Conference Volume | **4th Symposium of the Hohe Tauern National Park for Research in Protected Areas** September 17th to 19th, 2009, Castle of Kaprun | Pages 113-118

No sustainable conservation of biodiversity without connectivity

Establishing Ecological Networks throughout the Alps

Marie-Odile Guth[1], Yann Kohler[2], Guido Plassmann[2], Thomas Scheurer[3]

[1] 8ème Mission d'Inspection Générale Territoriale, Strasbourg Cedex, France

[2] Task Force Protected Areas, Permanent Secretariat of the Alpine Convention, Chambéry, France

[3] International Scientific Committee on Research in the Alps, Research Council of the Swiss National Park, Swiss Academy of Sciences, Office, Bern, Switzerland

The Alps are one of the largest natural regions left in Europe and therefore of particular importance for biodiversity; but they are also home to 14 million people and one of the most visited areas in the world. This is not without impact on biodiversity. Habitat loss and fragmentation, climate change, changes in agricultural practices and pollution are among the most important reasons for biodiversity loss and landscape destruction in the Alps. The creation of a functioning ecological network in the Alps can help to conserve extraordinarily rich alpine diversity. Two closely linked initiatives are working together to implement an ecological network: on the one hand the Ecological Continuum Project initiated in June 2007 by the Alpine Network of Protected Areas (ALPARC), the World Wide Fund for Nature (WWF), the International Scientific Committee on Research in the Alps (ISCAR), and the International Commission for the Protection of the Alps (CIPRA); on the other, the Ecological Network Platform of the Alpine Convention and the European Interreg (ETC) Project ECONNECT gathering more than 16 partners.

The concept of ecological corridors

Naturally and sufficiently large habitats constitute the core areas of an ecological network. These core areas can be connected to one another, for example through "ecological corridors" (Figure 1). Ecological corridors are linear connection elements 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, forest strips or forest edges, dry stone walls, and rock piles. Sustainably managed farm- and woodland can also function as a corridor, and small but well preserved biotopes create stepping stones in a corridor system. Especially in areas where human land use has created barriers, connecting elements must be preserved or re-established. Ecological networks are not only beneficial for fauna and flora but also for people. Meadows and pastures lining a stream contribute effectively to flood protection; revitalization 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 and therefore provide better air and attract tourists. A well-structured landscape can define the character of an entire region. However, networking can also entail risks: endemic species —i.e. species occurring only in the Alps— can be threatened by invasive species dispersing along the connecting elements. The quality of ecological corridors therefore plays a crucial role in minimizing this risk.

A multisectoral and multilevel challenge

Ecological connectivity is best attained through sustainable land use as well as harmonious coexistence of humans and nature, rather than restrictions or prohibitions. Many nature protection measures can contribute to ecological networks, provided they are promoted and supported by policy-makers at local, regional, and national levels in a coherent way:

Land use and traffic planning: Even if ecological networks cannot be established without high-level decision making, their implementation requires local consensus. Land use and traffic planning play a key role in this context. Connectivity and other land use interests have to be considered on equal terms, at the outset of the local and regional planning process (municipalities, regional authorities).

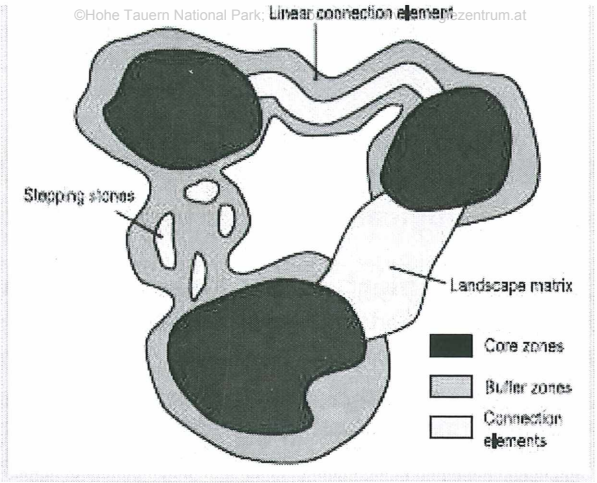

Figure 1: The concept of ecological corridors
(© Continuum Project)

Agriculture—the backbone of the landscape: Farming has a crucial impact on biodiversity in the Alps. Many habitats originated from traditional human land use (Figure 2). Intensive agriculture and urban expansion on valley floors can create obstacles to fauna migration. On the other hand, traditionally farmed fields at higher altitudes have outstanding biodiversity value. The latter are increasingly threatened by abandonment of farming practices. It is therefore crucial to engage farmers in networking projects. Thorough information will make farmers aware of the importance of connecting habitats. Their work practices can thus be adapted to the needs of biodiversity and connectivity.

Hunters and foresters: Hunters and foresters can be ambassadors for ecological networks based on their traditional role and activities. Sustainability plays a significant role in their line of work. In this respect, they play an important role in raising people's awareness of the importance of sustainable forest and wildlife management.

Water management: Water courses are considered linear connecting units in ecological networks, providing animals with shelter and food. They also help in orientation during migration. This important role can be secured in the long run only by conserving well-maintained river courses, ensuring high-quality water, and revitalizing riparian zones. Functional floodplain forests and wetlands play an equally important role.

People: Ecological networks are not only a large-scale matter. Everyone can contribute, for example by tending a near-natural garden, using areas in a sustainable manner, or hiking in a more nature friendly way.

Well connected habitats are important beyond the local scale. Some species, such as the wolf, the lynx, and the bear, need wide natural areas. This also applies to large ungulates such as deer, and large birds such as the bearded vulture and the golden eagle. To conserve these species in the Alps, collaboration is needed. Concrete actions for the establishment of an ecological network, however, will occur predominantly at the local level. The impact of global phenomena such as climate change is increasingly significant and therefore requires the development of a pan-Alpine strategy. Establishing an ecological network can be a cornerstone in a consistent response to global climate change. Facilitating the passage of species displaced by shifting climatic zones will help them find new suitable habitats and allow them to modify their range, thereby improving their chances of survival.

The Ecological Continuum Project

ALPARC, CIPRA, ISCAR, and WWF's European Alpine Programme have been carrying out joint activities for the conservation of Alpine biodiversity since 2002. The 4 organizations introduced a new approach to Alpine nature conservation by looking at biodiversity from an Alps-wide as opposed to a national perspective. Taking this approach a step further, a new project— the Continuum Project financed by the Swiss MAVA Foundation for Nature—was started in June 2007 with the aim of creating or restoring ecological connectivity between important areas for nature conservation. Foundations are currently being developed in a pre-project (until end 2008) for long-term implementation of a consistent ecological network in the Alps. The findings of the Swiss National Research Programme NRP48, "Landscapes and Habitats of the Alps," are being integrated.

One important objective of the pre-project is to elaborate a joint Alpine methodology for connecting important areas and develop a catalogue of possible measures to enhance connectivity. In a first step the Continuum Project evaluated and assessed methodological approaches currently used or proposed for establishing ecological networks. Four approaches—the Pan-European (PEEN), the Swiss Ecological Network (REN), WWF's Ecoregion approach, and ALPARC's Protected Area approach — assessed by 16 experts (scientists as well as members of the Ecological Network Platform), based on a questionnaire. The suitability of the 4 approaches differs clearly regarding aims, scale, data needs, and implementation. The results of the expert assessment were verified in a workshop in December 2007 in Zurich (Switzerland), leading to recommendations on priorities (where are ecological networks most needed), methodology (what are the most appropriate approaches to achieve the different goals), and procedure (how can regional projects for ecological networks be developed). A second objective of the Continuum Project is to carry out initial concrete actions in 4 pilot areas. The areas are dispersed across the Alpine Arc (Figure 3, showing the Alpine Arc and one pilot region).

Figure 2: A well-structured landscape offers a habitat for a variety of species
(Photo courtesy of Continuum Project)

Berchtesgaden–Salzburg transboundary region:

This comprises the Hagengebirge, the Salzburger Kalkhochalpen nature reserves, and Natura 2000 sites. The area is of great environmental interest and part of one bio-geographical entity. Many transboundary cooperation projects such as data exchange and scientific research already exist. With the Continuum Project this cooperation is now being broadened.

The eastern Austrian region:

The region around the Kalkalpen and Gesäuse national parks, with its large forest cover, small cultural landscape structures, low fragmentation, and high biodiversity is perfectly suited for the project. In addition, the area is an important link to other Alpine regions and the Carpathians (Figure 3). Based on the results of the 2004 ALPARC study, the Kalkalpen and Gesäuse national parks and other protected areas have already initiated the establishment of an ecological network.

Engadin–Alto Adige–Valle dell'Adige:

This pilot region will consider connectivity in two areas at the border between Italy and Switzerland. The first area runs along the Adige River valley, which is densely populated and intensively used by irrigated agriculture, and the Inn valley, which crosses migration routes from the south and east. The second area aims to connect existing protected areas: Adamello Brenta–Stelvio–Swiss National Park, and from the Nature Parks in South Tyrol (Italy) to the Hohe Tauern National Park in Austria. For these protected areas a main concern is to establish transboundary ecological networks to assure biological exchange and large migration areas (eg for brown bear).

The French Département de l'Isère:

The Département de l'Isère in the French Rhône-Alpes region is an intensely anthropized area with a strong need for rapid intervention to prevent human settlement from spreading continuously from Valence to Geneva. The valleys of this region are main migration routes of pan-Alpine significance—especially for birds; they are also of great importance for local migration of individual species between the regional massifs and the main large protected areas (Les Ecrins National Park, and Vercors, Chartreuse, and Bauges nature parks). The Département de l'Isère has been working on ecological networks since 1996. A map of all ecological corridors in the region has been serving as a basis for various implementation activities such as bridges and tunnels for game, speed limits, public relations work, and integration in planning processes. For all future Alpine projects it is extremely valuable to capitalize on this experience.

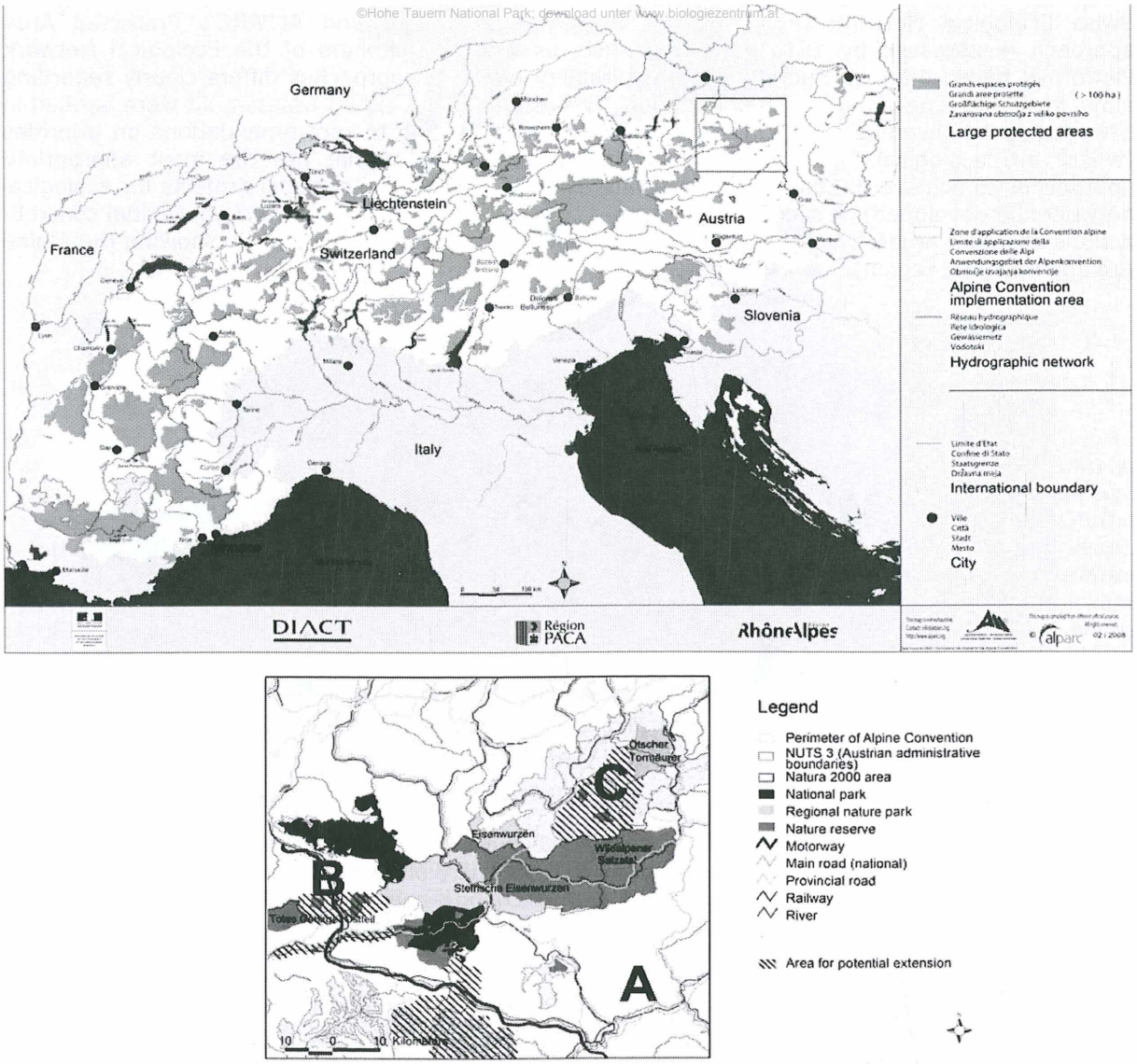

Figure 3: Protected areas in the Alps and location of one of the 4 pilot areas
(© Continuum Project)

The Ecological Network Platform

The Ecological Network Platform is a key instrument for implementation of the nature protection goals of the Alpine Convention; its aim is to help partners advance work on an Alps-wide ecological network. The Platform was established under the Alpine Convention in 2007. The Platform members are expert governmental staff from all Alpine countries, as well as observers from the Alpine Convention and NGOs. The goal of the Platform is the establishment of an Alps-wide transboundary network of protected areas and their respective connecting elements by engaging with experts, policymakers, and other relevant groups. Through the Platform, crucial information on measures and methodologies are being shared, refined, and compared between all Alpine countries. The Platform provides an important link between policymakers, the scientific community, and practitioners, and also enables efficient cooperation with other sectors. Within the Platform, experts work in 3 key activity areas: scientific support for the establishment of an ecological network, project-oriented implementation, and promotion of an Alpine-wide ecological network. Concrete tasks are the enlargement and integration of transboundary protected areas within the framework of existing activities, for example the development of the Natura 2000 and Emerald networks; the elaboration of methodologies for the connection of habitats, and support for the implementation of connection measures for Alpine species and habitats. Some regions have already started transboundary work. These efforts are being supported and further developed through Platform activities.

The fist phase of the platform (2007-2008) can be seen as build-up phase, where the focus was on promoting the platform and its possibilities, gaining new members and associates and initiating first activities. Due to the approval and start up of two extensive projects in the field of the ecologic networks in the Alps during the build-up phase of the platform (Ecological Continuum project and ECONNECT), funds were available to elaborate basic information and to carry out concrete measures. For the platform as a permanent body in the frame of the Alpine Convention, the following general role emerges:

- as interface for the cooperation between actors working on research and development and national and international political decision-makers and administrations (communicating scientific outcomes and the needs for action to decision-makers)
- as "think tank" for the identification of further important steps towards the construction of an ecological network in the Alps
- as coordinator for potential project partners

This role emerges from the unique composition of platform members and associates and should be further developed in future. In regard to the mandate for the platform's first phase mentioned above, the following tasks arise for a future mandate (2009-2010):

- supplementation of the catalogue for measures for the implementation of the ecological network and support on its use
- development of indicators for efficiency control of the implementation of the ecological network in cooperation with partners
- nomination and support for additional pilot areas on the basis of the selection and nomination concepts (e.g. scientific steering of beginning processes for exemplary implementation of networking measure in the pilot regions
- further determination of financial sources for measures to implement the ecological network and identification and as the case may be elaboration of recommendations for joint projects within the platform
- continuing the exchange and cooperation with different projects, relevant initiatives from the EU COM and the Council of Europe as well as the Carpathian Convention and the CBD

Furthermore the following activities are recommended for the period between the X. and XI. Alpine Conference:

- further implementation of the Memorandum of Cooperation between the Alpine and Carpathian Convention and the CBD
- using the year 2010 as UN year of biodiversity to advert the activities for the establishment of an ecological network in the Alps (e.g. participation in conferences and other events).
- the experiences and results reached so far in the implementation of an ecological network in the Alps shall be documented as a toolkit for implementation in the series "Alpensignale" and by this be brought to a wider public in the alpine languages
- implementation of the platforms communication strategy and further development of the website
- support coordination in the field of data management as currently carried out by different initiative (EU, ECONNECT, Ecological Continuum, SOIA, etc.) and e.g. offering a workshop for experience exchange
- in order to fulfil the specific function of the platform as interface to decision makers, ensure the participation of contracting parties to the Alpine Convention in platform meetings (if necessary through representatives).

The ECONNECT project

Conservation of biodiversity by an integrated and cross-sectoral approach for improving the ecological continuum within the Alpine region is the over-reaching objective of the Econnect project. Econnect is financed mainly by the EU Alpine Space Programme. Sixteen partners from six Alpine countries joined to implement a common methodology for the conservation of the natural heritage of the Alps: ecological connectivity will be enhanced by overcoming legal and ecological barriers while considering cross-boundary and super- national needs for action. The project's emphasis is on the implementation of measures in pilot regions in order to then magnify the results by way of guidelines and best-practice dissemination. The ECONNECT project has became operational in September 2008 and will run until the end of August 2011.

Two new Pilot regions are part of the ECONNECT project additionally to the 4th already existing ones of the Continuum project:

The area of "Hohen Tauern":

In this region the south Tyrolean Natural Parks as well as the National Park "Hohe Tauern" builds the largest cohesive protected network area in the Alps. Therefore this region is central for the alpine arc and an important intersection between the northern Alps and the southeast foothills in Slovenia which are specifically important for the large birds of prey. This area also represents the transition from the greater areas of the dolomites to the "Hohen Tauern".

South-east Alps – Mercantour/Alpi Marittime:

This pilot region is located at the southwest end of the alpine arc in the French region Provence-Alpes-Côte-d'Azur and the Italian region Liguria and Piedmont. The Natural Park Alpi-Marittime on the Italian side and the National Park Mercantour on the French side together build one geographical unit. Both regions are also close to each other culturally, so that one can speak of a single local unit. Therefore the transboundary cooperation in this region has a long tradition. The area plays an important role as a connection to the other Italian mountain ranges (Apennines).

Benefits beyond the Alps and for global biodiversity conservation

While endeavoring to establish or maintain an ecological network in the Alps, connectivity to adjacent mountain ranges cannot be neglected. The Alps–Carpathians corridor, for example, is vital for large carnivores. Connections with the Balkan mountain areas or the Apennines, as well as the French Central Massif, the Pyrenees, and the Jura play a key role for the dissemination of many species. Admittedly, the idea of ecological networking is nothing new. Many conventions, agreements, and initiatives already exist, although awareness of these is sometimes lacking. Internationally, all Alpine countries have committed to the conservation and sustainable use of biodiversity through the Convention on Biological Diversity (CBD). Mountain regions belong to the areas in the world with the highest biodiversity; ecological networks extending over the whole Alpine Arc can therefore make an important contribution to fulfilling global commitments. At the European level, things are becoming even more concrete: a pan-European ecological network is currently being established, in which the Alps will play a key role. The identified Natura 2000 or Emerald sites in the different countries are important building blocks of this project. International collaboration is particularly important for ecological networks. The governments of the Alpine countries are therefore collaborating with conservation organizations and the scientific community within the framework of the Alpine Convention for the implementation of ecological networks enabling undisturbed natural processes. A comparable process is on the way in the East European Countries within the framework of the Carpathian Convention and the Carpathian Network of Protected Areas (CNPA)

Further information

Website of the Ecological Network in the Alps: www.alpine-ecological-network.org

Contact

Marie-Odile Guth
marie-odile.guth@developpement-durable.gouv.fr

8ème Mission d'Inspection Générale Territoriale
2, route d'Oberhausbergen
67070 Strasbourg Cedex
France

Dr. Thomas Scheurer (ISCAR)
scheurer@scnat.ch

ISCAR – International Scientific Committee on Research in the Alps
Research Council of the Swiss National Park
Swiss Academy of Sciences
Office
Schwarztorstrasse 9
3007 Bern
Switzerland

Yann Kohler
yann.kohler@alparc.org

Dr. Guido Plassmann
guido.plassmann@alparc.org

Task Force Protected Areas
Permanent Secretariat of the Alpine Convention
256, rue de la République
73000 Chambéry
France