

Restoring the web of life



Ecological networks
for more biodiversity
in the Alps

The Alps: Nature unbound

The Alps span eight countries, from the Mediterranean shores of Southern France to Slovenia. They harbour an extraordinary diversity of habitats and species of flora and fauna and are considered one of the most important regions for the preservation of biodiversity in central Europe. Nature extending boundlessly over valleys and peaks? Yes, maybe...

Nature in balance

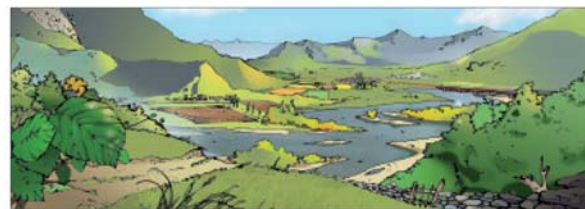
The alpine landscape is a mosaic of different biotopes. Meadows, woodlands, water courses and open prairie, but also farming infrastructure such as ditches, terraces and hedges. Incredibly varied spaces occur alongside one another and are inhabited by the most diverse species.



In the course of a year or a life cycle, the different elements of the landscape provide animals with shelter or food, as well as reproduction and wintering sites. During their migrations they have to overcome various obstacles including busy roads, man-made structures to control waterways and areas of intensive agriculture. Therefore linking the different ranges and resources – thus making them accessible – is of key importance for the survival of populations and species.



The traditional alpine landscape is a mosaic of different habitats. Well connected, natural, or near-natural, habitats provide a large number of species with shelter, food, and migration routes.



Human activities and the urbanisation of valley floors lead to habitat fragmentation and loss. The reduction of living space and biotope fragmentation negatively affect the chances of survival of many species.



Linked habitats support biodiversity

The intensification of human activities is leading to an ever-increasing fragmentation and urbanisation of the alpine landscape. The increasing development of scarcely populated or unpopulated areas, new infrastructures, the intensive land use and the growing pressure of urbanisation cause habitats to shrink, fragment into smaller, isolated areas, or disappear altogether. If a living space becomes too small, or if its connections to other areas are cut off, the survival chances of species decrease rapidly since small, isolated populations adapt less effectively to extreme environmental conditions such as those triggered by climate change. This can lead to the disappearance of populations.

However, if several small populations are distributed along connection elements, such as corridors, their survival chances improve, because local die-offs can be compensated for by immigration. The danger of genetic impoverishment due to inbreeding can also be counterbalanced through immigration of single individuals, however sporadic.

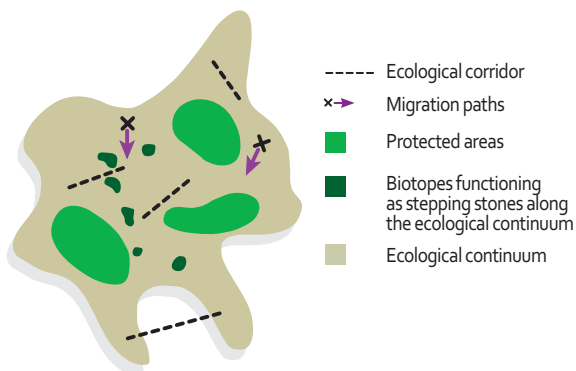


Human and animal migration

Near-natural, well-maintained and sufficiently large habitats constitute the core areas of an ecological network. These core areas can be connected to one another, for example, by “ecological corridors”.

Ecological corridors are linear connection units allowing the passage of species between different living spaces, thus enabling genetic exchange between populations. Corridors are made of landscape elements and small features such as field ditches, wooded strips or forest edges, dry stone walls, and rock piles. Sustainably managed farm and woodland as well as small but well-preserved biotopes can also function as steppingstones in a corridor system.

Especially in areas where human land use created barriers, connecting entities must be preserved or re-established. This goal is best attained through sustainable and environmentally friendly land use as well as the harmonious coexistence of humans and nature rather than restrictions or prohibitions. Only through these measures can the unique natural heritage of the Alps be preserved for future generations. Networking can also entail risks: endemic species could be threatened by invasive species dispersing along connecting elements. The quality of the ecological corridors plays a crucial role in minimising these risks.



Lynx

Macro to micro: different levels of intervention

Well-connected habitats are important beyond the local scale. Some alpine species need wide, natural areas, for example large carnivores: the wolf, the lynx, and the bear. This also applies to large ungulates such as deer or birds of prey like the griffon vulture. Other species like the black grouse, otter or freshwater fish like the bullhead individually require less extensive habitats, but to preserve them in all their diversity it is necessary to establish or maintain links between the various populations throughout the Alps. This presupposes collaboration on an Alpine scale, although specific actions for the establishment of ecological networks must primarily be taken at the local level.

The impacts of global phenomena like climate change and land use changes are now at the top of the agenda and call for the development of a pan-alpine strategy. Establishing an ecological network in the form of an “ecological continuum” involving all the countries of the Alps must be made the cornerstone of a coherent response for the mitigation of global change. Networking habitats and facilitating the passage of species displaced by shifting climatic zones will help them find new suitable habitats and lead to a corresponding shift in their range, thereby improving their chances of survival.



Alpine countries contribute to global nature conservation

The idea of ecological networks is nothing new. There are already many conventions, agreements and initiatives that address the subject in a variety of contexts.

Internationally, all alpine countries are committed to the conservation and sustainable use of biodiversity through the Convention on Biological Diversity. Since mountain regions belong to the areas in the world with the highest biodiversity, i.e. the greatest variety in terms of species, genetic material and habitats, ecological networks extending over the whole alpine arc can make an important contribution to fulfilling global commitments. The significance of biodiversity is reflected in the fact that 2010 has been made the International Year of Biodiversity.

At the European level, things are becoming more concrete: a pan-European ecological network is currently being established, in which the Alps will play a key role. The Natura 2000 and Emerald Network sites established on the basis of the European Habitat and Bird Directive and the Bern Convention are important building blocks in this network.

Nature knows no borders. International collaboration is therefore of particular importance for ecological networks. The Alpine countries are working with conservation organisations and the scientific community in the framework of the Alpine convention for the implementation of ecological networks.

Who can help?

A political challenge

Ecological networks can be supported through a variety of measures in the field of nature protection, e.g. the conservation and restoration of important habitat patches and river revitalisation, as well as management decisions in forestry or agriculture (such as ecological compensation sites and extensive farming). Sustainable traffic and zoning regulations can also play a role.



These measures must be taken by local actors and promoted by policy-makers at the regional and national levels. Policy-makers can support nature-friendly development, for example, by including the consideration of

ecological network in the criteria required to obtain funding. This is already the case in the agricultural sector in some countries.

In whichever field the measures are taken, it is essential to ensure that they are not taken in isolation and that they always form part of a strategy to create or promote the maintenance of an ecological network. An opportunity to do so is provided in the form of the national strategies for biodiversity already established in the countries of the Alps.

Land use and traffic planning: two crucial ingredients

Even if the establishment of ecological networks cannot be realised without the involvement of high-level decision making processes, its implementation requires local consensus. Land use and traffic planning play a key role in this context. Connectivity needs and other land use interests have to be considered on equal terms, at the outset of the local planning process (municipalities). Especially in valley locations, the traffic infrastructure is the main contributor to habitat fragmentation. Points of conflict between traffic and wild animals can be mitigated through the creation of green bridges and tunnels, for example, or by periodical road closures and traffic reduction schemes.



Agriculture, the backbone of our landscape

Farming has a crucial impact on biodiversity in the Alps. Many habitats originated from traditional human land use. Intensive agriculture in valleys is a major obstacle to the migration of fauna and the spread of wild plants. However, extensively farmed high fields can still be of outstanding biodiversity value. Yet these fields are increasingly threatened by the abandonment of traditional farming practices.

It is crucial to increase farmers' awareness of the importance of ecological networks, and to establish a system which allows them to receive due compensation for their contribution to the promotion of biodiversity and connectivity. In intensively worked fields, for example, green margins or structural elements like hedges and dry-stone walls can be



created, to aid connectivity. More extensive forms of management, without the use of fertilisers or insecticides, for example, also help to maintain biodiversity and ecological networks.



Griffon vulture



Otter



Brown bear



Hunters and foresters as ambassadors for ecological networks

In many places, hunters and foresters can be ambassadors for ecological networks on account of their traditional role and their line of work, in which sustainability plays a significant role. They can therefore contribute to awareness-building among the population as regards the importance of sustainable forest and wildlife management.

Forest reserves can help protect and preserve elements that are of value in terms of nature protection in general and biotope connectivity in particular, such as stands of mature trees and coppices. Alternative timber harvesting methods cause less damage to the vegetation and the soil. Forest margins are all the more capable of fulfilling their role as stepping stone biotopes and retreats when they have an adequate degree of structural variety.

Areas with no or limited hunting can be used by sensitive animal species as core zones or stepping stone biotopes. Habitat restoration measures can also be taken to support this.

Waterways as natural motorways



Water courses serve important functions within the ecosystem. They provide habitats, cover and food and constitute "natural motorways" for the flora and fauna, i.e. linear connecting elements within ecological networks. Fish-passes and similar structures enable fish and other flowing water

species to overcome obstacles like weirs and retention basins. In the long run, only well-maintained river courses, high-quality water, and revitalised riparian zones can play this important role.

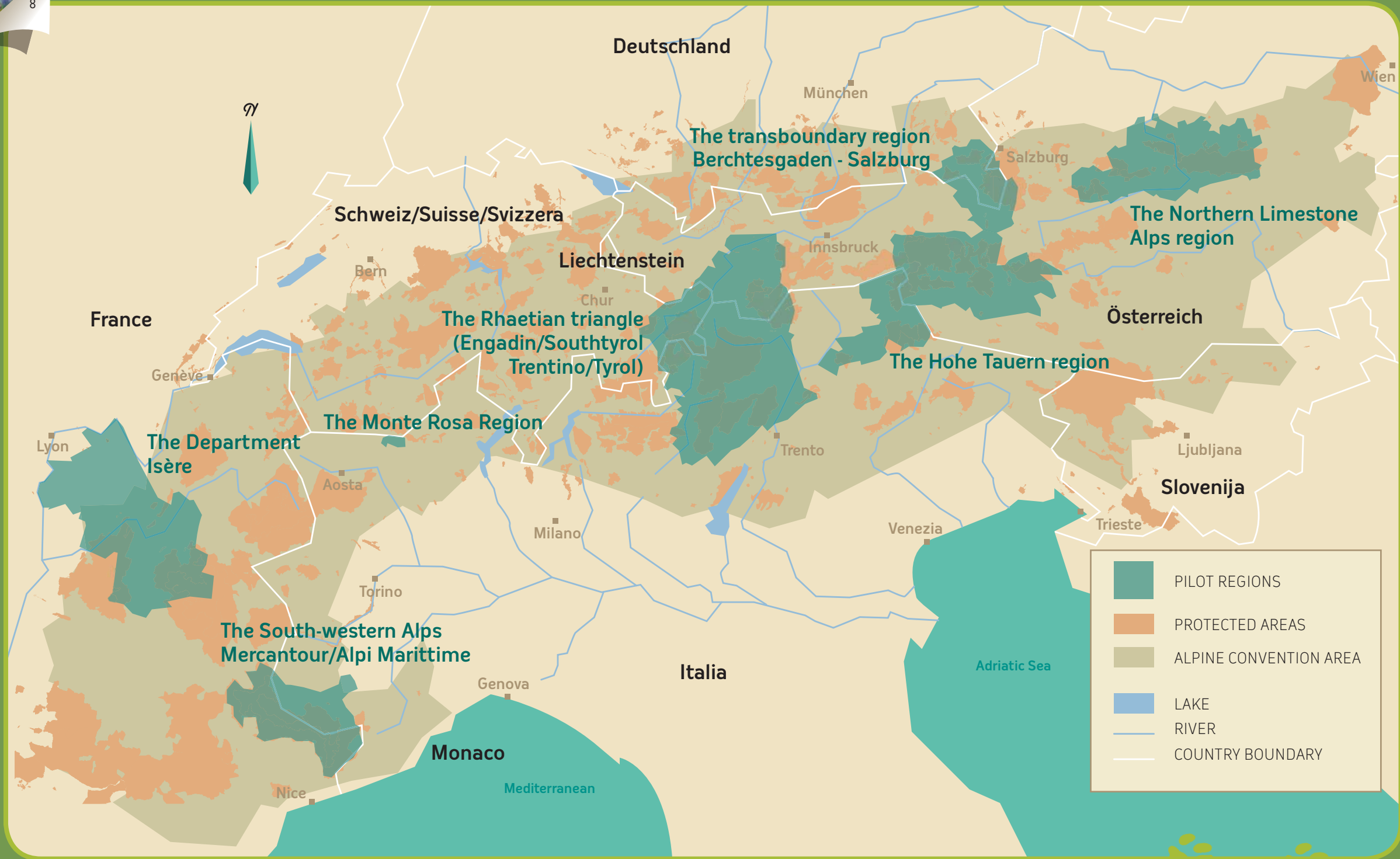
Functional floodplain forests and wet areas also play a decisive role in biodiversity.

Every individual can play a part

Ecological networks do not only work on a large scale. Everyone can contribute, for example, by tending an organic garden, using the landscape sustainably or reducing their impact on the natural environment while enjoying the countryside. Effective communication can help raise awareness of the importance of ecological networks and can therefore lay the foundations for their successful implementation.

In this regard, taking into account biological, socioeconomic, and cultural concerns is of key importance.





Protected areas and connectivity in the Alps

The protected areas in the Alps have a special role to play. They are often the last refuges for plants and animals and constitute therefore important core areas in an alpine ecological network. To fulfil their nature protection task in the long term, they must be connected to one another, thus enabling undisturbed natural processes.

In the framework of ECONNECT, seven pilot projects are now running to show how the management of protected areas and the affected regional actors can co-operate to restore and maintain ecological networks. The pilot projects will then serve as models to encourage as many regions as possible to implement the vision of an Alps-wide ecological continuum.



The Ecological Continuum Initiative

From lynx to tamarisk, the vision is the same: all the species of flora and fauna that constitute the natural diversity of the Alps are in good condition and benefiting from a high degree of habitat connectivity. That is the goal of the Ecological Continuum promoted by the Alpine Network of Protected Areas (ALPARC), the International Commission for the Protection of the Alps (CIPRA), the International Scientific Committee for Alpine Research (ISCAR) and the European Alpine Programme of the WWF.

The four partners in the Ecological Continuum Initiative are working independently of any project deadlines or political decisions. They have laid the foundations and created a common Alps-wide framework in which people can now take measures at the local level to protect or restore corridors between the habitats of the flora and fauna.

The work of the partners is focussed on the following three targets:

- **Initiating, promoting and mentoring activities:** Their work and commitment have led to the establishment of the Ecological Network Platform of the Alpine Convention and the ECONNECT project.
- **Providing know-how:** A harmonised methodology for the whole of the Alps, a catalogue of potential measures and a databank of publications and information on relevant projects as well as experts available to help representatives of protected areas, public authorities and environmental organisations in their implementation of activities.
- **Awareness-building:** The partners are working to convince decision-makers of the importance of Alps-wide habitat connectivity and to persuade people to make their own contributions to ecological networking.

The four organisations have been collaborating since 2002 and their work has been funded by the Swiss MAVA Foundation for Nature since 2007.

www.alpine-ecological-network.org/continuum



The Ecological Network Platform of the Alpine Convention

Connecting natural spaces is of key importance for the nature protection goals of the Alpine Convention, and the Ecological Network Platform has thus been established under the aegis of the Alpine Convention with the goal of supporting the creation of a cross-border alpine network of protected areas and connecting elements.

Through the platform, alpine countries will be able to share, compare, and revise crucial information on measures and methodologies. The platform, which brings together representatives of the Alpine countries, protected areas and Alpine institutions and experts, provides an important link between policy makers, the scientific community and practitioners. It also encourages more efficient cooperation with other sectors.

Within the platform, experts are working on three key areas of concern: scientific support for the establishment of an ecological network, its project-oriented implementation, and communication and PR work. Some pilot regions in the Alps have already started work on the cross-border network. Platform activities will further support and develop their efforts.

www.alpine-ecological-network.org/platform



ECONNECT: Restoring the web of life

The objective of the ECONNECT project, which was launched in 2008, is to protect, maintain and restore ecological connectivity in the Alps. For this purpose a number of pilot regions have been selected with the aim of developing a methodology that is applicable to the whole of the Alpine region. ECONNECT is thus helping to establish continuity between areas of ecological importance in the Alps which have already taken the first steps in implementing biotope connectivity in their respective regions. This process also contributes to the further development of a more dynamic approach to nature protection, which can be effective beyond the limits of the protected areas as they are defined today.

The project involves international organisations that are closely involved in the Alpine Convention as well as research institutions and local partners (management of protected areas, local authorities), who are working together to define the needs and open questions and to develop innovative instruments to improve the ecological networks of the Alps.

Work is planned on the first specific projects involving various local actors in the seven pilot regions. So as to overcome legal and administrative obstacles, a number of political recommendations will be formulated.

This will also facilitate international cooperation and improved coordination of activities at the local level.

www.econnectproject.eu



Apollo



Capercaillie



Chamois



Fire Salamander



Red Deer



Rock Ptarmigan



Golden eagle



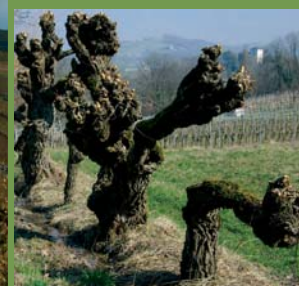
Tawny Owl



Not “just” networking

Networking measures make life better for animals and plants...and for people too!

- Green areas lining a stream contribute effectively to flood protection;
- The revitalisation of water courses can turn jogging or a Sunday hike into an exciting nature experience;
- Sustainably managed forests provide effective protection against avalanches;
- In heavily settled valley floors, ecological corridors act as “green lungs”. They provide better air, attract tourists, and represent an ideal recreational area;
- A well-structured landscape can define the character of an entire region, as is the case for terraced vineyards or hedgerow landscapes. They are an unmistakable part of the local identity and play an important role in tourism. Connectivity can often be improved with minimal effort in association with other simple measures. As an example, postponing roadside mowing allows the growth of springtime and summer plants, thereby providing food for bees and other insects.



Beyond the Alps

As we work to establish or maintain ecological networks in the Alps, we cannot neglect adjacent mountain ranges. The Alps-Carpathians corridor, for example, is vital for large carnivores. Connections to the Balkan mountain areas, to the Apennines, the French Central Massif, the Pyrenees, and the Jura play a key role for the dissemination of many species.

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www.alpine-ecological-network.org

