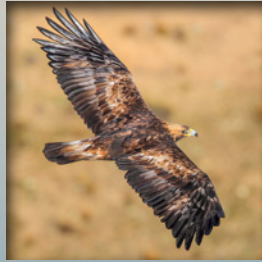




APE TOE

RIPRISTINO PRATERIE E FORESTE DELL'APPENNINO TOSCO-EMILIANO

Restore Prairies and Forests of the Tuscan-Emilian Apennine



Supported by



Endangered Landscapes & Seascapes Programme



Cambridge Conservation Initiative



Funded by **ARCADIA**



Northern Apennine Conservation Plan



ITE110002



NORTHERN APENNINE CONSERVATION PLAN
 (Concise Version)

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1. INTRODUCTION

1.1 THE APE TOE PROJECT AND THE ELSP PROGRAMME

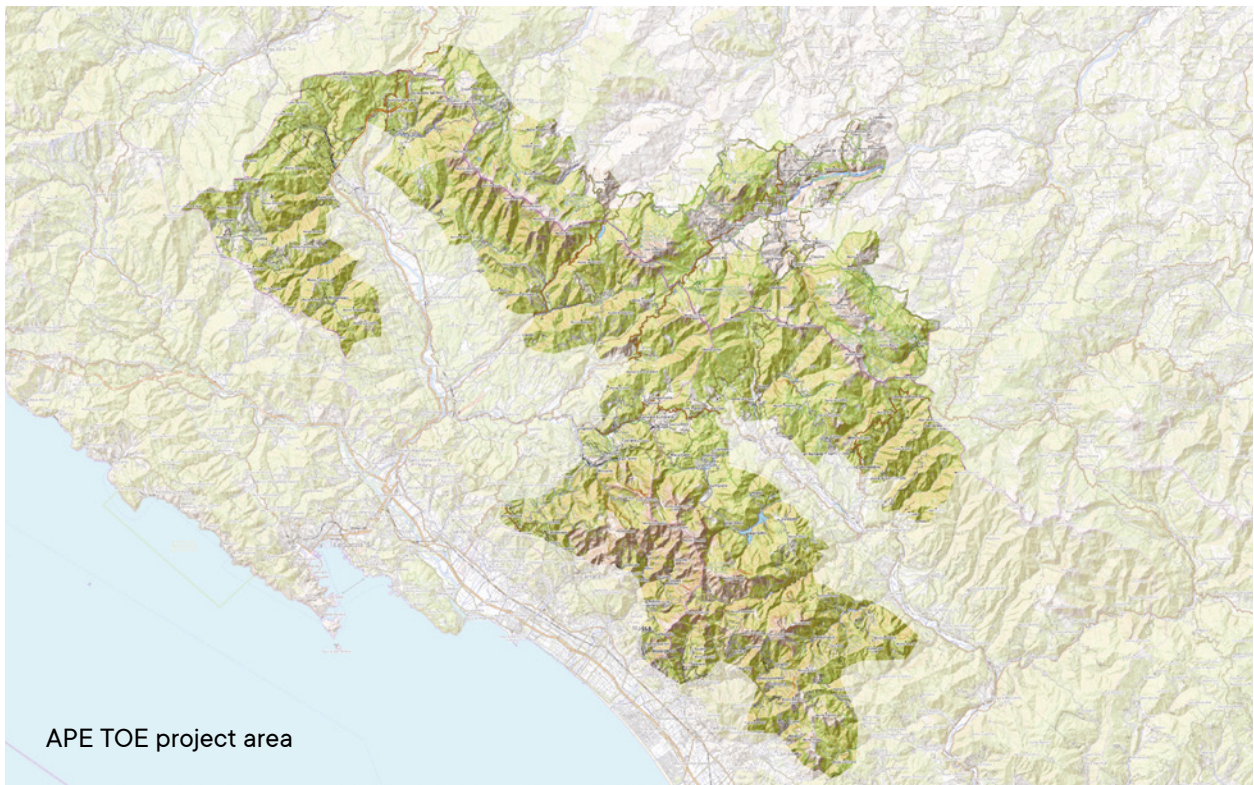
The project “Restore Prairies and Forests of the Tuscan-Emilian Apennine”, with the acronym “APE TOE”, was selected in 2023 among the nine funded proposals (the only one in Italy) out of approximately 200 submitted under the ELSP programme.

The Endangered Landscapes & Seascapes Programme (ELSP) is managed by the Cambridge Conservation Initiative (CCI), a collaboration between the University of Cambridge and ten leading biodiversity conservation organisations: BirdLife International; BTO (British Trust for Ornithology); CCF (Cambridge Conservation Forum); FFI (Fauna & Flora International); IUCN (International Union for Conservation of Nature); RSPB (Royal Society for the Protection of Birds); TRAFFIC; Tropical Biology Association; UNEP-WCMC (UN Environment Programme World Conservation Monitoring Centre); Wildlife Conservation Society.

CCI, in collaboration with Arcadia, a charitable foundation, funds and manages projects and initiatives aligned with its vision and biodiversity conservation strategy, including the Endangered Landscapes & Seascapes Programme.

The general objective of the funded project is to lay the foundations for initiating large-scale restoration of the agropastoral Apennine landscape, consisting of a mosaic of natural areas, pastures, and traditional croplands capable of maintaining high levels of biodiversity, restoring habitats and ecological processes, enhancing climate resilience, attracting sustainable tourism, and improving the well-being of local communities.

Project Identity Card	APE-TOE Ripristino Praterie e Foreste dell'Appennino Tosco-Emiliano <i>APE-TOE Restore Prairies and Forests of the Tuscan-Emilian Apennine</i>
What	Northern Apennines Conservation Plan (bottom-up drafting, creation of a new future vision, action database)
Dove	155.000 ha tra Toscana ed Emilia Romagna (Appennino Tosco-Emiliano, Alpi Apuane, Lunigiana e Garfagnana)
Why	Restoration and ecological reconnection of abandoned agro-natural landscapes in the Tuscan-Emilian Apennines
Lead Organisation	Legambiente nazionale APS Rete Associativa ETS
Support	Endangered Landscapes & Seascapes Programme managed by Cambridge Conservation Initiative with support from Arcadia
Partner	Parco Nazionale dell'Appennino Tosco-Emiliano, Parco Regionale delle Alpi Apuane, Ente di Gestione per i Parchi e la Biodiversità Emilia Occidentale (Parchi del Ducato) Unione di Comuni Montana Lunigiana, Unione Comuni della Garfagnana, GAL Consorzio Lunigiana, GAL MontagnAppennino Regione Toscana, Regione Emilia Romagna, UNCEM
Technical Support	NEMO Nature and Environment Management Operators Srl
Legambiente Project team	Nicola Corona: Project Coordinator Arturo Palomba: Financial Manager Antonio Nicoletti: Protected Areas National Coordinator Stefano Raimondi: Biodiversity National Coordinator Silvia Visca: Technical Officer Matteo Tollini: Local Operator for Stakeholder Engagement and Social Communication Milena Dominici: Head of Communication Sebastiano Venneri: Technical Coordinator
Collaborations	Dott. Tommaso Campedelli – D.R.E. Am Italia Soc. Coop. Agr. e LIFE ShepForBio; Dott. Matteo Casanovi – Unione Comuni Garfagnana e Comune di Minucciano; Prof. Alberto Maltoni – DAGRI UNIFI; Dott. Alex Borrini – libero professionista; Ing. Corrado Mansanti – Centro Studi “La Giovane Montagna”; Dott. Italo Pizzati – Comunità del Cibo di crinale; Dott. For. Antonio Brunori, dott. Francesca Dini, dott. Agr. Eleonora Mariano – PEFC Italia



1.2 PLAN SCENARIO

The Conservation Plan aims to establish conditions for coherent interventions focused on restoring a multifunctional landscape, specifically by:

- Supporting and promoting the restoration of natural processes across vast areas, creating core areas primarily for nature conservation and climate resilience.
- Maintaining and restoring cultivated landscapes, particularly pastures and hay meadows, which host many threatened species and habitats.
- Enhancing nature-based tourism linked to the natural and cultural heritage.
- Promoting traditional land-use activities as a means to support ecosystem services, including climate regulation, soil conservation, and cultural well-being



1.2.1 Ecological Value of the Territory

The project area holds significant importance for both Italian and European biodiversity, as evidenced by the presence of:

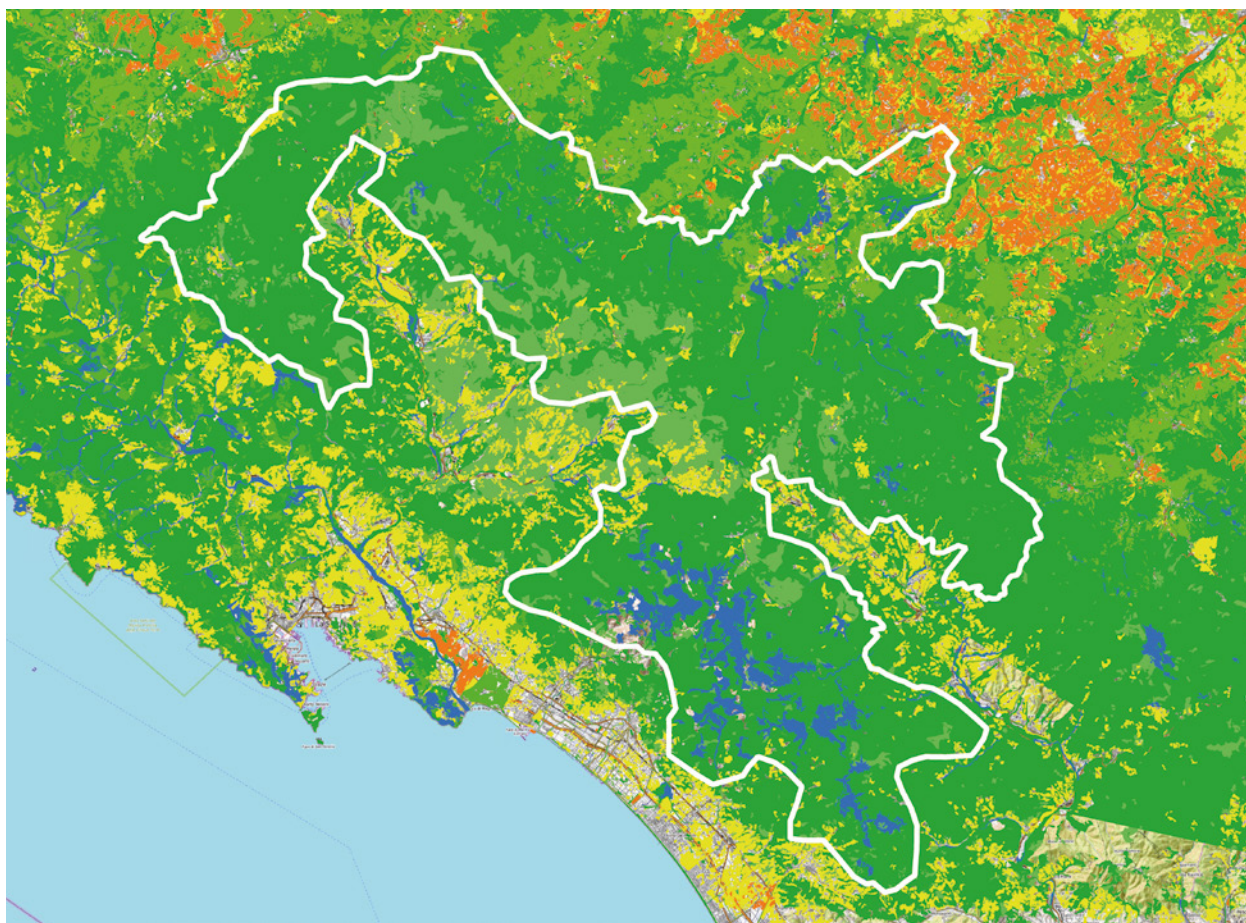
- 45 habitats of Community interest, included in Annex I of Directive 92/43/EEC “Habitats”;
- 52 species of Community interest, listed in Annex II of Directive 92/43/EEC “Habitats” or in Annex I of Directive 2009/147/EC “Birds”;
- 56 endemic plant species (19 exclusively found in the Apuan Alps) and 18 animal species;
- 29 Natura 2000 sites (covering 43% of the area’s surface);
- The National Park of the Tuscan-Emilian Apennines, along with two regional parks: the Apuan Alps Regional Park and the Cedra and Parma Valleys Regional Park (covering 30% of the project area);
- The UNESCO MAB Reserve “Tuscan-Emilian Apennines.”

These aspects are further supported by data from the Carta della Natura (Laureti et al., 2009). Based on this information, ISPRA has assigned an Ecological Value to each mapped biotope, using a set of indicators grouped into three categories:

- Institutional values (inclusion in a SCI, a SPA, or a Ramsar site);
- Biodiversity components of habitats (presence of habitats of Community interest; potential presence of vertebrates; potential presence of flora);
- Landscape ecology (extent, rarity, perimeter-to-area ratio).

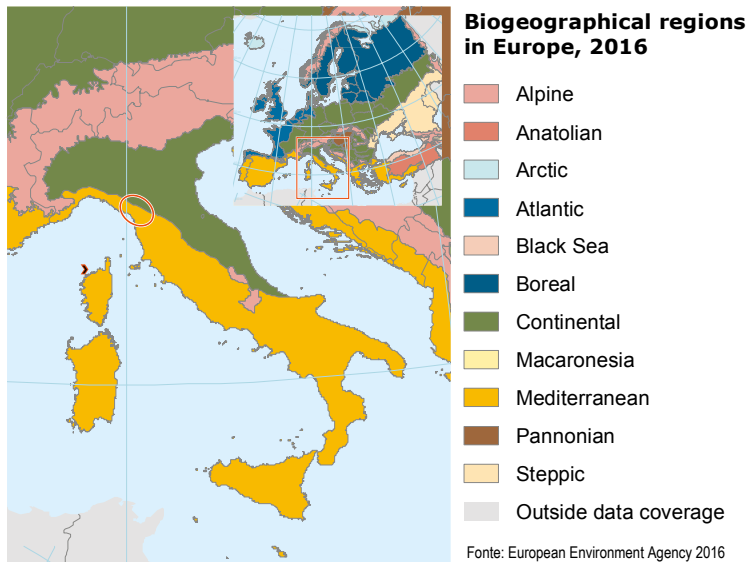
The project area is largely of high ecological value, with medium ecological value in some parts, while very high ecological value is observed in specific locations such as the Apuan Alps (MS, LU), the meadows of Logarghena (MS), certain areas of the Emilian Apennine slopes, and other mountain areas of Emilia (e.g., the chestnut and alder forests in the upper Secchia Valley, the chestnut forests of Civago).

Situated at the boundary between the Mediterranean and Continental biogeographical regions, this territory is an extensive, low-human-impact area where natural processes largely prevail. It plays a strategic role in nature conservation in Italy, as it:



Valore ecologico dell'area di progetto (blu = molto alto; verde scuro = alto; verde = medio; giallo = basso; arancione = molto basso)
Ecological Value of the Project Area (blue = very high; dark green = high; green = medium; yellow = low; orange = very low)

- Serves as a crucial corridor between the Apennines, the Alps, and continental Europe, offering a potential refuge and transit zone for species that are expected to shift their range due to climate change;
- Marks the southernmost distribution limit for continental species and the northernmost limit for Mediterranean species;
- Is identified as the primary biodiversity hotspot according to the Regional Biodiversity Strategy of Tuscany.



The landscape is currently characterised by extensive natural areas, predominantly composed of forests, interspersed with grasslands in mountainous regions and limited cultivated areas, mainly surrounding small rural settlements. Many of these agricultural areas still qualify as High Nature Value Farmland (HNVF).

Since the 1960s, non-forested environments, grasslands, and cultivated fields have been in sharp decline. In the past, the project area was far more inhabited and extensively utilised, as evidenced by the presence of ancient settlements, roads, and agricultural structures of significant historical and landscape value.

The combination of natural and historical-cultural values that defines the area has been the foundation for its designation as a UNESCO MAB Reserve. The abandonment of rural activities has contributed to the overall re-naturalisation of the area, leading to forest expansion, the recent return and population increase of key species (such as ungulates, wolves, and golden eagles), and the restoration of natural processes. However, current dynamics also have negative effects on biodiversity, primarily due to the loss of habitat heterogeneity and open landscapes

1.2.2 Vegetation and Flora

Within the project area, 45 habitats of Community interest have been identified as worthy of conservation, 10 of which are considered a priority for their preservation at the European level.

The flora of biogeographical and conservation importance is closely linked to the extent and location of these habitats, as well as a few other natural habitats, which are associated with:

- 7 plant species of Community interest;
- 173 plant species of conservation interest;
- 56 endemic or sub-endemic plant species, including 19 species exclusive to the Apuan Alps.

Forests - Broadleaf forests are the most widespread vegetation formations in the project area. Beech forests, generally found at elevations above 1,000 metres, are particularly abundant in the Tuscan-Emilian Apennines. Of notable ecological value, due to their naturalness and rarity, are the beech forests with yew (*Taxus baccata*) and holly (*Ilex aquifolium*), present in Alpe di Succiso, as well as the beech forests with silver fir (*Abies alba*) in the Upper Val Dolo and the Upper Taverolo Valley.

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Historically, forests have represented an important resource for mountain communities. This is evident from the widespread presence of chestnut forests, which were actively encouraged by humans in many Apennine areas, including the project area. Chestnut orchards are a typical feature of the traditional



agroforestry landscape of mountain regions and still serve as a valuable historical and cultural testimony to the utilisation of mountain resources by humans. However, these semi-natural environments are now in decline, primarily due to various diseases and the lack of management, a consequence of the progressive depopulation of mountain areas.

In the Orecchiella Park – Pania di Corfino – Lamarossa area, as well as in the Gordana Valley and the Secchia Valley, high-quality forest formations can be found on cool slopes and ravines, dominated by lime trees, ashes, and maples, covering significant areas. Elsewhere, these forest communities have often become relics, having historically been replaced by deciduous trees more suited to coppicing practices.

Along watercourses and lake shores, riparian forests dominated by various species of alder, willow, and ash can be found, characteristic of hygrophilous vegetation.

Grasslands - Above 1,700 metres, altitudinal grasslands extend across much of the Apennine ridges, differing based on the type of substrate supporting vegetation: acidophilus

grasslands, characteristic of a more Alpine environment, and calcicolous grasslands, which are particularly widespread in the Apuan Alps.

At the summit areas of the Apuan Alps, in addition to high-altitude grasslands, there are rocky environments of various origins (glacial cirques, scree slopes, moraine deposits, etc.). The habitat found on the Apuan limestone pavements of M. Borla, M. Tambura, and M. Sagro is considered of particular European importance. These rocky habitats have given rise to unique plant assemblages, including *Athamanta cortiana*, *Silene lanuginosa*, and the Borla knapweed (*Centaurea montisborlae*), all of which are endemic to the area.

Located in small isolated populations along the northern ridge of the Tuscan-Emilian Apennines, between Monte Vecchio and Monte Orsaro, is the Apennine primrose (*Primula apennina*), an endemic species classified as a priority species of Community interest.

Between the forest limit and primary high-altitude grasslands, low-growing shrub vegetation, such as bilberry heathlands, is well represented in the Northern Apennines (e.g., M. Belfiore, M. Prado, M. Vecchio) and more locally distributed in the Apuan Alps, on higher siliceous peaks (e.g., M. Pisanino, M. Cavallo, M. Contrario). In the Northern Apennines, this vegetation, characteristic of Alpine environments, has evolved a distinct floristic composition, forming an endemic association of this region, where the dominant species include Richer's St. John's Wort (*Hypericum richeri*) and small-leaved bog bilberry (*Vaccinium uliginosum* subsp. *microphyllum*).



At lower elevations within the study area, near settlements, rural nuclei, and foothill zones, semi-natural grasslands can be found. These meadow environments, created through agricultural and livestock activities, are maintained by grazing and mowing for hay production. These characteristic agroecosystems support high biodiversity, both plant and animal (e.g., birds and butterflies). For this reason, some of these semi-natural grasslands have been classified as habitats of Community interest.

Of particular ecological importance are:

- Calcicolous rocky grasslands, dominated by species of the genus *Sedum* (stonecrop) and annual *Alyssum*;

- Semi-natural dry grasslands, with scattered shrubs on calcareous substrates, often hosting rich orchid blooms;
- Nardus grasslands, found on siliceous substrates.

Among the most noteworthy plant species associated with pastures and calcareous grassland slopes is the netted gladiolus (*Gladiolus palustris*), a species classified as Near Threatened (NT) and listed among the plant species of Community interest.

Wetlands - At a regional scale, some of the most important wetland areas include the Padule di Fivizzano, Lago Peloso in Zeri, and the Gemini Lakes and Lago Santo Parmense in Corniglio. Within these environments, peat bogs make a significant contribution to the overall biodiversity of the project area.

These wetlands are fragmented, small-scale ecosystems where the water table is at the surface, allowing for the development of peat-forming communities dominated by sedges (*Carex* spp.) and floating carpets of sphagnum moss (*Sphagnum* spp.).

In the project area, these habitats are found in localized areas, such as Pania di Corfino (Lamarossa bog), Rocca Tenarano, and Prato Spilla below Monte Bocco, as well as in the Apuan Alps, specifically in Padule di Fociomboli, Monte di Roggio, Foce Mosceta, and the Gorfigliano plain.

These highly biodiverse environments are particularly fragile, as they are affected by direct anthropogenic disturbances and broader-scale pressures linked to climate change. These pressures are causing the progressive decline of typical wetland habitats and the species associated with them, which are among the most globally threatened.



1.2.3 Fauna

The project area is of paramount importance for Italian and European faunal diversity, as evidenced by the presence of:

- 52 species listed in Annex II of Directive 92/43/EEC or Annex I of Directive 2009/147/EC;
- 42 endemic species.

The landscape, characterised by extensive natural areas, primarily composed of forests interspersed with grasslands, creates a high ecological heterogeneity, which is highly favourable for hosting a large number of animal species.

Given its vast and diverse habitats, the area is of great significance for birdlife. Numerous bird species of Community interest find suitable breeding sites within these environments.

The open grasslands, mountain pastures, and high-natural-value agro-pastoral landscapes (High Natural Value Farmland – HNVF) provide nesting grounds for over 70 breeding bird species (Campedelli et al., 2019), some of which are of particular conservation interest, including:

- Tawny pipit (*Anthus campestris*)



- Woodlark (*Lullula arborea*)
- Rufous-tailed rock thrush (*Monticola saxatilis*)
- Red-backed shrike (*Lanius collurio*)

Beyond the extensive grassland areas, the peaks of the Tuscan-Emilian Apennines and the Apuan Alps are surrounded by rocky environments with distinctly Alpine characteristics. These habitats are home to species such as:

- The Alpine chough (*Pyrrhocorax graculus*)
- The rarer red-billed chough (*Pyrrhocorax pyrrhocorax*)
- The wallcreeper (*Tichodroma muraria*)

Additionally, mountain cliffs in the area support species strictly associated with rocky habitats, such as the golden eagle (*Aquila chrysaetos*), which is present in the project area with at least 10 breeding pairs.

The numerous wetland areas of the Tuscan-Emilian Apennines, both permanent and temporary, along with the complex hydrographic network, enrich the landscape with aquatic environments, which in turn support a diverse fauna of invertebrates and vertebrates.

In the upper courses of several streams within the project area, the white-clawed crayfish (*Austropotamobius pallipes*) is present—a freshwater decapod classified as globally endangered (EN).

Regarding fish fauna, each of the Apennine slopes included in the project area is characterised by the presence of endemic species, including:

- Various species of barbel (*Barbus* sp. pl.)
- Italian bleak (*Telestes muticellus*)
- Other rheophilic cyprinids (species adapted to flowing waters).



Among urodele amphibians, several endemic species of the northern and central Apennine district have been recorded.

Species associated with surface wetlands include:

- The Apuan alpine newt (*Ichthyosaura alpestris* ssp. *apuana*), which inhabits various types of pools, including basins within marble quarries.
- Savi's salamander (*Salamandrina perspicillata*), typically found near springs and forest streams.

The karstic nature of some areas in the Tuscan-Emilian Apennines and the Apuan Alps has led to the formation of a complex system of underground caves and water bodies. These environments are home to:

- The Ambrosi's cave salamander (*Speleomantes ambrosii*)
- The Strinati's cave salamander (*Speleomantes strinatii*)

Both of these plethodontid species are endemic to the karst systems of the northern Apennines and are completely independent of aquatic environments for reproduction, as they exhibit ovoviviparity.

Of particular conservation importance within the project area is the presence of several populations of

the Apennine yellow-bellied toad (*Bombina pachypus*), an endemic amphibian of peninsular Italy. Once widespread in agro-pastoral and riparian environments, this species has undergone a drastic decline in recent decades, with local extinctions across large portions of its range.

Invertebrates of Community Interest - The project area hosts several invertebrate species of European conservation concern, including:

- The Rosalia longicorn (*Rosalia alpina*), a rare beech-associated cerambycid beetle.
- The hermit beetle (*Osmoderma eremita*), a highly threatened saproxylic species.

Both species are considered flagship species, as their conservation would contribute to the protection of mature forest ecosystems and their associated faunal communities.

The rich entomofaunal diversity of the Tuscan-Emilian Apennines is further demonstrated by the presence of 30 endemic insect species, some of which are exclusive to the Apuan region, including:

- The ground beetle (*Nebria apuana*)
- The leaf beetle (*Chrysolina osella*)
- The Apuan pill beetle (*Timarcha apuana*)

Additionally, the area is home to various cave-adapted species belonging to the genus *Duvalius*, which are troglobitic beetles specialised for life in subterranean environments.

Among the numerous mammal species recorded in the project area, particular attention is given to seven bat species listed in Annex II of Directive 92/43/EEC, including:

- The barbastelle (*Barbastella barbastellus*)
- Bechstein's bat (*Myotis bechsteinii*)

Both species are classified as Endangered (EN) on the Italian IUCN Red List, with populations declining sharply due to the widespread practice of coppice forest management, which reduces the availability of old-growth trees used as roosting sites.

Newly Discovered Species in the Apuan Alps - Recently, a population of the snow vole (*Chionomys nivalis*) was discovered in the Apuan Alps (Agnelli et al., 2021). This species is a mid-southern European and Turanic mountain rodent, found in the Alps and various areas of the Apennines. It is considered a glacial relict, making it of great biogeographical significance. This small mammal is included in Annex A2 of Regional Law 30/2015.

Wolf Recolonisation in the Apennines - After a long period of decline due to human persecution, the wolf (*Canis lupus*) has gradually recolonised large areas of the hilly and mountainous regions of the Italian peninsula in recent decades. The central and southern Apennine ranges played a crucial role as a refuge for the species, from which it began to reoccupy its historical range, including the study area, eventually extending its distribution as far as the Western Alps and Switzerland (Fabbri et al., 2007).

1.2.4 Ecological and Biogeographical Connections

Ecological fragmentation is one of the main threats to natural biodiversity. The continuity of natural habitats and ecological connectivity are key factors for the conservation of viable populations, allowing individuals to:

- Optimise resource acquisition (e.g., food, reproductive resources) within their ranges.
- Ensure adequate gene flow, maintaining genetic diversity within populations.

Anthropogenic activities and increasing land Artificialization reduce the availability of suitable habitats for many species. The concept of an “ecological network”, defined by ISPRA as a “system of interconnected habitats where biodiversity must be safeguarded”, was developed to optimise the management of natural resources at a regional scale.

This tool, which is increasingly used by territorial governance authorities in planning at regional, provincial or municipal scale, aims to maintain adequate levels of ecological connectivity and, where necessary, restore disrupted connections through targeted regulations and conservation actions (Battisti & Romano, 2007). Since species occupying large geographical areas have distinct ecological requirements and varying dispersal capacities, the ecological network concept must be adapted to this complexity. In this sense, a single territory theoretically contains as many ecological networks as the number of species inhabiting it (e.g., Battisti, 2004).

Parks and reserves play a fundamental role in ensuring the availability of highly natural areas within the ecological network. However, these areas are often poorly connected, functioning more as biodiversity islands within highly fragmented natural or semi-natural landscapes.

The protected areas within the project area can, in this sense, be considered a vast biodiversity reserve, which:

- Provides suitable habitats for numerous plant and animal species.
- Acts as a “source” of individuals/propagules for the recolonisation of neighbouring areas.

With its large extent and environmental diversity, the ecological system included in this area plays a crucial role in species conservation and in supporting ecological resilience on a regional scale.

Extensive woodland areas within the project area form the “nodes” of the network (core areas) of forest environments, which sustain and remain connected to each other and to adjacent forested areas through corridors and forest stepping stones.

However, past intensive and widespread exploitation has led to a situation where many of these forests now have modest ecological value, often consisting of only a few species, or even monospecific stands, with a scarcity of mature formations.

In this context, the most structurally complex formations were fruit-producing chestnut orchards, once widespread. With their open structure and ancient trees, they represented the primary, and in some cases the only, refuges for species typical of mature forests or those favouring so-called wood-pastures. Their gradual disappearance is being partially offset by the improvement in the quality of other broadleaf formations, a long-term process affecting larger areas.

Similarly, agro-pastoral systems, historically shaped by agriculture and extensive livestock farming, represent the nodes of the agroecosystem network. These areas are commonly referred to as High Natural Value Farmland (HNVF) due to their significant role in biodiversity conservation, particularly for species associated with open landscapes.

To safeguard these areas, it is essential to maintain an adequate level of ecological connectivity, especially in light of the gradual abandonment of traditional activities resulting from rural depopulation in mountain regions. This ongoing process, which has been affecting vast areas of the Northern Apennines for several decades, has led to the progressive closure of extensive grasslands, particularly at lower mountain elevations, due to the natural recolonisation by shrub and tree vegetation, which was previously inhibited by grazing or mowing activities.

Furthermore, the hydrographic network and wetland system within the project area hold considerable ecological value. These elements serve a dual function:

- As core areas for the aquatic ecosystem network.
- As ecological corridors, thanks to the riparian zones along watercourses, which contribute to landscape connectivity.

Finally, as previously highlighted, the Tuscan-Emilian Apennines represent an area of great biogeographical significance. These mountain ranges mark the bioclimatic boundary between the Continental and Mediterranean biogeographical regions. Here, species typical of continental environments overlap with those characteristic of Mediterranean zones, creating rich and diverse ecosystems that are also highly relevant for future research on species and ecosystem adaptation to climate change. For example, the project area represents the southern geographical limit of distribution for numerous Alpine and Continental plant species, including, among others, *Campanula patula* and *Potentilla rupestris*. A similar pattern is observed in some animal species. This is the case for the three cave salamander species (*Speleomantes* spp.), for which the study area represents the southernmost limit of their respective geographical ranges (Bruni & Chiocchio, 2022).



2. NORTHERN APENNINE CONSERVATION PLAN

2.1 THEORY OF CHANGE

The Theory of Change is a participatory process through which groups and stakeholders define their long-term objectives and identify the conditions that must be met for these objectives to be achieved. These conditions represent the desired changes. The Theory of Change of the APE TOE Strategic Plan serves as the framework of the Plan and will guide the development of all the actions contained within it. The ToC is structured around six key themes: Political Support and Awareness-Raising - Ecosystem Services - Ecological Connectivity - Habitat and Species Conservation - Climate Change - Cultural Landscapes and Sustainable Socio-Economic Development

2.2 VISION

The vision of the APE-TOE project represents an ideal ecological scenario or final reference framework for the project area. Its objective is to maintain all existing grassland, forest, and riverine environments in a good state of conservation, with a particular focus on those of highest ecological and landscape value, while also improving as much as possible the abandoned or degraded areas.

At the same time, the vision aims to ensure ecological continuity within the Plan's territory and between this territorial system, the Apennine chain, and the Alpine arc.

This is not about defining a fully attainable objective, but rather about aligning plans, projects, and local development funds towards a change that moves in this direction.

Forests - *The slopes of the Apennines and the Apuan Alps are largely covered by dense broadleaf-dominated forest formations, with a mosaic of coppice woodlands, high-forest stands, fruit-producing chestnut groves, and local patches of "old-growth" forests. These forests are managed according to the principles of close-to-nature forestry, promoting mixed woodlands and the natural regeneration of conifer plantations.*

Grasslands and Foothill Pastures - *The forested areas give way near settlements and rural nuclei in the foothill zone, where they are replaced by a heterogeneous agricultural landscape, consisting of croplands and grazed meadows, predominantly managed using organic farming methods. The fields are separated by linear vegetation elements (hedgerows, tree rows), while the edges between forests, meadows, and agricultural areas are marked by strips of shrub vegetation.*

High-Altitude Grasslands and Pastures - *At the summit areas of the Apuan mountains and along the Apennine ridges, a discontinuous belt of high-altitude grasslands can be found. Their preservation is ensured by traditional mowing practices and grazing by cattle, horses, and sheep, most of which belong to local breeds.*

Mountain Wetlands - *Lakes, peat bogs, and marshy areas are protected from the risk of disappearance due to climate change and other major threats. These ecosystems host rare and endangered plant and animal species and are made accessible in a sustainable manner.*

Infrastructure-Related Ecological Barriers - *Along the municipal section of the A15-E33 motorway, the SS 62 della Cisa, the SS 63 del valico del Cerreto, and provincial roads such as Pontremoli-Zeri-Sesta Godano, Brattello, Cirone, Passo delle Radici, Passo del Lagastrello, and Passo di Pradarena, wildlife crossings and deterrents have been implemented to facilitate safe animal movement.*

The Population - *The local economy is sustainable, and resident communities are aware of biodiversity values, benefiting from ecosystem services, including: Agricultural, livestock, forestry, and tourism-based income - Landslide and drought risk mitigation - Recreational spaces provided by forests, grasslands, pastures, and waterways. There is a growing presence of traditional agroforestry activities that support nature conservation, along with the expansion of green tourism, leading to the gradual repopulation of mountain villages. Across the Apuan Alps and the Tuscan-Emilian Apennines, a shared identity is increasingly recognised, with widespread adoption of sustainable behaviours. The conservation and restoration of forest and grassland habitats are ensured by authorities that collaborate effectively at a transregional level. The area is renowned for maintaining an economy in harmony with the environment, serving as a model for other geographical contexts.*

3. GENERAL AND SPECIFIC OBJECTIVES

The General Objectives are broken down into Specific Objectives, which are presented in the following table.

General Objective	1	POLITICAL SUPPORT AND AWARENESS-RAISING Obtain political support for the Tuscan-Emilian Apennines Conservation Plan and raise public awareness.
Specific Objectives	1.1	Promote a coordinated management model for the area.
	1.2	Raise awareness among the public and stakeholders.s
	1.3	Encourage the development of economic activities that support the maintenance/ restoration of the area, align with the Plan's objectives, and contribute to its implementation.
General Objective	2	ECOSYSTEM SERVICES
Specific Objectives	2.1	Increase the ecosystem services provided by grasslands and pastures
	2.2	Enhance the ecosystem services provided by forests.
	2.3	Ensure the maintenance of tourism and recreational ecosystem services.
General Objective	3	ECOLOGICAL CONNECTIVITY Ensure and improve ecological connectivity at regional and interregional scales, as well as within the Plan's area.
Specific Objectives	3.1	Ensure and improve ecological connectivity between the Apuan Alps and the Apennines
	3.2	Ensure and improve ecological connectivity along the Apennine ridge and towards the Alps
General Objective	4	HABITAT AND SPECIES CONSERVATION Improve the conservation status of habitats and plant and animal species.
Specific Objectives	4.1	Improve the conservation status of species in grassland and pasture habitats
	4.2	Improve the conservation status of forest habitats
	4.3	Improve the conservation status of species in wetland and aquatic habitats
General Objective	5	CLIMATE CHANGE Promote the resilience of ecosystems and human communities to climate change and mitigate the impacts of extreme climatic events
Specific Objectives	5.1	Support the progressive increase of carbon storage in natural and semi-natural environments
	5.2	Enhance the resilience of ecosystems and improve the adaptive capacity of habitats and species to climate change
	5.3	Increase the area covered by native Apennine conifer species (<i>Abies alba</i> , <i>Picea abies</i> , <i>Pinus sylvestris</i>).
General Objective	6	CULTURAL LANDSCAPES AND SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT
Specific Objectives	6.1	Support the restoration and enhancement of rural villages, terraced landscapes, and historic routes
	6.2	Maintain and promote the breeding of local livestock breeds

1. SUPPORTO POLITICO E SENSIBILIZZAZIONE

For the successful implementation of the Conservation Plan, it is necessary to:

Obtain political support for the Tuscan-Emilian Apennines Conservation Plan and promote a coordinated management model for the area through the establishment of transregional management bodies and agreements.

Increase public awareness, particularly among public and private landowners and other stakeholders, regarding the ecological value of the Apuan Alps and the Tuscan-Emilian Apennines and the importance of sustainable and responsible management of forests, grasslands, and pastures.

Key Actors of Change - In addition to the APE TOE Plan Partners, the main stakeholders involved include: Municipalities - Unions of Municipalities - Provinces - Economic operators - Professional agricultural organisations and their members - Tourism agencies

Major Expected Changes

- Legitimation of the APE TOE initiative by political decision-makers.
- Creation of synergies with relevant national and regional strategies.
- Adoption of more sustainable agricultural and forestry practices, aligned with nature conservation objectives.
- Coordinated territorial planning, considering ecological connectivity needs.
- Strengthening territorial identity and awareness among local communities.

To achieve this objective, the Plan has been shared from its earliest drafting stages with representatives of the various responsible authorities. This has been carried out through a series of public meetings across different areas, where stakeholders and economic operators were invited to contribute.

To further strengthen and expand local community support, the Plan includes general and targeted awareness-raising actions aimed at increasing citizens' and stakeholders' understanding of:

- The value of the landscape and biodiversity.
- The importance of sustainable and responsible management of forests, grasslands, and pastures.
- The benefits of joining sustainability credit recognition programmes, encouraging participation from agroforestry businesses and landowners.

2. ECOSYSTEM SERVICES

For the successful implementation of the Conservation Plan, it is essential to guarantee and enhance the ecosystem services provided by forests, grasslands, and pastures, including:

- Provisioning services: food, water, timber, fibres.
- Regulating services: climate regulation, hydrological cycle regulation.
- Supporting services: soil formation, photosynthesis, nutrient cycling.
- Cultural services: inspiration, recreation, spiritual well-being.

Key Actors of Change

In addition to the APE TOE Plan Partners, the main stakeholders involved include:

- Economic operators
- Tourism agencies
- Mass media

Major Expected Changes

- Promotion of ecosystem services by institutions and support from economic operators and citizens.
- Adoption of sustainable natural resource use practices, supported by economic incentives, including certification schemes and reward mechanisms for good management practices.

The Plan as a whole, as well as each individual action to varying degrees, aims to maintain and enhance different ecosystem services.

Actions specifically targeting the strengthening and expansion of ecosystem service certification and payment schemes are explicitly designed to achieve this specific objective.

3. ECOLOGICAL CONNECTIVITY

For the successful implementation of the Conservation Plan, it is essential to:

- Ensure and enhance ecological connectivity at a regional and interregional scale (for birds and mammals), particularly along the Apennine chain, towards its northernmost sections in the direction of the Alps, and towards the southeast, connecting with the Tusco-Romagnolo Apennines and beyond (Central and Southern Apennines).
- Ensure and improve ecological connectivity within the Plan's area, for instance, between mature forests and between the Apuan Alps and the Apennine ridge, to meet the ecological requirements of species with different mobility patterns and habitat needs.

Key Actors of Change

In addition to the APE TOE Plan Partners, the main stakeholders involved include:

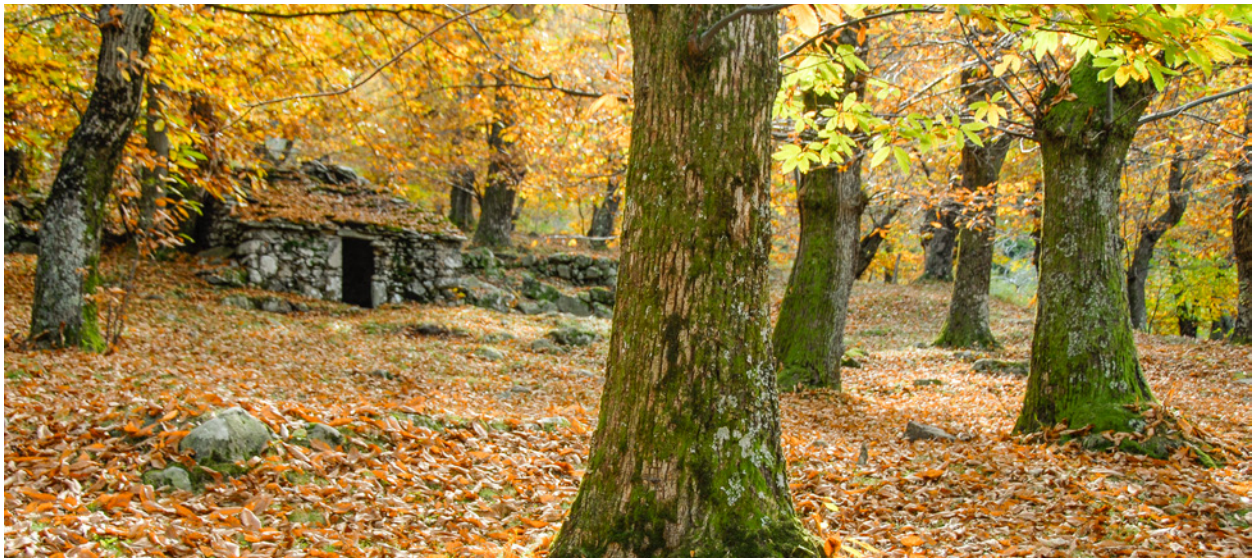
- Professional agricultural organisations and their members
- Local authorities
- Local citizens

Major Expected Changes

- Increased awareness among local institutions regarding the importance of ecological connectivity.
- Institutional incentives to support ecological connectivity measures within:
 - Sustainability and biodiversity credit schemes
 - Common Agricultural Policy (CAP) instruments
 - Other EU programmes and funding opportunities
- Promotion of these measures within the agricultural and forestry sectors through professional organisations, along with support for participation in certification and credit schemes (facilitating small landowners, training technical staff, etc.), and their adoption by farmers and forestry businesses.
- Ongoing dialogue between the different regional departments of Tuscany and Emilia-Romagna on ecological connectivity issues.
- Progressive strengthening of ecological connectivity in key areas within the project area and beyond, with particular attention to:
 - Mature forest networks
 - Open landscape

The ecological connectivity of the forests within the project area can generally be considered satisfactory, given the large and continuous forest matrix. A critical issue in terms of forest ecological connectivity is the scarce and fragmented distribution of mature forests, which also exhibit contrasting evolutionary trends. On one hand, there has been a progressive decline in pre-existing mature forests, primarily composed of fruit-producing chestnut groves, over the past decades due to phytopathological and socio-economic factors. On the other hand, there is a slow but widespread expansion of more mature forests, particularly aged coppice woodlands. Other concerns include the extensive areas managed as coppice forests and the low diversity of forest ecosystems, often consisting of monospecific woodlands.

Regarding open environments and the mosaic of forests and grasslands, it is important to note that, as in the entire Apennine region, no native ungulate species are present that can naturally maintain the forest-grassland mosaic, which was likely present before the extinction of large herbivores. Their ecological role has been partially replaced—often excessively—by the prolonged presence of domestic ungulates. It should also be considered that species associated with grasslands and pastures are largely adapted to living and moving within naturally discontinuous environments, such as high-altitude grasslands, and are generally highly mobile. Therefore, the conservation and expansion of efficient discontinuous ecological links, through appropriately sized connection nodes between large source areas, such as the Apennine ridge, is the objective pursued by the Plan.



4. CONSERVAZIONE DI HABITAT E SPECIE

For the successful implementation of the Conservation Plan, it is necessary to maintain and restore at least part of the system of mountain open areas, which in the past was created by the widespread presence of domestic livestock grazing. This presence has progressively declined due to well-known socioeconomic changes that have taken place since the post-World War II period. This objective must be pursued through: Financial support for the maintenance of open habitats by means of sustainability credit payments.

Support for the continuation of traditional land-use practices, particularly outdoor livestock farming in mountain areas, which is especially beneficial for numerous threatened and declining species (such as the red-backed shrike, rufous-tailed rock thrush, yellowhammer, Alpine chough, red-billed chough, and snow vole).

The experimentation of free-ranging and semi-free-ranging livestock management aimed at replicating as closely as possible the ecological role of wild herbivores, promoting rewilding dynamics in mosaic landscapes characterised by abandoned areas, forested lands, and residual open spaces.

Additionally, it is essential to improve the ecological quality of forests, which are largely of low conservation value due to the extensive use of coppice management and the lack of forest diversity, often resulting in monospecific woodlands. This will be achieved through:

Actions promoting the presence of mature forests, by encouraging participation in the National Park's sustainability credit programme.

The Plan plays a crucial role in achieving this objective, as it already involves many of the institutions responsible for habitat and species conservation. Other key actors of change include:

- Environmental associations
- Research institutions
- Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA)
- Hunting and sport fishing associations
- Local communities
- Schools
- Mass media

Major Expected Changes

The implementation of the Plan is expected to bring about significant changes, including:

- Improved knowledge of the target species requiring intervention, as well as a better understanding of the pressures and threats affecting them.
- Institutional incentives for habitat conservation and restoration measures, through ecosystem service certification and compensation schemes, the Common Agricultural Policy (CAP), and other EU (e.g., LIFE) and national funding programmes.
- Promotion of these conservation measures within the agricultural and forestry sectors through professional organisations, ensuring their adoption by farmers and forestry enterprises.

- Active collaboration of environmental associations and local communities in conservation efforts.

Although the Plan includes specific actions targeted at individual species, species groups, and habitats, its primary focus is on the protection of landscapes and environmental systems. These encompass habitats as defined by Directive 92/43/EEC, as well as habitats of threatened plant and animal species that require conservation measures.

For instance, specific conservation actions will focus on small wetland areas and mountain peat bogs, which are characterised by mosaic habitats. Additionally, targeted measures will be implemented for the conservation of amphibians and native conifer forests.

The Plan also includes species monitoring actions, focusing on species associated with the main ecosystems covered by the Plan, particularly those of conservation interest and indicator species. These monitoring activities will allow for assessing the conservation outcomes in terms of biodiversity protection and ecological system restoration.

5. CLIMATE CHANGE

Ensuring the Effective Implementation of the Conservation Plan

For the successful implementation of the Conservation Plan, it is essential to:

- Promote management practices that facilitate the progressive increase of carbon storage in forest ecosystems, grasslands, and wetland environments.
- Enhance the resilience of ecosystems and human communities to climate change, mitigating the impacts of extreme climatic events. Specifically, increase the resilience of forest ecosystems by promoting close-to-nature silvicultural techniques.
- Strengthen the resilience of agroecosystems through the conservation and expansion of grasslands and pastures, while also identifying nature-based solutions to protect the network of natural and artificial mountain wetlands.
- Improve ecological connectivity at local and regional scales to facilitate the gradual movement of species and plant and animal communities in response to climate change, particularly in this crucial contact zone between different biogeographical regions.

The adoption and expansion of the necessary management practices to achieve these objectives are supported by the certification and payment system for ecosystem and biodiversity services.

Key Actors of Change

In addition to the APE TOE Plan Partners, the main stakeholders involved include:

- Professional agricultural organisations and their members
- Municipalities

Major Expected Changes

- Identification and adoption of forest management practices that enhance the resilience of forest ecosystems to climate change, including extreme weather events.
- Identification and implementation of management approaches that promote carbon storage across the different target environments of the Plan (grasslands, forests, and wetlands).
- Development and execution of conservation, expansion, and management actions that promote ecological connectivity between grasslands, pastures, and agroecosystems, thereby increasing their resilience to climate change, including extreme events.

Tackling climate change is one of the explicit objectives of the ongoing certification and payment programme for forest ecosystem services, and this goal is expected to be maintained in the planned adoption of similar instruments for fruit-producing chestnut groves and open environments. The conservation and restoration of peat bogs and mountain wetlands, along with the maintenance and restoration of moderate grazing levels in open habitats and abandoned complex mosaics, are particularly beneficial for carbon storage capacity.

At the landscape level, the restoration of complex and interconnected habitat mosaics, the progressive increase in the ecological value of forests, and the conservation of grassland and wetland systems will enhance the ability of species and habitats to survive the impacts of climate change, facilitating their gradual shift towards new suitable areas.

For specific cases, targeted interventions will be carried out to counteract the disappearance of habitats

and plant communities directly caused by climate change. These include certain natural conifer formations and natural and artificial wetlands that are at risk due to changes in precipitation patterns and the discontinuation of livestock watering pools maintenance.

6. CULTURAL LANDSCAPES AND SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT

For the successful implementation of the Conservation Plan, it is essential to:

- Maintain, restore, and enhance traditional mountain landscapes, which include rural areas surrounded by small cultivated fields, pastures, chestnut groves, agricultural infrastructure (e.g., terracing), as well as historic paths and roads (e.g., the Via Francigena).
- Preserve and promote local livestock breeds, which have adapted to the area's environment over centuries and have helped shape the landscape itself. Their traditional breeding practices, preferably outdoor and in mountain areas, should be encouraged, while also assessing their potential use in rewilding initiatives.

Key Actors of Change

In addition to the APE TOE Plan Partners, the main stakeholders involved include: Professional agricultural organisations and their members - Local communities - Tourism agencies

Major Expected Changes

- Increased awareness among local institutions about the importance of cultural landscapes.
- Institutional incentives for cultural landscape conservation measures within the Common Agricultural Policy (CAP) framework and other EU funding programmes.
- Promotion of these measures within the agricultural, livestock, and forestry sectors through professional organisations, ensuring their adoption by economic operators.
- Conservation and restoration of key cultural landscapes within the project area.

Although the Plan does not explicitly include actions dedicated solely to this objective, many of its measures indirectly contribute to the maintenance and restoration of landscape systems resulting from centuries-old interactions between natural environments and human activities.

Supporting traditional land-use practices encourages both the retention and arrival of new residents in small mountain villages, which in turn—alongside the preservation and enhancement of a beautiful and ecologically valuable landscape—helps foster small-scale tourism activities.

In summary, the Plan's actions as a whole aim to trigger a self-sustaining process of conservation, restoration, and enhancement, contributing to sustainable economic development and improving the quality of life of local communities



4. ACTIONS

4.1 METHODOLOGICAL NOTES

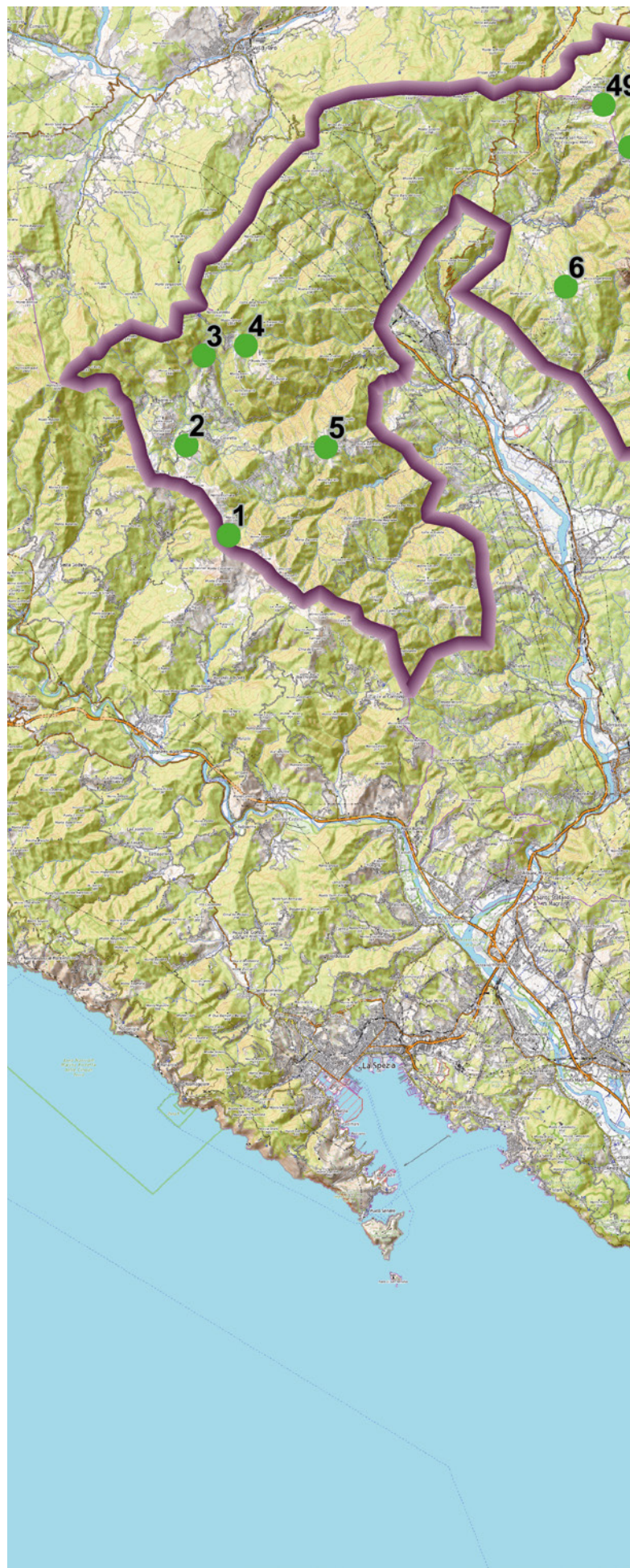
For the identification of areas where specific actions should be implemented, we relied on satellite imagery, available data on ecological value (vegetation, flora, fauna, and ecosystems), and first-hand knowledge of the project area.

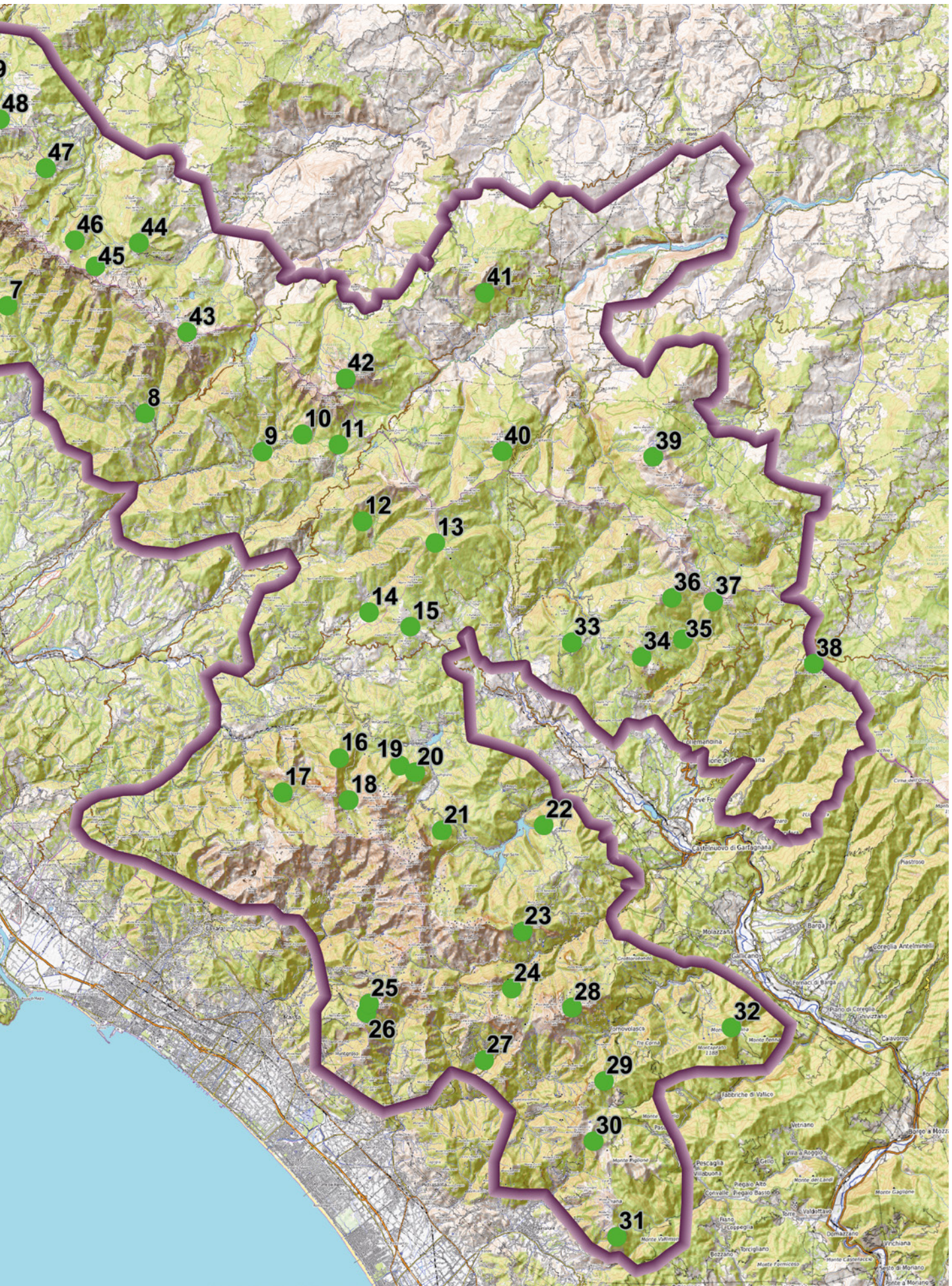
Based on this information, priority areas were georeferenced for the conservation of grasslands and pastures, as well as for the conservation of wetlands (including lakes, ponds, peat bogs, wet meadows, and petrifying springs).

Given the extent and continuity of forested areas and the extreme scarcity of available data on their ecological value, no priority areas for forest conservation within the project area were georeferenced. With the exception of certain fruit-producing chestnut groves, conservation actions for forests have been designed to be effective across the entire forested surface covered by the Plan

4.1.1 Priority areas for the conservation of grasslands and pastures

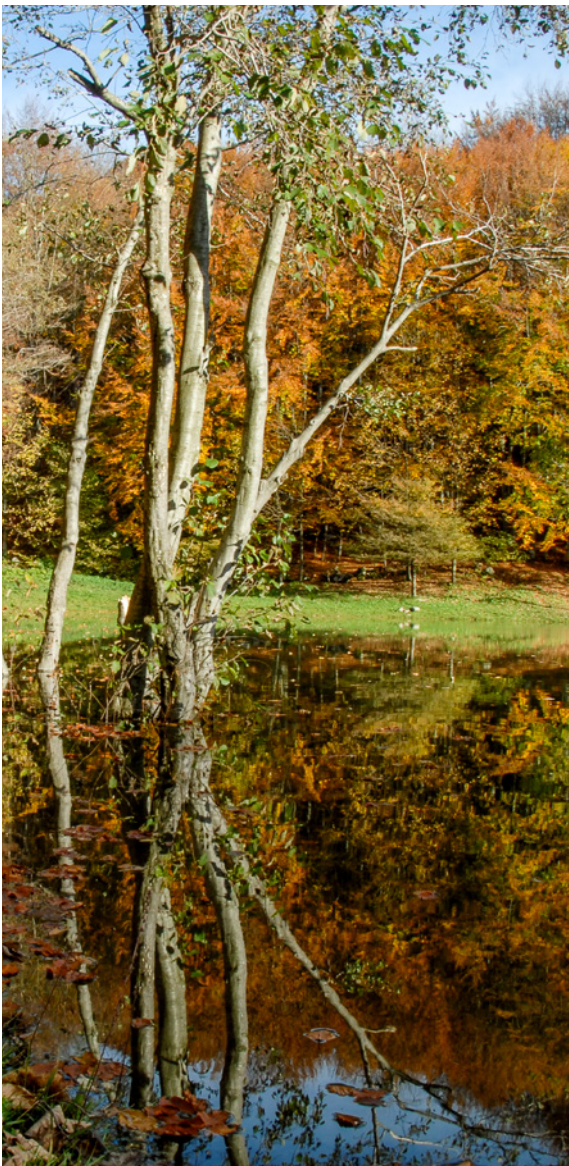
- | | |
|-------------------------------------|---------------------------------------|
| 1 P.so del Rastello-M. Civolaro | 25 Campaccio (Pasquillo) |
| 2 Zeri - castello | 26 Monte Focoraccia - Monte Folgorito |
| 3 Zeri - Valditermine | 27 Pezzo Grande di Terrinca |
| 4 Zeri-prati di Formentara | 28 Rif. Rossi alla Pania |
| 5 M. Carmuschio | 29 M. Croce |
| 6 prati di Logarghena | 30 M. Nona - M. Prana |
| 7 M. Basta | 31 M. Pedone |
| 8 Apella - Taponecco | 32 M. Paladina |
| 9 Comano-Castello di Comano-M.Gi | 33 Orecchiella - M. Frignano |
| 10 Camporaghena | 34 Pania di Cortina |
| 11 prati di Camporaghena (Sassalbo) | 35 Alpi Sassorosso Massa |
| 12 Prati di Massicciano | 36 Bocca di Scala |
| 13 M. Posola-M.Tondo_Cima Belfiore | 37 M. Cella |
| 14 Regnano Villa | 38 Alpe di San Pellegrino |
| 15 M. Argegna | 39 M. Bagioletto M.Cusna Cima del |
| 16 Uglianaldo e Alpe di Ugnano | 40 Monte Cavalbianco |
| 17 Vinca | 41 Monte Ventasso |
| 18 Val Serenaia - Orto di Donna | 42 Alpe di Succiso |
| 19 Monte Castri | 43 Prato Spilla-Capanna cagnin |
| 20 Monte Calamaio | 44 M. Navert |
| 21 Campocatino | 45 Badignana |
| 22 La Bosa | 46 M. Roccablasta |
| 23 Tre Coste - capanne di Careggine | 47 M. Tavola |
| 24 Puntato | 48 Alta Val Baganza (Corniglio) |
| | 49 Alta Val Baganza (Berceto) |

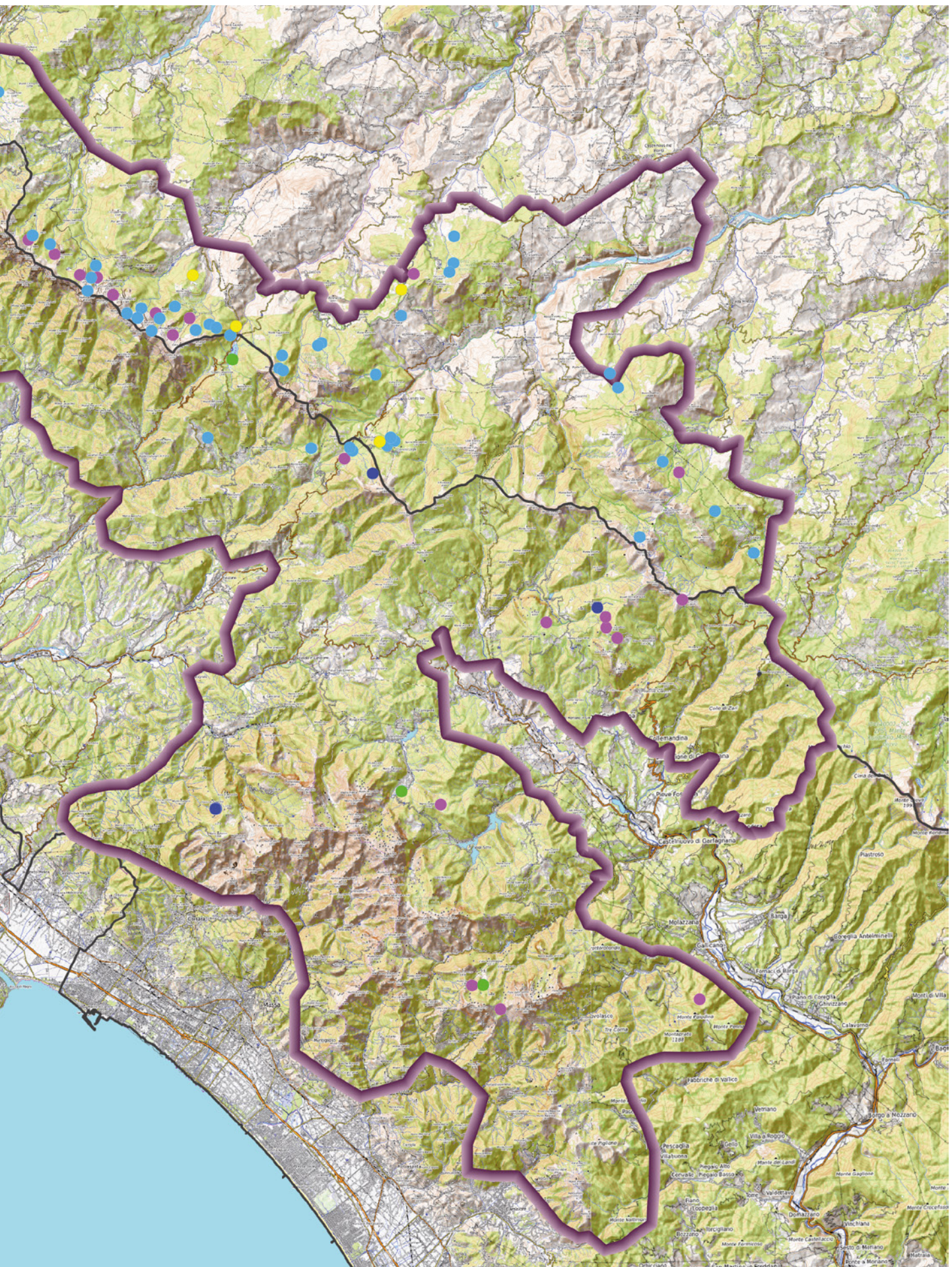




4.1.2 Key Areas for the Conservation of Wetlands

- Lake, pond
- Pond undergoing transformation
- Wet meadow
- Petrifying spring
- Peat bog, marsh
- Artificial basin





4.1.3 Climate change mitigation

One of the main objectives of the Plan is to mitigate and adapt to climate change. The first aspect of this goal is reflected in Specific Objective 5.1, which aims to promote the progressive increase of carbon storage in natural and semi-natural environments.

This objective has been considered throughout the identification of actions, ensuring that the Plan includes measures that positively contribute to carbon sequestration through vegetation in natural resources. Additionally, actions related to communication and monitoring, although important, are not directly quantifiable in this regard.

At the level of detail with which the actions have been defined, it is not currently possible to calculate or estimate their precise impact on CO₂ balance. However, some general indications can be provided. Actions that involve concrete interventions or contribute to their implementation (such as biodiversity and sustainability credit payments) have been categorised by habitat type and functionally grouped into:

- Maintenance and restoration of grassland areas.
- Promotion of the sustainability credit payment system for forest ecosystems and the development of a similar system to support the conservation and enhancement of open habitats and other semi-natural environments.
- Restoration and expansion of fruit-producing chestnut groves, supporting ecological connectivity between the Apennines and the Apuan Alps.
- Conservation and expansion of native Apennine coniferous forests.
- Protection and restoration of natural and artificial mountain wetlands, as well as the preservation of associated habitats and species.

Climate change mitigation is one of the declared objectives of the certification and payment programme for ecosystem services in forest environments, managed by the National Park of the Tuscan-Emilian Apennines. The Sustainable Forest Management and Ecosystem Services Certification Programme is already a key tool for recognising the role of forests in carbon sequestration and promoting responsible management. It also facilitates access to new economic opportunities, such as voluntary carbon markets linked to sustainability credits.

These credits are generated through the verification and quantification of carbon sequestration and avoided emissions in forests, achieved through the implementation of best management practices that create additionality (quantified in tonnes of CO₂ equivalent). Additionally, a range of other assessments is carried out to quantify the various environmental benefits produced.

A similar approach will be adopted in extending this tool to other environments, particularly open habitats and fruit-producing chestnut groves.

In other words, only interventions with a favourable carbon balance can and will be eligible for payments. Each project submitted for funding must include an indication of its contribution to increasing CO₂ storage or preventing its emission. Given the potentially vast areas that could benefit from such payments, the impact of these actions on global warming mitigation is expected to be highly significant.

For concrete environmental management actions, if implemented through an ELSP Restoration Grant, an evaluation of their effect on carbon stock and avoided CO₂ emissions will always be carried out during the executive planning phase, also taking into account the impact of wildfire prevention measures.

Below is a list of potential areas where these practices generating marketable carbon credits could be developed:

- Fruit-producing chestnut groves: The resumption of active management in abandoned chestnut groves aims to restore their economic use and protect them from wildfires. The rejuvenation pruning of centuries-old trees and the restoration of fruit production in abandoned groves—often transformed into coppice forests—through the grafting of new shoots increases carbon sequestration in trees that will also produce high-value fruit. At the same time, the removal of vegetation that has grown in abandoned groves serves as wildfire prevention, a measure considered additional under the PEFC standard for ecosystem services. The emissions avoided through this practice can be



quantified by estimating the reduced risk of wildfire ignition in previously abandoned areas. Regarding the certification of ecosystem services in fruit chestnut groves, there is potential to define a standard that also includes the maintenance and restoration of structurally similar formations, even where economic production is minimal or absent. This would apply to groves where new trees are left to mature without grafting, with the presence of other tree species and undergrowth areas.

- **Native conifers:** The main goal is to increase the presence of native Apennine conifer stands, which enhance carbon storage in forests. This would be achieved through the new planting of *Abies alba*, *Picea abies*, *Pinus sylvestris*, and *Taxus baccata*, in micro climatically suitable locations, potentially in combination with native broadleaf species. This high-biodiversity intervention also serves as a climate adaptation strategy, ensuring the conservation of threatened native populations and assisting their migration to climatically suitable areas.
- **Grasslands:** The practical interventions for grassland conservation mainly involve activities that

promote their maintenance, appropriate management, and the reintroduction of grazing. In all cases, these actions have a positive impact on CO₂ balance, as they are conducted extensively with low livestock densities, leading to the restoration of dynamic and complex habitat mosaics. These mosaics will consist of grasslands interspersed with scattered trees, small woodlands, and shrub formations, promoting carbon sequestration in soils and in both aboveground and belowground plant structures. These activities are also linked to the maintenance of wetlands, with the construction of livestock watering ponds downstream. As part of the certification framework for grassland ecosystem services, it will be necessary to assess interventions that, while primarily aimed at biodiversity conservation, must also generate a positive effect on CO₂ absorption.

- **Wetlands:** The conservation and restoration of peat bogs and mountain wetlands is particularly beneficial due to the high carbon storage capacity of these habitats. Specific targeted interventions will be carried out to prevent the loss or degradation of these environments, which may be directly caused by climate change (e.g., changes in precipitation patterns) or by the abandonment of watering pond maintenance. While the climate change mitigation effects of these interventions may be limited due to the small surface area of these habitats, they are fundamental for preserving biodiversity associated with these relict ecosystems.

4.2 ACTION PLANNING AND COST ESTIMATION

Achieving the objectives and realising the envisioned scenarios outlined in the Plan's Vision will require significant investments over a period of at least 10 years. The Plan includes actions that the partnership commits to planning between 2025 and 2035, with a total estimated cost of nearly €24 million. This funding will be sought through public financing instruments, such as the PR Toscana ERDF 2021–2027, Action 2.7.2 Nature and Biodiversity, for which several planned actions have already been submitted (see table).

The cost estimates provided are indicative and will be further detailed in subsequent phases of action planning. Some actions will require feasibility studies before implementation, which will help refine budget estimates for all phases of execution. Additionally, certain costs—such as those related to monitoring the effectiveness of the actions—cannot yet be precisely quantified but will be determined during the funding application stages.

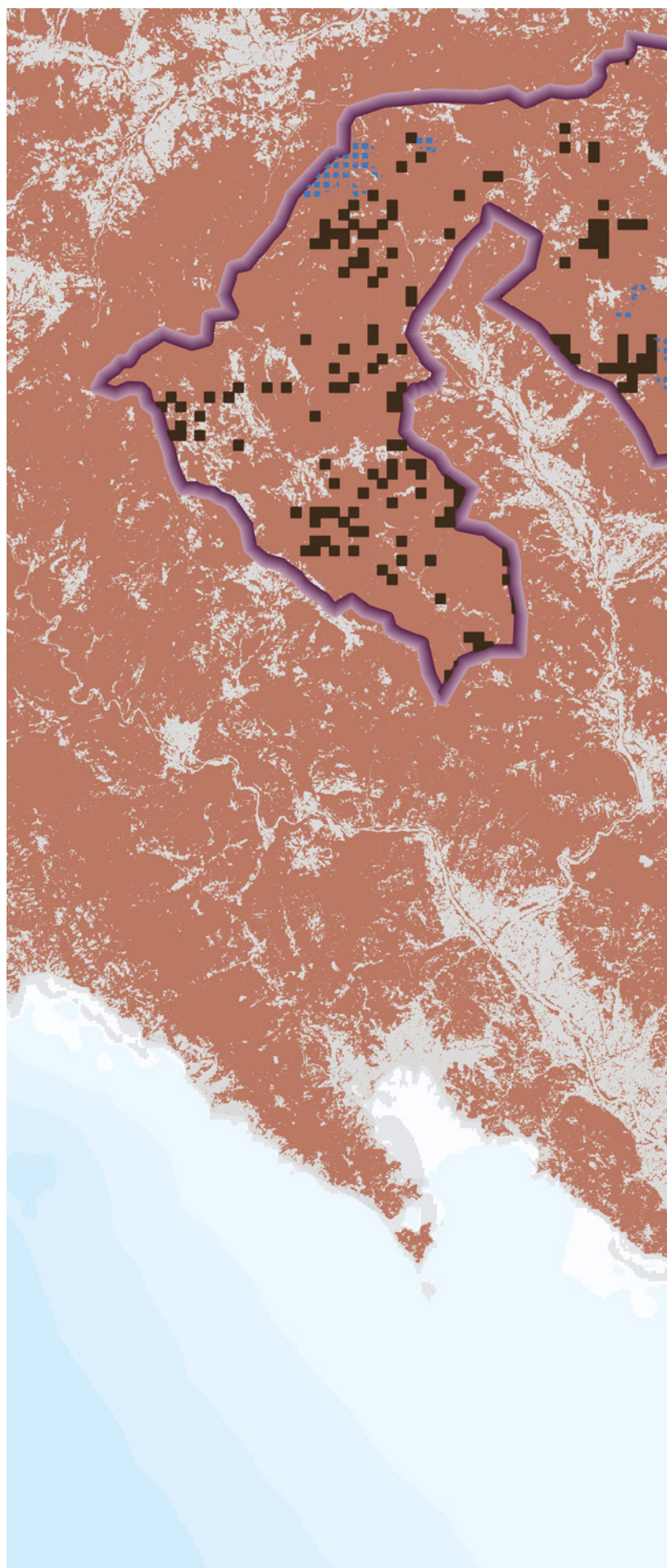
	ACTION	Priority	Duration	Cost (€)
General Actions: Promotion, Facilitation, and Dissemination				
1	Increase public and stakeholder awareness of the value of landscapes and biodiversity and the importance of the sustainable and responsible management of forests, grasslands, and pastures	Medium	5 years	250.000
2	Establish a network of operators	Medium	5 years	160.000
3	Support the management of agro-silvo-pastoral heritage related to civic uses and collective properties	High	5 years	420.000
4	Develop the activities of the "La Piana" nursery to support habitat restoration interventions	Medium	5 years	2.487.000
5	Establish new Natura 2000 Sites in Lunigiana and expand existing SACs (Sites of Community Importance)	High	2 years	20.000
Total Costs for General Actions				3.333.000
Grasslands and Pastures				
6	Promote a Shepherds' School	High	2 years	300.000
7	Implement a pasture restoration project in an abandoned or underutilised area to simulate a rewilding intervention	High		
8	Define certification standards and promote the payment of sustainability credits for the sustainable management of agroecosystems and other semi-natural environments	High	5 years	920.000
9	Maintain and expand the grasslands of Lunigiana	High	10 years	5.730.000
9.1	Maintain and expand the grasslands of Camporaghena	High	1,5 years	240.000
9.2	Maintain and expand the grasslands of Logarghena	High	1,5 years	680.000
9.3	Maintain and expand the grasslands of Monte della Pala	High	2 years	50.000
9.4	Maintain and expand the grasslands of Lunigiana not covered by sub-actions	High	10 years	4.760.000
	Maintain and expand the grasslands of Garfagnana	Medium	10 years	2.790.000
10.1*	Maintain and expand the grasslands of Bocca di Scala	High	2 years	156.000
10.2*	Maintain and expand the grasslands of Monte Cella and Monte Giovarello	High	2 years	258.000
10.3*	Maintain and expand the grasslands of Alpe di San Pellegrino – Monte Romecchio	Medium	2 years	250.000
10.4*	Maintain and expand the grasslands of Alpe di Sassorosso and Massa	Medium	2 years	74.000
10.5	Maintain and expand the grasslands along the ridge of Monte Posola - Monte Tondo - Cima Belfiore	High	1,5 years	160.000
10.6	Maintain and expand the grasslands of Pania di Corfino and Orecchiella	High	2 years	272.000
10.7	Maintain and expand the grasslands of Garfagnana not covered by sub-actions	Medium	10 years	1.620.000
	Maintain and expand the grasslands of the Apuan Alps	High	10 years	4.445.000
11.1	Maintain and expand the intra-forest grasslands of Terrinca	Medium	1,5 years	45.000
11.2*	Maintain and expand the grasslands of publicly owned areas in the Apuan Alps	High	2 years	1.400.000
11.3	Maintain and expand the grasslands of the Apuan Alps not covered by sub-actions	High	10 years	3.000.000

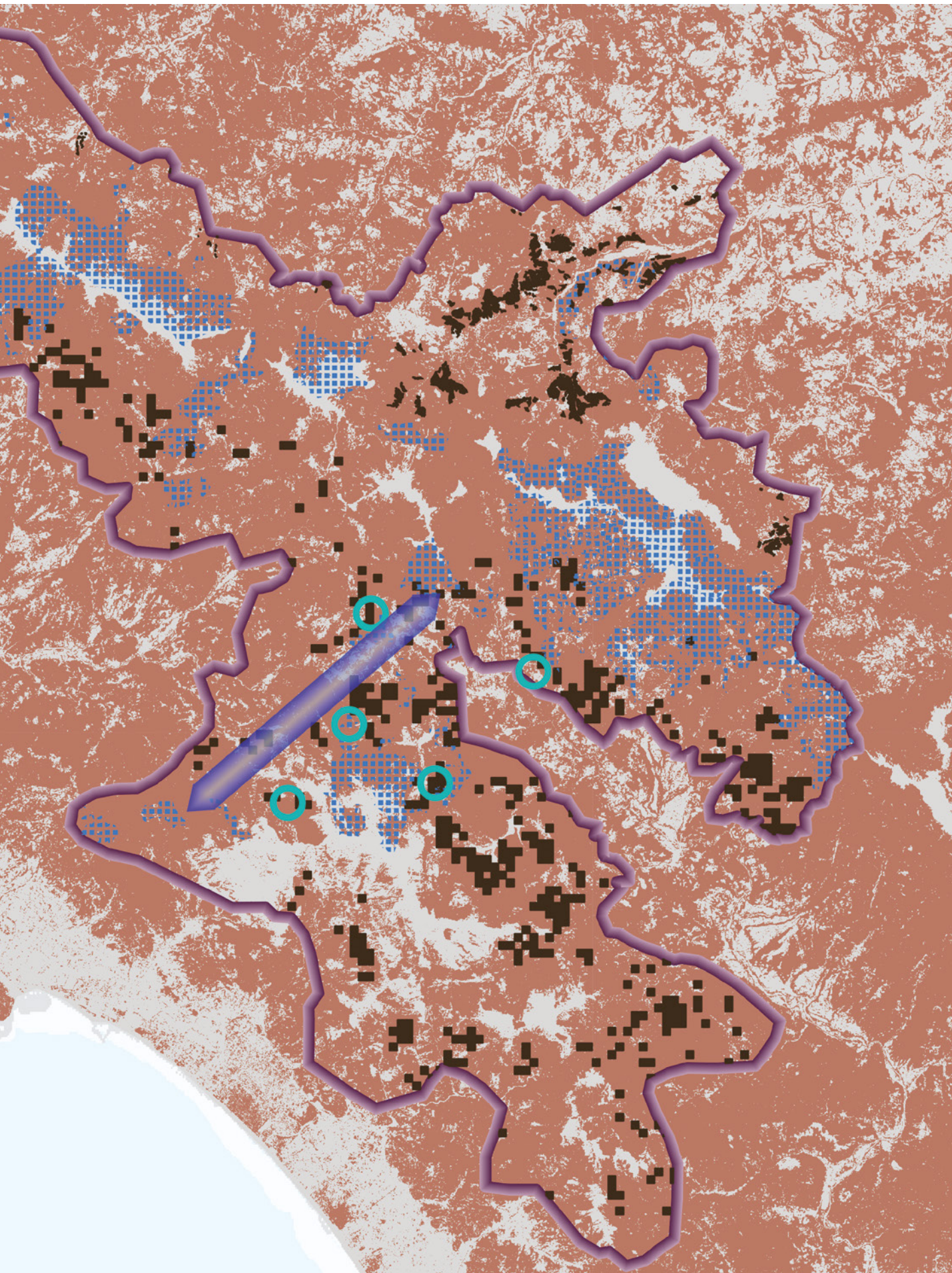
12	Maintain and expand the grasslands of the Parmense Apennines	High	10 years	3.688.000
12.1	Maintain and expand the grasslands of Alta Val Baganza (Berceto)	High	1,5 years	160.000
12.2	Maintain and expand the grasslands of Alta Val Baganza (Corniglioglio)	High	2 years	160.000
12.3	Maintain and expand the grasslands of Monte Tavola	High	1,5 years	160.000
12.4	Maintain and expand the grasslands of Badignana	High	1,5 years	200.000
12.5	Maintain and expand the grasslands of Prato Spilla – Capanne Cagnin	High	1,5 years	100.00
12.6	Maintain and expand the grasslands of Monte Navert	High	2 years	100.00
13	Monitor and assess the effects of a recent case of "spontaneous" rewilding on the biodiversity of the Apuan Alps grasslands	High	1,5 years	145.000
14	Monitor the effects of restoration interventions on the conservation status of grassland flora and fauna	High	1,5 years	-
	Total Costs for Grassland Actions			18.018.000
	FORESTE			
15	Expand participation in the forest sustainability credit payment system.	High	5 years	695.000
16	Strengthen ecological connections for mature forest species between the Apennines and the Apuan Alps.	High	2 years	130.000
17	Increase the surface area of native Apennine conifer stands (<i>Abies alba</i> , <i>Picea abies</i> , <i>Pinus sylvestris</i> , <i>Taxus baccata</i>).	High	5 years	750.000
18	Monitor the effects of restoration interventions on the conservation status of forest flora and fauna.	High	1,5 years	-
	Total Costs for forest actions			1.575.000
	WETLAND AREAS			
19	Improve the conservation status of aquatic and wetland species: interventions to enhance connectivity between existing and potential wetlands	High	5 years	395.000
20	Improve the conservation status of aquatic and wetland species: Lago Peloso.	High	1,5 years	40.000
21	Improve the conservation status of aquatic and wetland species in three artificial reservoirs.	High	3 years	15.000
22	Improve the conservation status of aquatic and wetland species in the wetland environments of Prati di Logarghena.	Medium	2 years	60.000
23	Improve the conservation status of wetland species in the wetland areas of the upper course of the Rosaro stream.	Medium	2 years	172.000
24	Improve the conservation status of aquatic and wetland species: safeguard the pond of Prati di Camporghena	Medium	1 anno	30.000
25	Improve the conservation status of wetland species in the peat bogs of Monte Palodina.	High	2 years	20.000
26	Improve the conservation status of wetland species in the wet meadows of Gorfigliano.	Medium	2 years	20.000
27	Improve the conservation status of Sphagnum stations in the Apuan Alps.	High	1,5 years	30.000
28	Develop and implement a conservation programme for the Apennine yellow-bellied toad (Bombina pachypus).	Medium	5 years	130.000
29	Monitor the effects of restoration interventions on the conservation status of aquatic and wetland flora and fauna.	High	1,5 years	-
	TOTAL COSTS FOR WETLAND			912.000
	OVERALL TOTAL COST			23.838.000

ACTIONS - EXAMPLES

Improvement of ecological connections between mature forests (chestnut groves)

-  LOCALISED ACTIONS IN PRIORITY AREAS
-  DIRECTION OF ECOLOGICAL CONNECTION BETWEEN MATURE FORESTS IN THE APUAN ALPS AND THE APENNINE SLOPES
-  PUBLIC AND COLLECTIVE PROPERTY
-  CHESTNUT GROVES
(data source: Inventario Forestale Toscano 1978-1996 - Mappa delle aree forestali delle province di Parma e Reggio Emilia, aggiornamento 2014)
-  WOODS
(data source: CLC+ Backbone Raster Product 2021 © European Union, Copernicus Land - Monitoring Service 2021 - European Environment Agency)
-  PROJECT AREA





ACTIONS - EXAMPLES

Natura 2000 Network: Proposal for new sites and expansion of existing sites

 EXISTING NATURA 2000 NETWORK

 EXTENSION OF EXISTING NATURE
CONSERVATION AREAS:

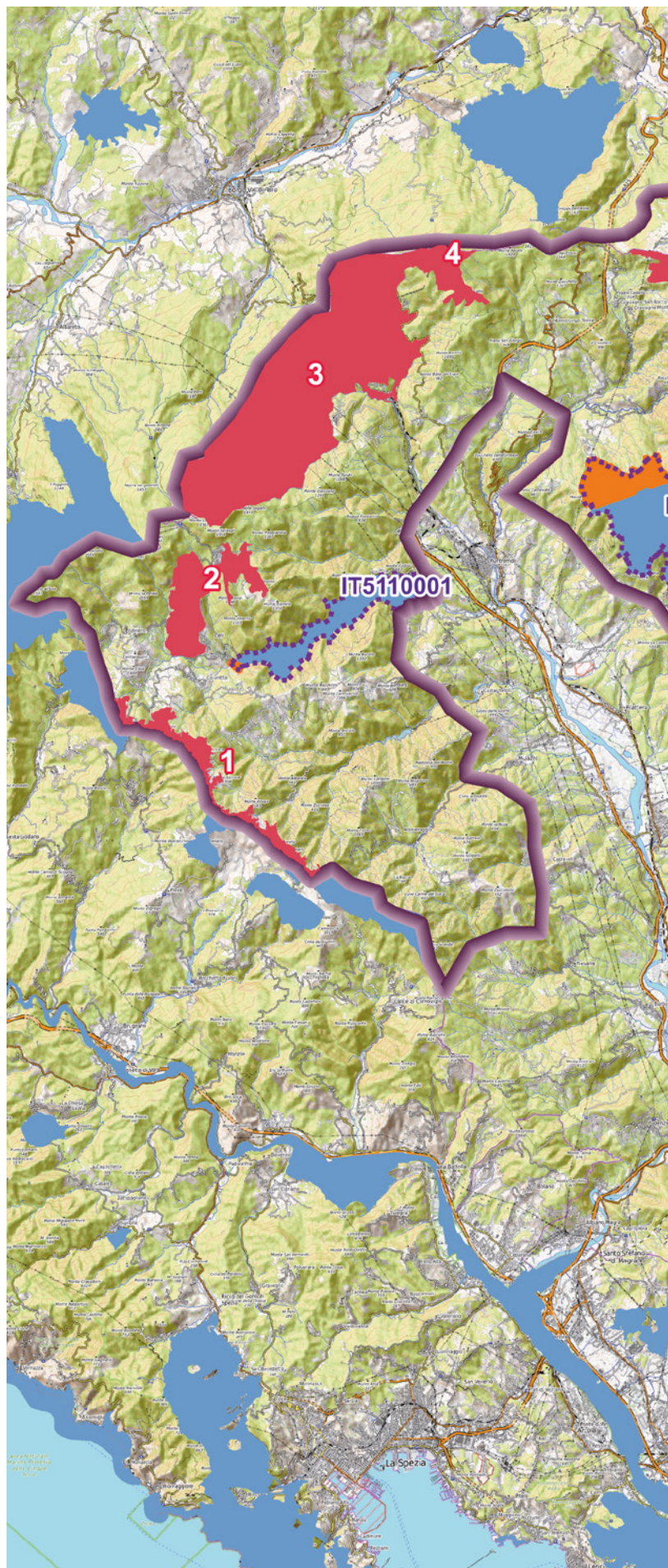
IT5110001 Valle del Torrente Gordana
IT5110002 Monte Orsaro
IT5110003 Monte Matto - Monte Malpasso
IT5110004 Monte Acuto - Groppi di
Camporaghena
IT5110005 Monte La Nuda - Monte Tondo
IT5120002 Monte Castellino - Le Forbici
IT5120003 Parco dell'Orecchiella - Pania di
Corfino - Lamarossa

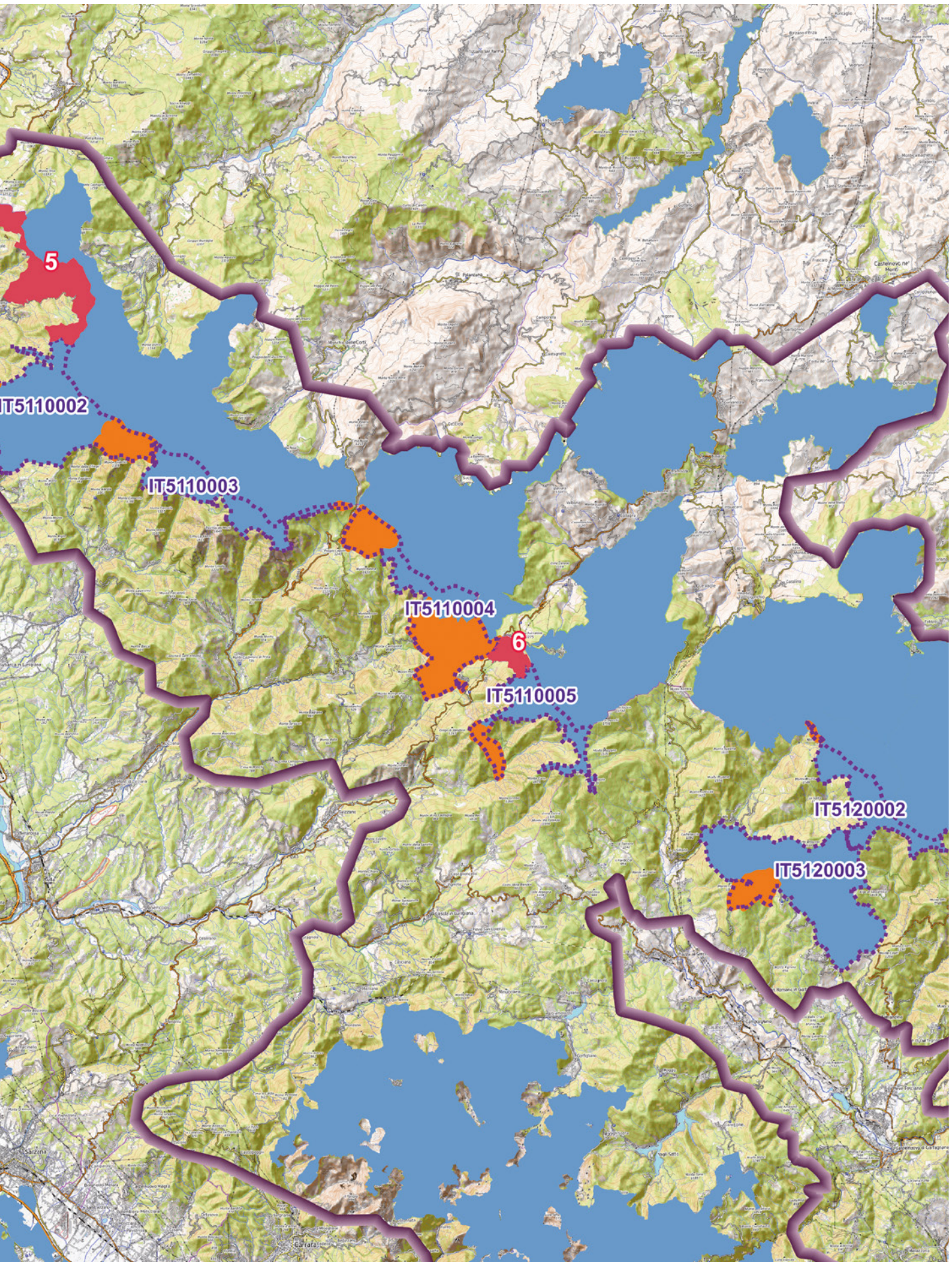
 AS RESULTING FROM THE ENLARGEMENT

 PROPOSED NEW N2000 SITES:

1 Crinale Passo del Rastello-M. Scalocchia
2 Prati di Fomentara - M. Colombo -
Valditermine
3 Alta valle del torrente Verde
4 M. Molinatico- M. Giogallo
5 Passo della Cisa - Passo del Cirone
6 Lago Padule, Valle dell'Inferno

 PROJECT AREA





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**RIPRISTINO PRATERIE E FORESTE
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Restore Prairies and Forests of the Tuscan-Emilian Apennine

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