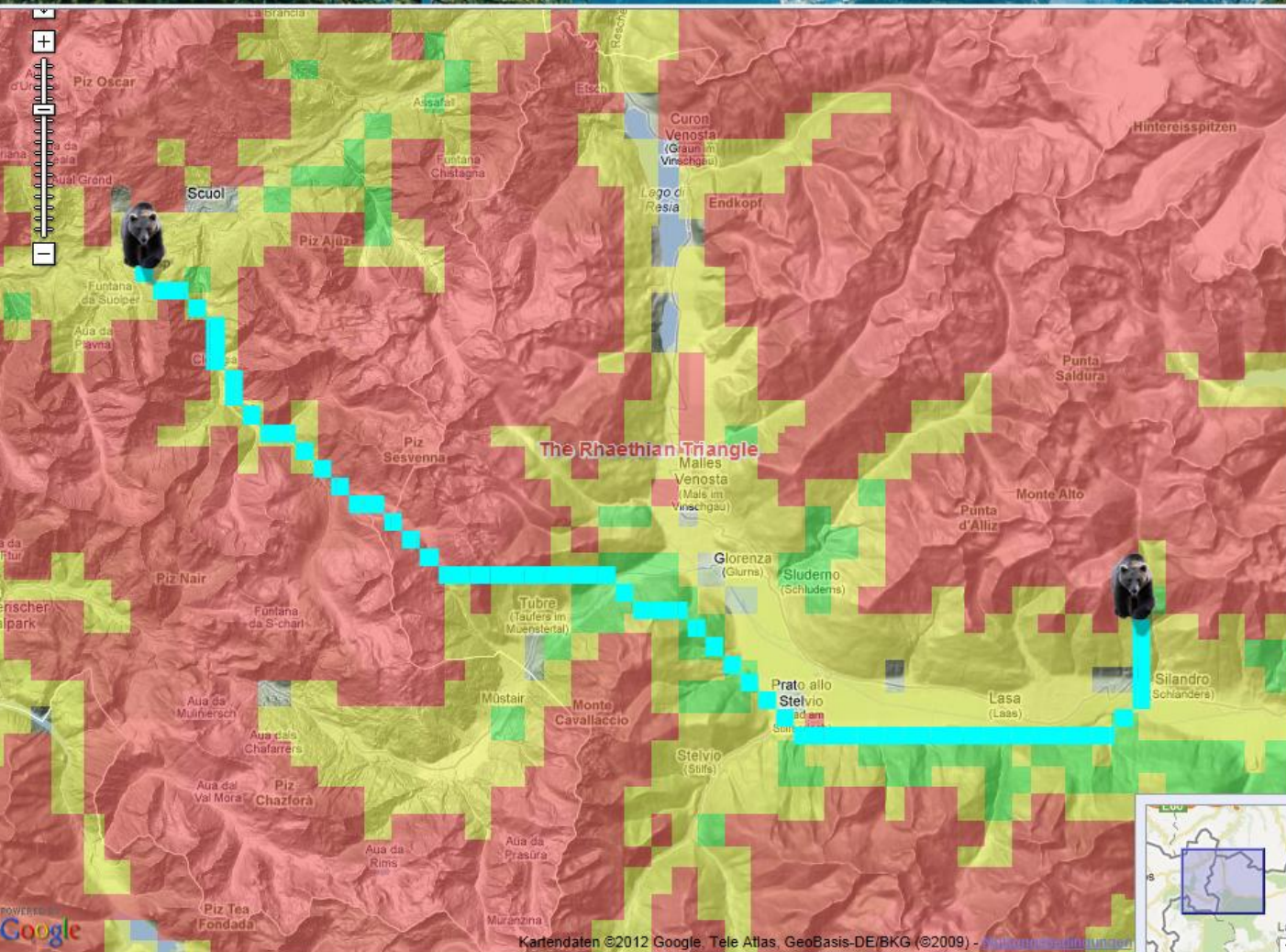


Karte Satellit Hybrid Gelände



Kartendaten ©2011 Google, Tele... Technologies, N...
 Alpine SPACE
 COOPERATIVE

Platform Large Carnivores, Wild Ungulates and Society (WISO)



SMA Service (v.8)

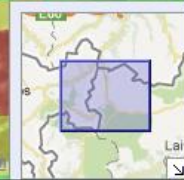
- Layers**
- Black grouse model
 - Black grouse GUIDOS
 - Brown bear model
 - Brown bear GUIDOS
 - Lynx model
 - Lynx GUIDOS
 - Griffon vulture model
 - Red deer habitat
 - Red deer GUIDOS
 - Wolf model
 - Wolf GUIDOS
 - Superspecies map of:

Activate function and display Indices by clicking in the map

Barrier Tool

This tool calculates the most barrier-free path from point A to B for the above checked umbrella species (Layer) using a Cost-Path function.

Draw 2 points: On/Off



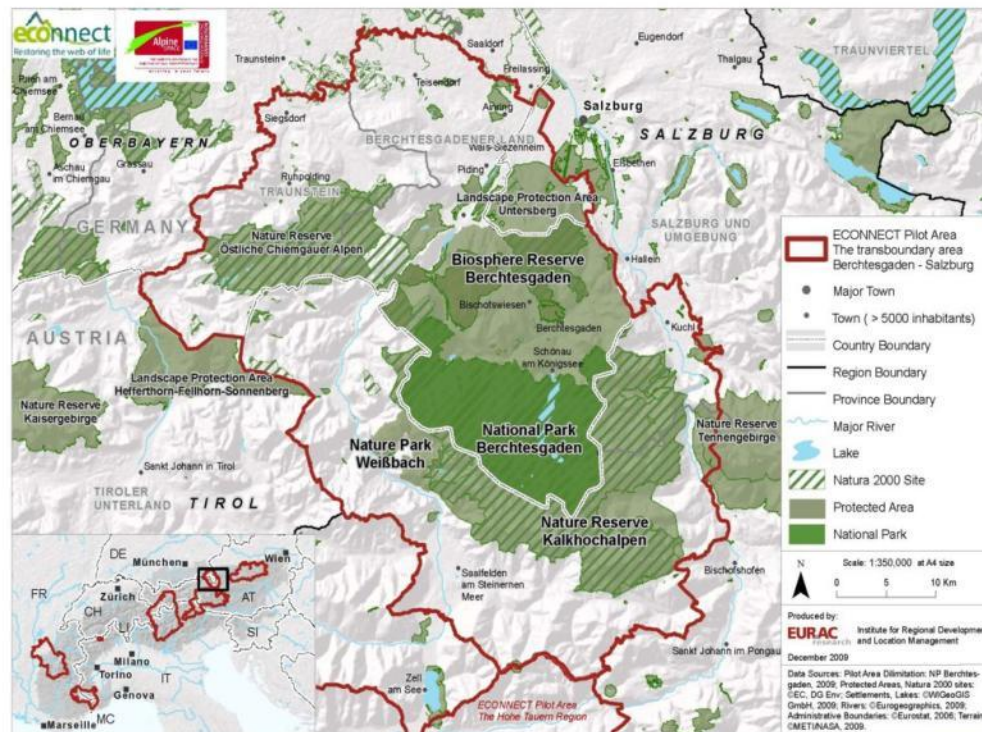
Ecological Measures

Local Networks

Common-Methodology

Implementation of Measures

(see implementation guidelines)





COMITATO



PARCO NATURALE ALPI MARRITIME

PA. CIP: **P132-2016-MP** BUDG: **130.000** DATA: **agosto 2011**

PROGETTO

PROGETTO EUROPEO ECONNECT

La connettività ecologica terrestre ed aerea del territorio Marittime Mercantour

SOMMARIO

TAVOLA 03_01_A

Rete ecologica del Forcello

Functional Connectivity Modeling (FunConn)

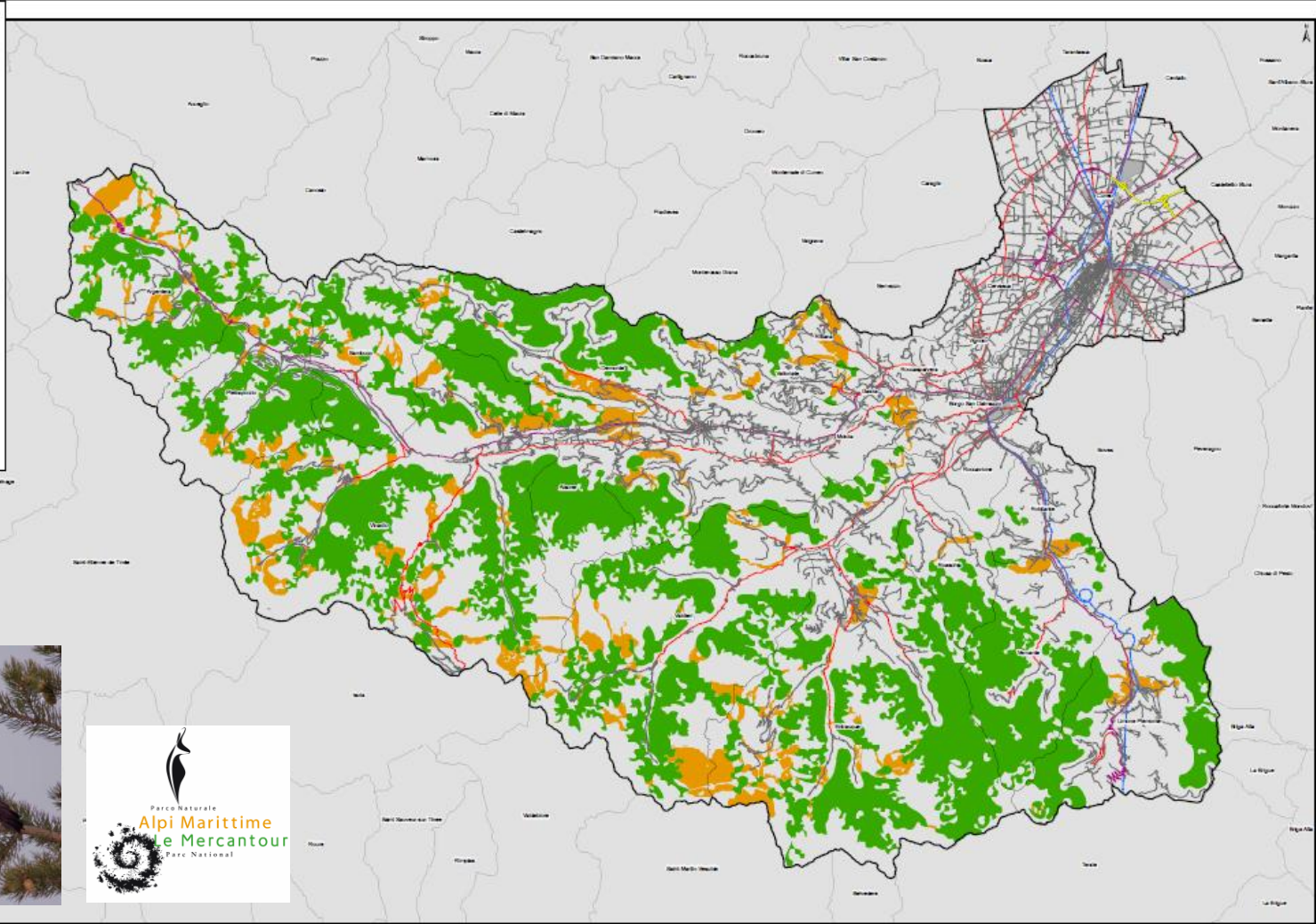
PROGETTO
Dir. Agr. Maria Pianazzola
Dir. Nat. Laura Carallo
Dir. For. Roberto Giabaglio

COLLABORATORI
Dir. Nat. Stefano Cossello

VERIFICA
Dir. Agr. Giorgio Gioielli

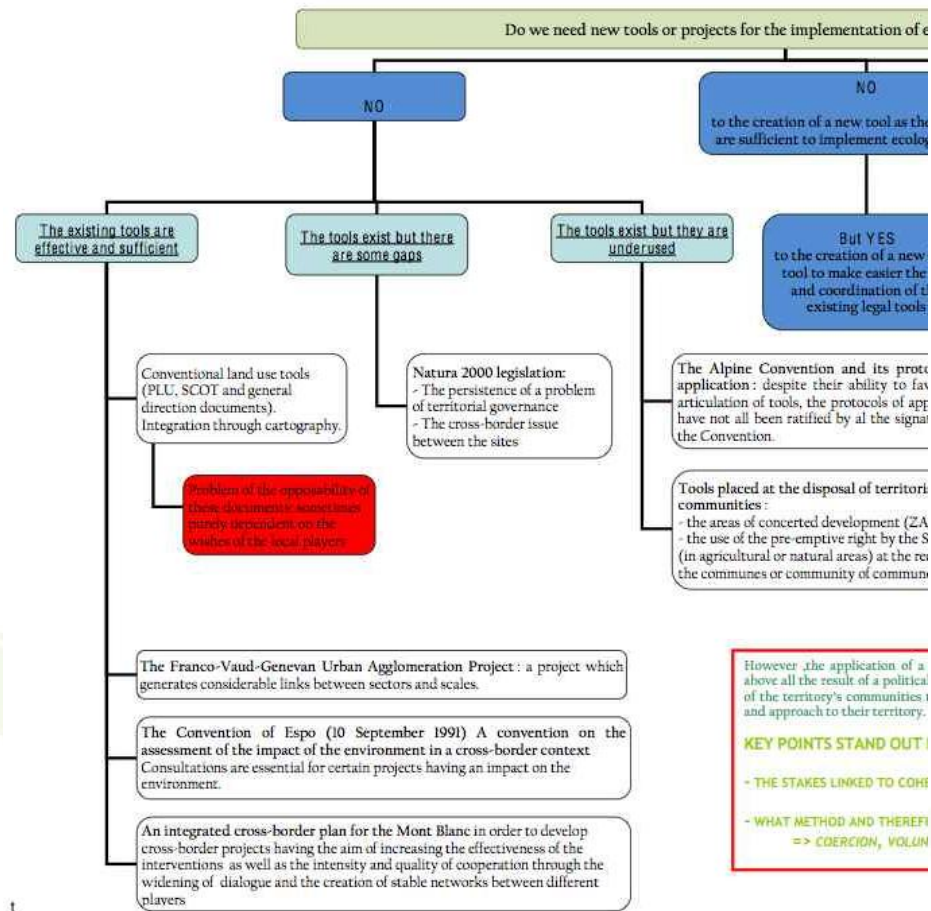
PROGETTO
DIPARTIMENTO REGIONALE DELLO SVILUPPO ECONOMICO, REGIONALE DELLO SVILUPPO ECONOMICO, REGIONALE DELLO SVILUPPO ECONOMICO

PROGETTO
DIPARTIMENTO REGIONALE DELLO SVILUPPO ECONOMICO, REGIONALE DELLO SVILUPPO ECONOMICO, REGIONALE DELLO SVILUPPO ECONOMICO



The Protection of Ecological Connectivity: Analysis of the Principal Legal Instruments.

Comparisons between Swiss, French and Italian Jurisdictions.



Final Documents

Policy Recommendations

Final booklet

Synopsis

Implementation
recommendations





RECOMMENDATION 01

Valorise ecological connectivity for Alpine society and economy...

... which would provide a solution to the growing fragmentation of the Alpine space especially as an adaptation strategy to climate change.

RECOMMENDATION 02

Establish a legal framework to realise ecological connectivity measures at various scales ...

... in order to increase the chances of success, which are imperative to identify legal opportunities and obstacles for the feasibility of every project.



RECOMMENDATION 03

Integrate the concept of ecological connectivity into all spatial planning instruments at all scales (local to international) using an inter-disciplinary approach ...

... is essential for biodiversity conservation and for enhancing the resilience of ecological processes in the face of global anthropogenic changes in the multi-functional Alpine landscape.

RECOMMENDATION 05

*Make a
funds op
managem
scale ...*

*with public
data
(one-wide)*

... in order to red
and management.

position





Platform Large Carnivores, Wild Ungulates and Society (WISO)



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Rossi, Christian Schmid, Chris Walzer
a.m.o.

