



University of Foggia
Department of Agriculture, Food and Environment

A wide-angle photograph of a dry, hilly landscape in the Apulia region. The foreground shows a dirt path leading through dry grass and shrubs. In the background, rolling hills are visible under a clear blue sky, with a few wind turbines on the horizon.

The Sheep-Track Network and the High Nature Value Farmland in the Apulia region: a strategy for a systemic conservation.

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Structure of the presentation

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Introduction: what are the sheep track? What are the High Nature Value Farmaland?

Long and **grassy paths** connecting Abruzzo and Molise to the Apulia region.

Transhumance is a **very old form of pastoralism** practice where livestock is moved seasonally between higher pastures, in summer time, and lower pastures, during the winter.

Over time, these paths have been developed following the **natural shape of the landscape** and, at the same time, providing the environmental “warp” to the “weft” made of relevant historical and cultural heritage.

Today transhumance is no longer carried out, but the legacy of such a peculiar “fabric” should be considered a **valuable regional asset that needs to be properly maintained** in terms of promoting rural development. The management of this asset is in charge of the **Apulia Regional Property Department** that recently endorsed a planning framework (L.R. 4/2013) through which the **sheep-tracks should be characterized and classified with respect to their integrity**.

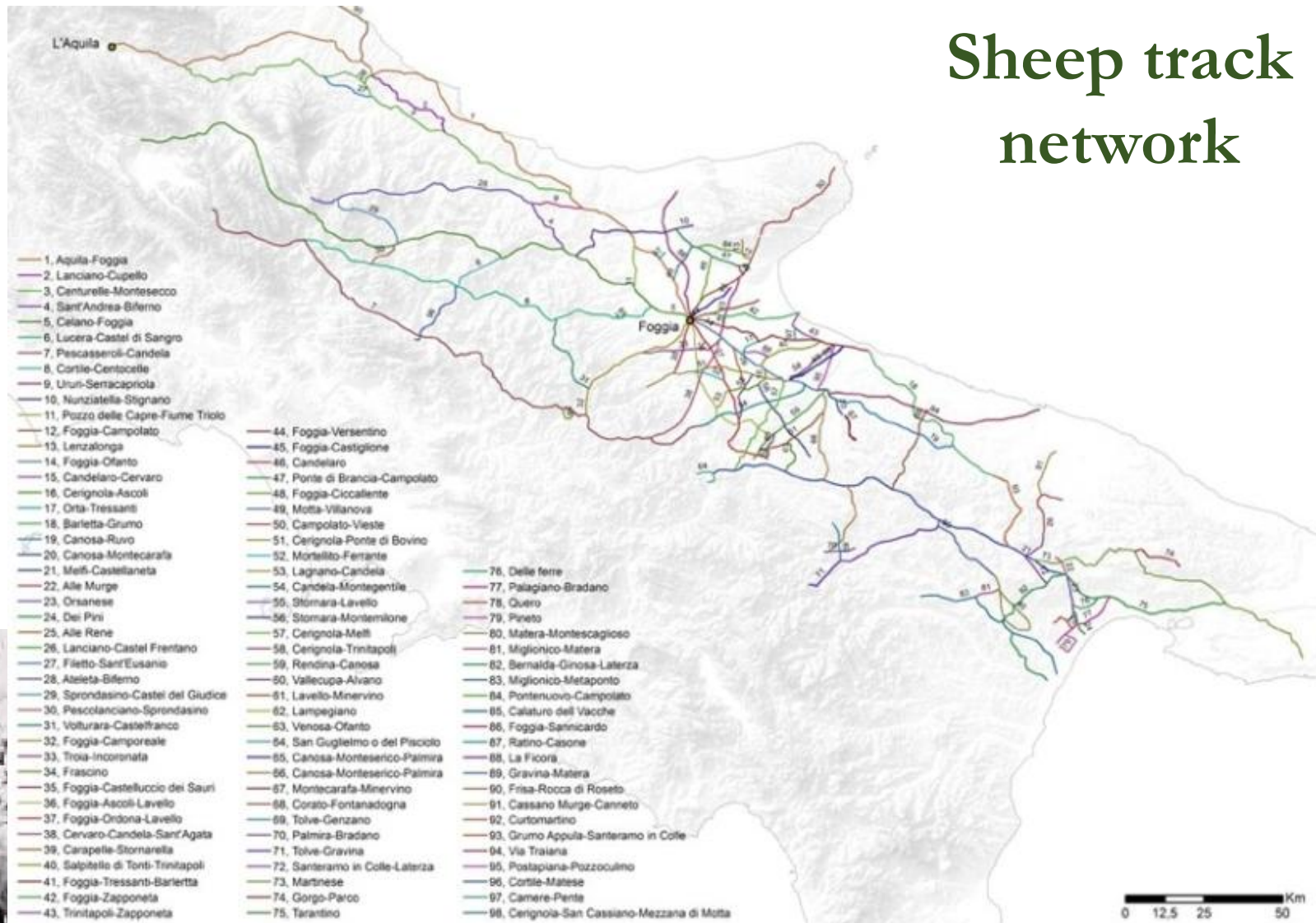


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Introduction: what are the sheep track? What are the High Nature Value Farmaland?

Sheep track network



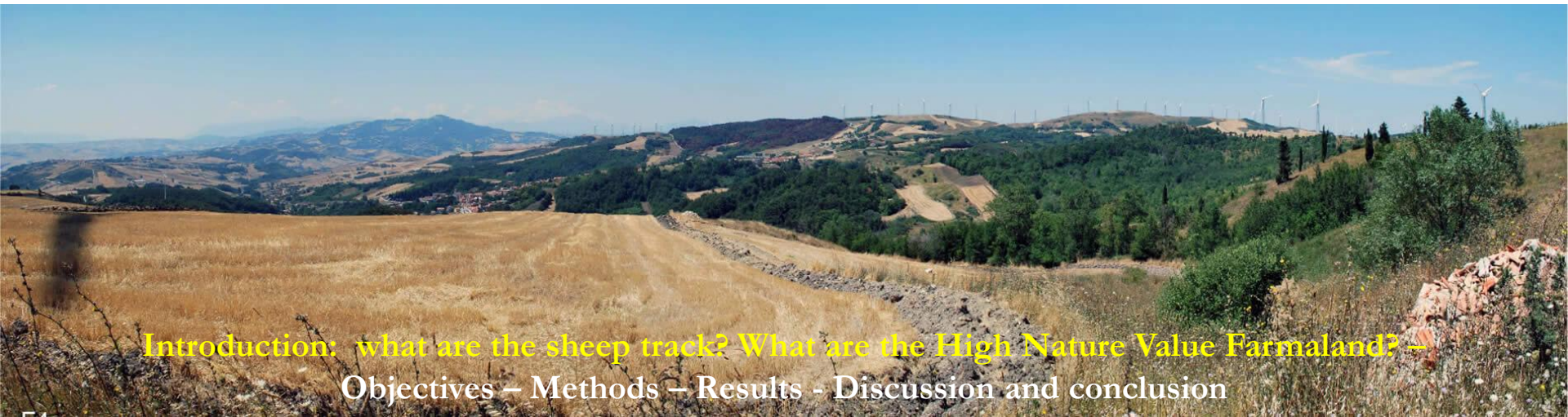
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Introduction: what are the sheep track? What are the High Nature Value Farmland?

One or more of the following properties characterize **High Nature Value Farmland**:

1. low farming intensity;
2. semi-natural vegetation and species of conservation interest;
3. heterogeneity and diversity of the land cover types



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Objectives

The **agro-environmental analysis** of the landscape pertaining to the sheep-track network was assigned to the University of Foggia in collaboration with the “Land Planning Sector” of the Foggia province.



Identification and characterization of the ecosystem units



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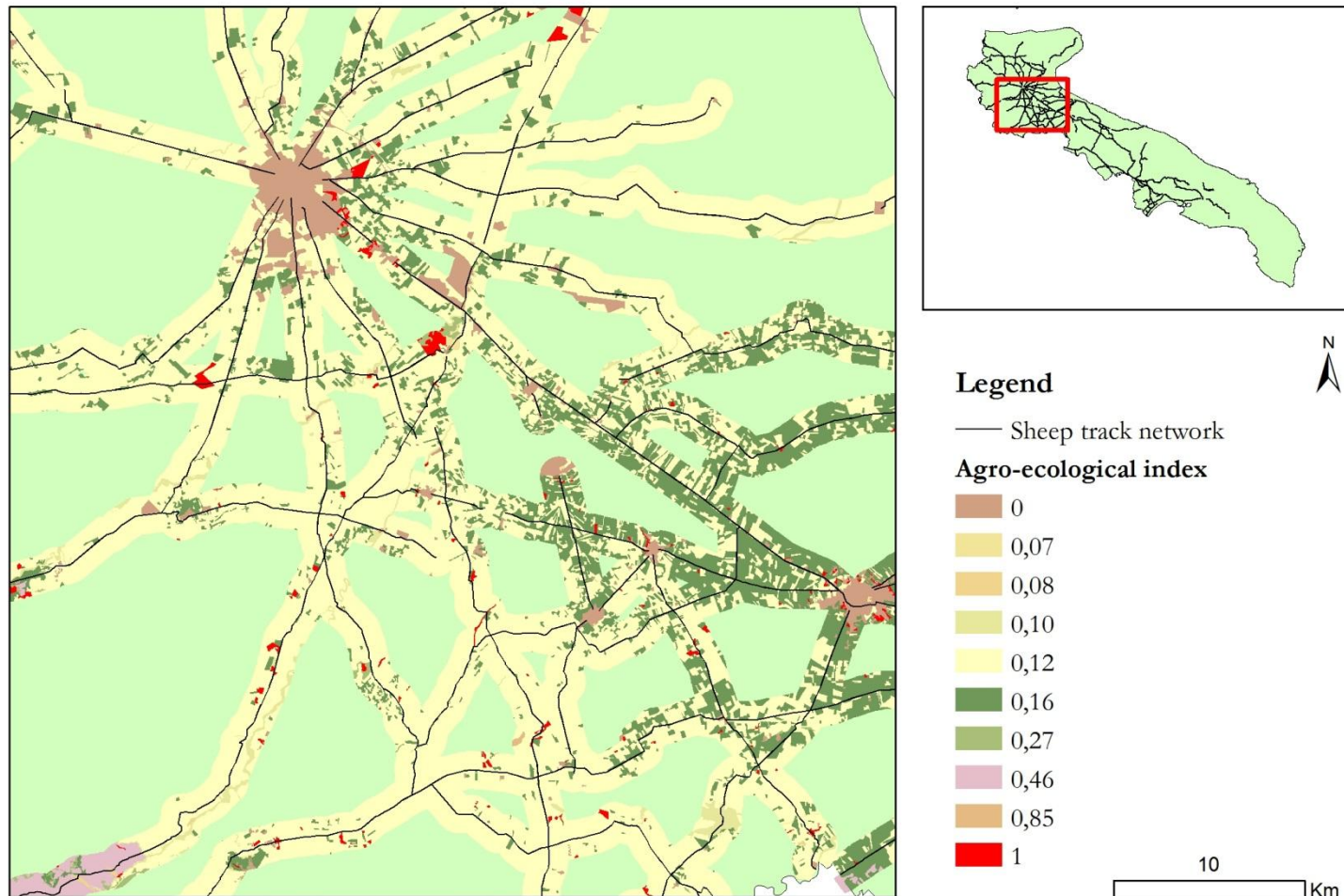
Methods

The applied methodology is a combined approach of **landscape ecology** and **agroecology**, with the support of a **Geographic Information System** (GIS) that allowed the processing of **georeferred information** and the obtainment of properly designed **thematic maps**.

1. The **sheep track** network was selected for the Apulian region;
2. A **buffer of 1 km** was made around the network.
3. The **Apulian Habitat Map** (ISPRA, 2009) was used to produce the **Agro-Biotopes Map** through a clustering of similar habitats.
4. An **agro-ecological score**, ranking from 0 to 1, was assigned to each type of agro-biotope according to a cardinal ranking procedure.

Biotope code	Agro-biotopes	Agro-ecological score
B0	Artificial areas	0,00
B1	Artificial vegetated areas	0,07
B2	Dunal vegetation	0,08
B3	Bare rock	0,08
B4	Riparian vegetation areas	0,10
B5	Annual crops	0,12
B6	Fruit tree crops	0,16
B7	Woods and Forests	0,27
B8	Complex cultivation patterns	0,46
B9	Bush and garrigue	0,84
B10	Meadows and pasture	1,00

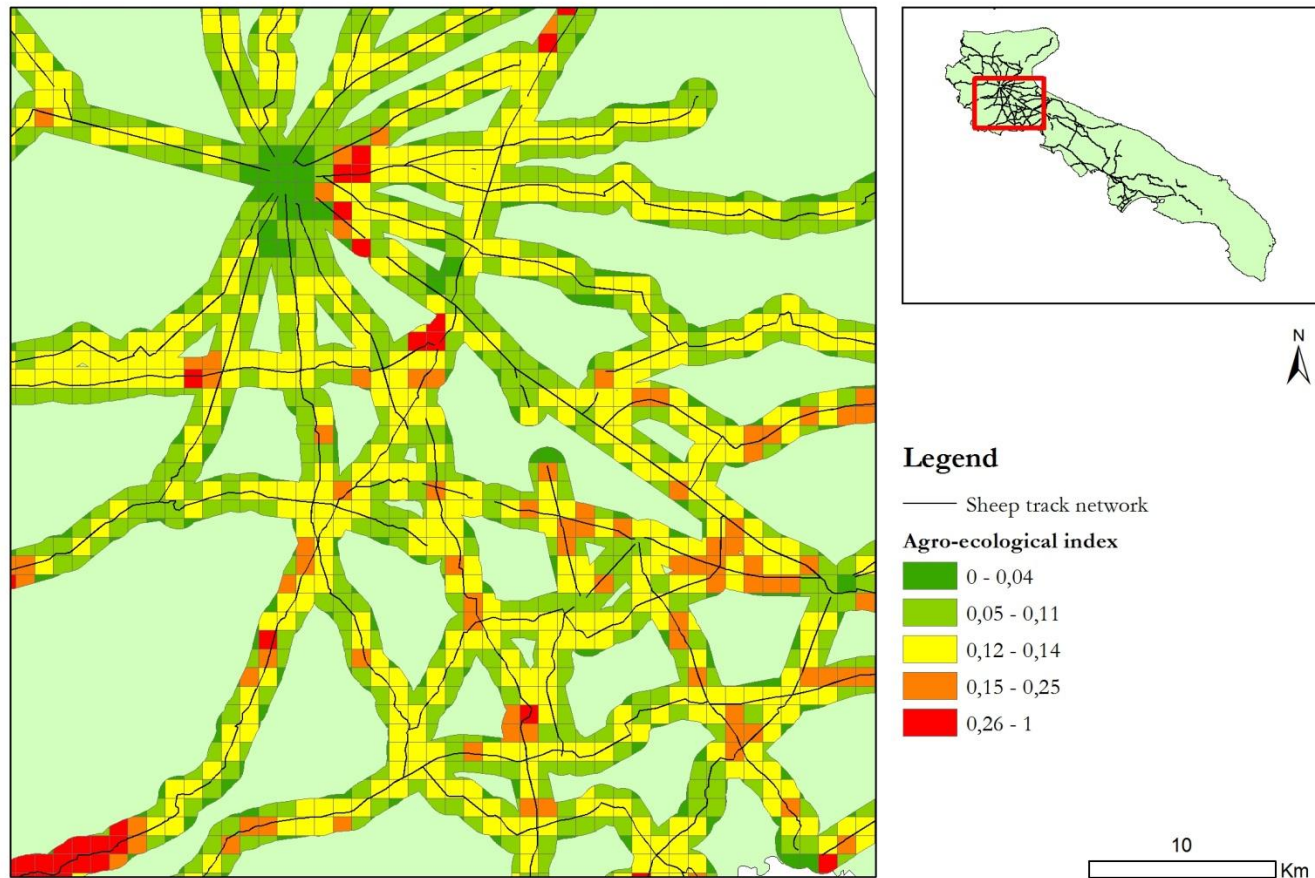
Methods



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5. Then, a **grid** with a squared mesh of 1 km by side was overlapped to the *Agro-Biotopes Map*. A **weighted average agro-ecological** score was assigned to each mesh based on the proportional area of each occurring agro-biotope, thus producing an *Agro-ecological value Map*.



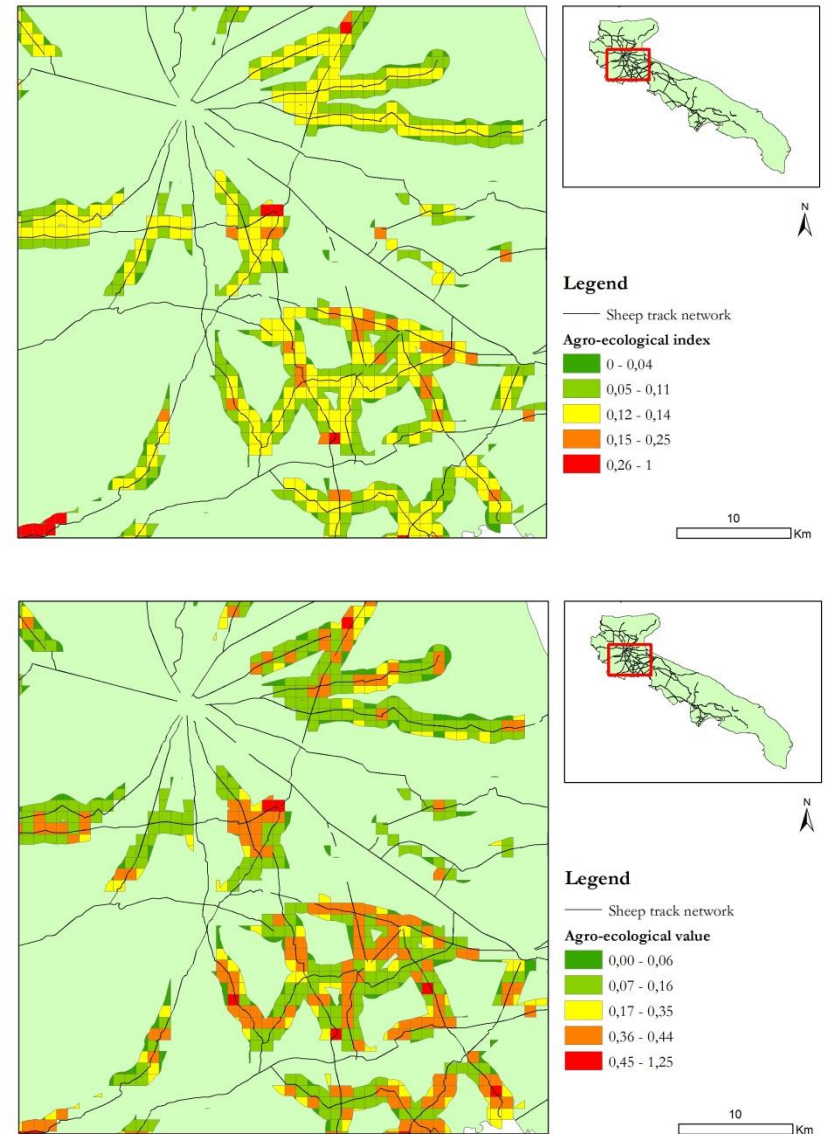
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6. Using the georeferenced database of the **road network**, it was observed that frequently the original path of the sheep-track network was almost completely occupied by highways and national roads. These sections of the network were not considered in the analysis and, therefore, removed.

7. The agro-ecological score was increased for those meshes belonging to **protected natural areas** (national and regional parks, SCI and SPA of Natura 2000 network) or containing **priority habitats** according to the Directive 92/43/CEE.

8. The total score of each mesh was finally **assigned into 5 classes** according to its corresponding quantile. Only the upper class (i.e. class 5 with the highest scores) was selected as containing those relevant areas to be preserved and mapped.

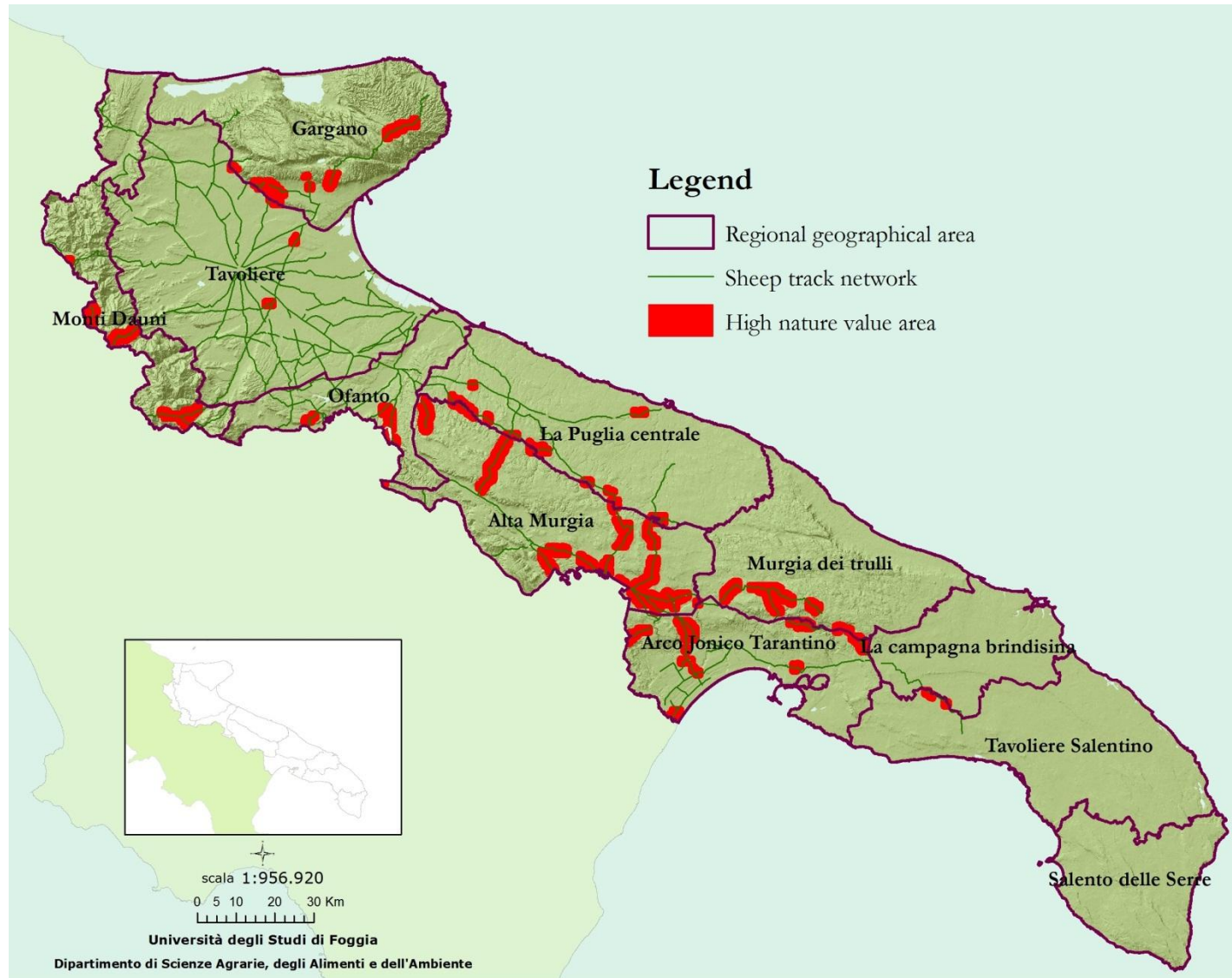


Results

Biотopes	Code	Agro-ecological score	Number of patches (N)	Area (ha)	Area (%)
Riparian vegetation areas	B4	0,10	39	233,66	0,58
Annual crops	B5	0,12	34	1.086,77	2,70
Fruit tree crops	B6	0,16	866	7.054,65	17,56
Woods and Forests	B7	0,27	371	6.232,39	15,51
Complex cultivation pattern	B8	0,46	701	18.936,71	47,13
Bush and garrigue	B9	0,84	72	648,20	1,61
Meadows and pasture	B10	1,00	390	5.986,19	14,90
Total			2.473	40.178,57	100,00

B8 is a traditional form of agricultural land utilization related to a diversified management that preserves and attracts biodiversity. This definition is similar to **type 2 HN VF** (sensu Andersen et al. 2003) and is represented by a farming landscape with a proportion of semi-natural vegetation (wood, forests, meadows and pastures) which insists in a rich mosaic of arable and/or tree crops.

Results



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Results

Regional geographical area	Number of patches (N)	Area (ha)	Area (%)
Alta Murgia	818	17.216,80	42,85
Murgia dei trulli	245	4.965,50	12,36
Arco Jonico Tarantino	494	4.848,87	12,07
Monti Dauni	244	4.194,05	10,44
Gargano	161	3.581,57	8,91
Puglia centrale	343	3.033,44	7,55
Ofanto	128	1.608,75	4,00
Tavoliere	23	455,72	1,13
Tavoliere salentino	15	265,11	0,66
Campagna brindisina	2	8,76	0,02
Total	2.473	40.178,57	100,00



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Discussion and conclusion

- The identification of those **sheep-track sections** in which type 2 HN VF are present was performed.
- The importance of **low intensity farming** in the conservation of biodiversity was acknowledged early in the 1990s, when the concept of HN VF was firstly proposed (Lomba et al., 2014).
- **Sustainable agricultural systems** are now increasingly important in terms of both food production and ecosystem services, including regulatory, support, cultural and aesthetic services (Lomba et al., 2014).
- At landscape scale, maintaining HN VF areas and consequently their ecosystem services is a way to **preserve**, at the same time and **synergistically, the complex culture system linked to the sheep-track network**.

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Grazie per l'attenzione!

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