Sciences Eaux & Territoires

INRAE

https://doi.org/10.20870/Revue-SET.2023.43.7383

The role of alpine protected areas in the spatial planning of ecological connectivity in their regional context

Yann KOHLER[1]

[1] Grenoble-Alpes Métropole, member of the international "Connectivity Conservation Specialist Group" of the IUCN, France.

Correspondance : Yann KOHLER, yann.kohler@grenoblealpesmetropole.fr

The Alpine protected areas are important spaces in the implementation of ecological networks in the Alpine context. Their role is not limited to being the core areas of these networks due to the richness of their fauna and flora. The managers are also actively involved in the design and implementation of ecological networks, in some cases even contributing directly to their materialisation in spatial planning documents.

Alpine protected areas – more than "just" biodiversity reservoirs at the heart of an ecological network

Ecological connectivity in the Alps as a stimulating international issue for nature conservation

Ecological connectivity, and its implementation in the form of ecological networks (or "*trames vertes et bleues*" according to French and "green infrastructure" according to European terminology), is an important concept for ensuring the maintenance and development of biodiversity in the Alpine region. Ecological connectivity is essential for ensuring the survival and adaptation of species in a context of rapid climate change, as regularly reported by the Intergovernmental Panel on Climate Change (IPCC), and of dramatic biodiversity loss, recently documented by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). The identification and inclusion in spatial planning of measures creating connectivity, such as ecological corridors or stepping stone biotopes, is important to ensure their quality and long-term viability.

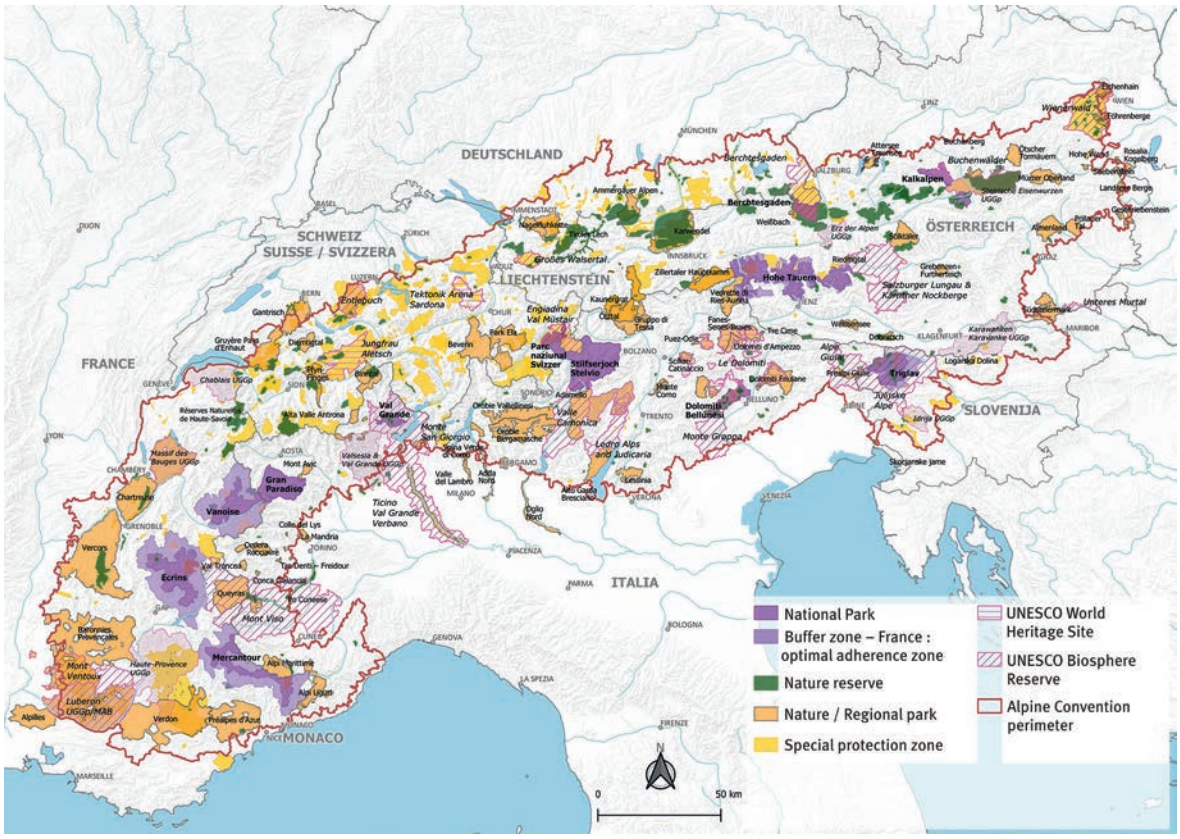
The protected areas also play a central role in the conservation of biodiversity (Figure ❶). They enable species to remain in their original habitats, species under pressure to regain ground and ecosystems to fulfil their functions. In addition, they help to preserve the landscape diversity of the Alpine territories.

In the context of ecological networks, protected areas are generally considered as core areas or biodiversity reservoirs (Figure ❷). The Regional Scheme of Ecological Coherence (SRCE) of the Auvergne Rhône Alpes Region, for example (Figure ❸), integrates existing zonings such as areas of categories of strong protection (like sites protected through prefectoral decrees for the protection of biotopes or national park core areas) or "zonings of knowledge" (like the natural areas of ecological, faunistic and floristic interest (ZNIEFF type I), Natura 2000 sites or the sensitive natural areas, ENS) into the biodiversity reservoirs. In the case of Bavaria (Germany), all protected area categories (such as nature reserves, natural parks and national parks) are part of the cores (*Kernflächen*) of the biotope network (*Biotopverbund*). As a result of the classification of part (for protected areas with a lower protection status such as protected landscapes or natural parks) or all of their territory as a core area of an ecological network, the role assigned to them is essentially one of conservation of the quality of the habitats as well as the flora and fauna present in their territory.

Ever since the issue of ecological networks emerged in the Alpine context in the early 2000s, the managers of the protected areas recognised the importance of (spatial) links between protected areas in order to carry out their conservation mission. They quickly wanted to take on a more active role in the creation of ecological networks, going beyond the preservation of species and habitats in their own territory. The issue of ecological connectivity and the desire to contribute to the creation of an ecological network have therefore been a constant priority for cooperation between the protected areas of the Alpine Arc since 2003 (see the annual activity reports of the ALPARC network of protected areas[1]).

1. www.alparc.org/alpine-resources

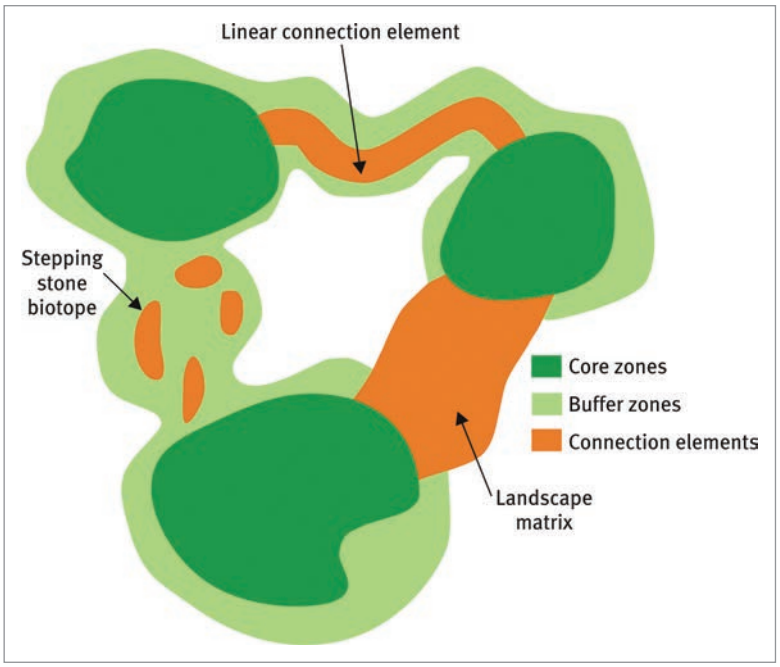
Figure ❶ – Map of the Alpine protected areas (2020). © ALPARC.



In the Alpine context, the Alpine Convention (an international treaty signed by the eight Alpine countries) provides a legal framework for this desire, with the "Conservation of nature and the countryside" protocol requiring the implementation of "the measures appropriate for creating a national and cross-border network of protected areas, biotopes and other environmental assets protected or acknowledge as worthy of protection". The Alpine protected areas, in particular through their ALPARC network, have been closely involved in the "Ecological Network Platform" working group of the Alpine Convention, which is responsible for ensuring the implementation of this protocol. More recently, the European Union's Macro-regional Strategy for the Alps (EUSALP) has strengthened the policy framework in the Alpine region including with an action group to "to develop ecological connectivity in the whole EUSALP territory" (Action Group AG7). The protected areas are continuing their mobilisation within this new framework.

2. www.jecami.eu
3. www.alpbionet2030.eu

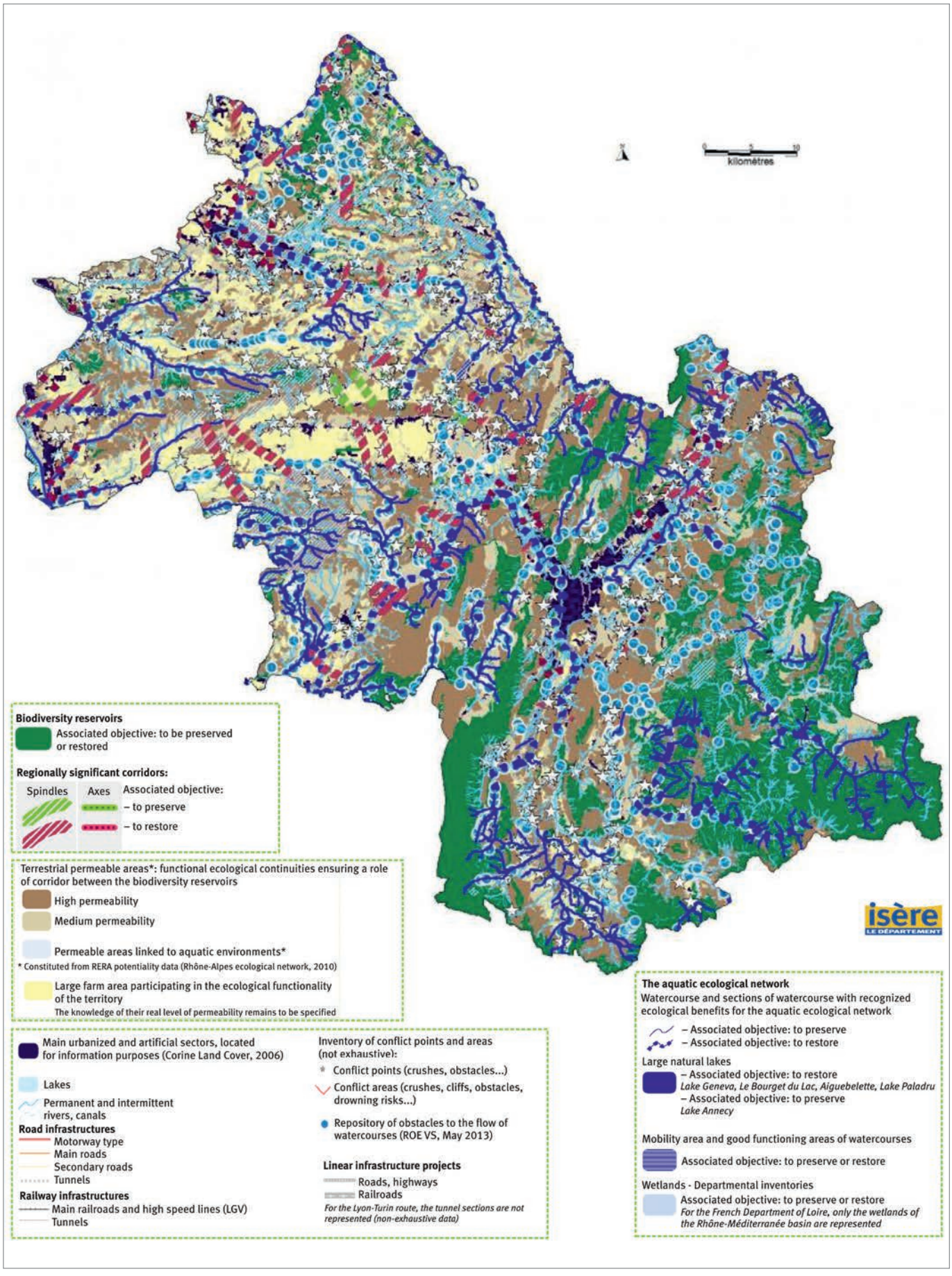
Figure ❷ – Diagram of an ecological network with its different elements.



Communication and lobbying but also projects and actions

The protected areas therefore play an active role in popularising and promoting the subject of ecological networks in the Alpine context. Initially, this was mainly the case through an involvement in the elaboration of methodological bases for the identification of such networks at the level of the Alpine arc and in the development of spatial analysis tools. They have thus been at the origin of and actively involved in several international projects (such as the Interreg Alpine Space programme, ECONNECT, greenAlps, ALPBIONET2030 and ALPCOTRA Biodiv'ALP). In this context, they have used their expertise to develop mapping tools for the analysis of ecological connectivity well beyond their borders (development and optimisation of the JECAMI[2] mapping tool and the concept of Strategic Alpine Connectivity Areas SACA[3]). The expertise of the Alpine protected areas in this field is recognised and they are solicited by various stakeholders to contribute to the elaboration

Figure ❸ – Map of the Regional Scheme of Ecological Coherence (SRCE) in the Isère department. © CG 38.



of regional planning (e.g. for the analysis of ecological connectivity in the cross-border area between Bavaria and Austria for the Bavarian State Ministry of the Environment and Consumer Protection StMUV (Germany), or by the Land of Vorarlberg (Austria), Salzburg (Austria) and Tyrol (Austria)).

The managers of protected areas do not limit themselves to analysis and planning outside their borders, but are in some cases also actively involved in implementation activities, such as the *Kalkalpen* National Park in Austria. In cooperation with the neighbouring *Gesäuse* National Park and other protected areas in the vicinity, this park has initiated the creation of the *Netzwerk Naturwald*, a network of primary forest habitats. Here it is actively involved in modelling and planning a network of old-growth forest areas to ensure the connectivity of this type of habitat, for which the park bears a special responsibility (not least because of its UNESCO World Natural Heritage status for its old-growth beech forests). Negotiations with private forest owners have led to agreements excluding all exploitation of areas identified as strategic between the protected areas.

What legitimacy do protected areas have to justify such commitments?

The question regarding the legitimacy of protected area managers to become involved in the issue of ecological networks beyond their territories has been the subject of numerous debates and, for some parks faced with a complicated territorial situation, a brake on action. However, the parks do objectively have many assets justifying their action in this field.

The areas covered by the parks offer the possibility of "testing" and gaining experience in setting up ecological networks in the Alps (see the example from Switzerland below). Furthermore, it is among the staff of the protected areas that one finds experienced geographers, biologists and other naturalists with a very good knowledge of the terrain, the species and the issues specific to the area. The administrations of protected areas are partners known and recognised by local stakeholders, and are therefore an ideal relay for transmitting, discussing and developing such projects in their region.

Close links between the ecosystems inside and outside the parks are numerous and an attempt was made to take them more fully into account with the introduction of the notion of "ecological solidarity" in the 2006 law on national parks in France. Even if this concept ultimately did not succeed in gaining acceptance, the principle of designing and organising parks by taking into account the ties that bind them to their environment remains relevant.

Laboratories for scientific and practical experimentation

By 2040, Switzerland must have a functional ecological infrastructure in rural and urban areas, in the Central Plateau, the Jura and the Alps. The Action Plan for the Swiss Biodiversity Strategy describes the measures and timetable required to achieve this. On the one hand, the Swiss system of protected areas must be integrated and re-evaluated in a targeted manner; on the other hand, a system of areas of connectivity spanning the entire country must be integrated and secured in a general manner. All sectors will be called upon to make a contribution to the ecological infrastructure.

The Swiss natural parks are explicitly designated as laboratories for experimenting with the implementation of ecological infrastructure. A first project financed by the Federal Office for the Environment (FOEN) in 2016-2017 to promote the implementation of ecological infrastructure in volunteering natural parks was carried out and very positively evaluated. A second project, ValPar.CH, is currently being carried out in Swiss parks and will further refine the concept and its implementation. The experiences gained in the Swiss parks will then be applied to the rest of the country.

Long-term continuity of ecological networks ensured solely through spatial planning

The methodologies for identifying and designing ecological networks at different scales have evolved considerably and there are many examples of good practice. What often remains problematic is the implementation and, above all, the securing of the various elements of an ecological network over time. Indeed, the securing of the various components of an ecological network outside core areas, which for the most part do not benefit from a protection status, is currently often done through agreements with owners or users. In order for these areas to fulfil their role in an ecological network, agreements on the types of practices to be adopted or management measures to be implemented are laid down in conventions. However, these are often of limited duration. In addition, they are mostly also linked to financial compensation to offset any losses or additional costs associated with the type of management measures agreed upon. This is for example the case for the Biodiversity Promotion Areas (BPA) in Switzerland, representing 7% of agricultural land, which form the agricultural ecological networks. These agricultural ecological networks are defined for a period of 7 years and are then renegotiated.

In order to ensure the long-term functionality of an area within an ecological network, other, more permanent solutions are needed. In addition to the frequently voiced request for the expansion or establishment of new protected areas in this context, the inclusion of the ecological network's elements in land-use planning documents is one of the most appropriate. An approach the managers of the protected areas have also recognised and are committed to.

The role of Swiss natural parks as laboratories for ecological networks is a process that is well advanced for French regional natural parks (PNRs). Very early on, the French PNRs became involved in "green and blue network" issues, initially through leadership and involvement in a national working group on the subject, but also as sites of scientific and practical experimentation, with significant work on the issue of taking into account the French "green and blue network" in planning documents.

The "green and blue network" (TVB), a biodiversity preservation and land use planning tool originating from the "*Grenelle d'Environment*" (a national consultative process), is included in both the Environment Code and the Urban Planning Code. The legislative and regulatory framework provides in particular for its translation into urban planning documents.

Regional natural parks are particularly called upon by this aspect of the implementation of the TVB. Indeed, beyond the requirement to define in their Charter objectives for the preservation/restoration of ecological connectivities specific to their scale and the enforceability of urban planning documents with regard to this, they also have a responsibility to support municipalities and intermunicipalities, which will have to translate these issues in their own urban planning documents.

For example, the Massif des Bauges regional natural park works on an intermunicipal scale through actions in terms of planning and has developed spatial planning and sustainable development schemes (SADDs), which can be tantamount to the multi-municipal spatial planning and sustainable development projects (PADDs). Theses take up the provisions of the Charter and the scheme of territorial coherence (SCoT), including those relating to the TVB for integration into the municipal urban planning documents. While this support for planning documents is generally provided within the park's perimeter, there is also an inter-park component, as is the case, for example, between the Chartreuse and Bauges parks or the Espace Belledonne (an area in the process of preparing for a regional natural park), which are separated by intensely urbanised and exploited valleys. The regional natural parks are involved in corridor contracts or Green and Blue contracts in these areas.

What about the other categories of protected areas?

The examples cited show that given their objectives, structures and missions, natural parks seem to be the most suitable category of protected area to become involved in ecological network applications.

The Conservatory of natural areas of Upper Savoy, ASTERS, manager of 9 natural reserves, has also taken up the matter. As a partner in the ALPBIONET2030 and the Biodiv'Alp projects, it has positioned itself as the driving force behind this issue in Upper Savoy, initiating numerous actions with local French partners, such as the hunters' federation on questions of wildlife management, or the motorway operating company on the problems encountered by animals in crossing these infrastructures, leading to the construction of several wildlife crossings. ASTERS also ensures an international exchange with its Swiss and Italian neighbours, in particular in order to coordinate their efforts on the ecological connectivity of this border territory.

The Berchtesgaden National Park in Bavaria (Germany) was early to consider exchange and existing ecological links between habitats in its transboundary region with Austria. The cross-border pilot region "Berchtesgaden-Salzburg" was honoured by the Ministerial Conference of the Alpine Convention for its exemplary commitment to this topic as a "pilot region for ecological networking in the Alpine region". The application procedure as a pilot region of the Alpine Convention and the support of international projects on ecological connectivity (like ECONNECT and the Ecological Continuum Initiative) were coordinated regionally by the national park administration and supported to a large extent by the municipalities.

The results of these processes were taken up and integrated into the new supra-municipal landscape plan and the landscape framework plan, revised in 2012. The cooperation between the five municipalities in the peripheral area of the national park and the national park itself has resulted in the inclusion of elements of the local ecological network in these planning documents. In particular, extensively managed grassland areas and wetlands, but also the ecological corridors for two animal species (lynx and deer) were considered (Figure ❹). The successful inclusion of such elements previously identified in international projects is, at present, quite unique and exceptional in the Alpine Arc.

Protected areas as stakeholders and facilitators

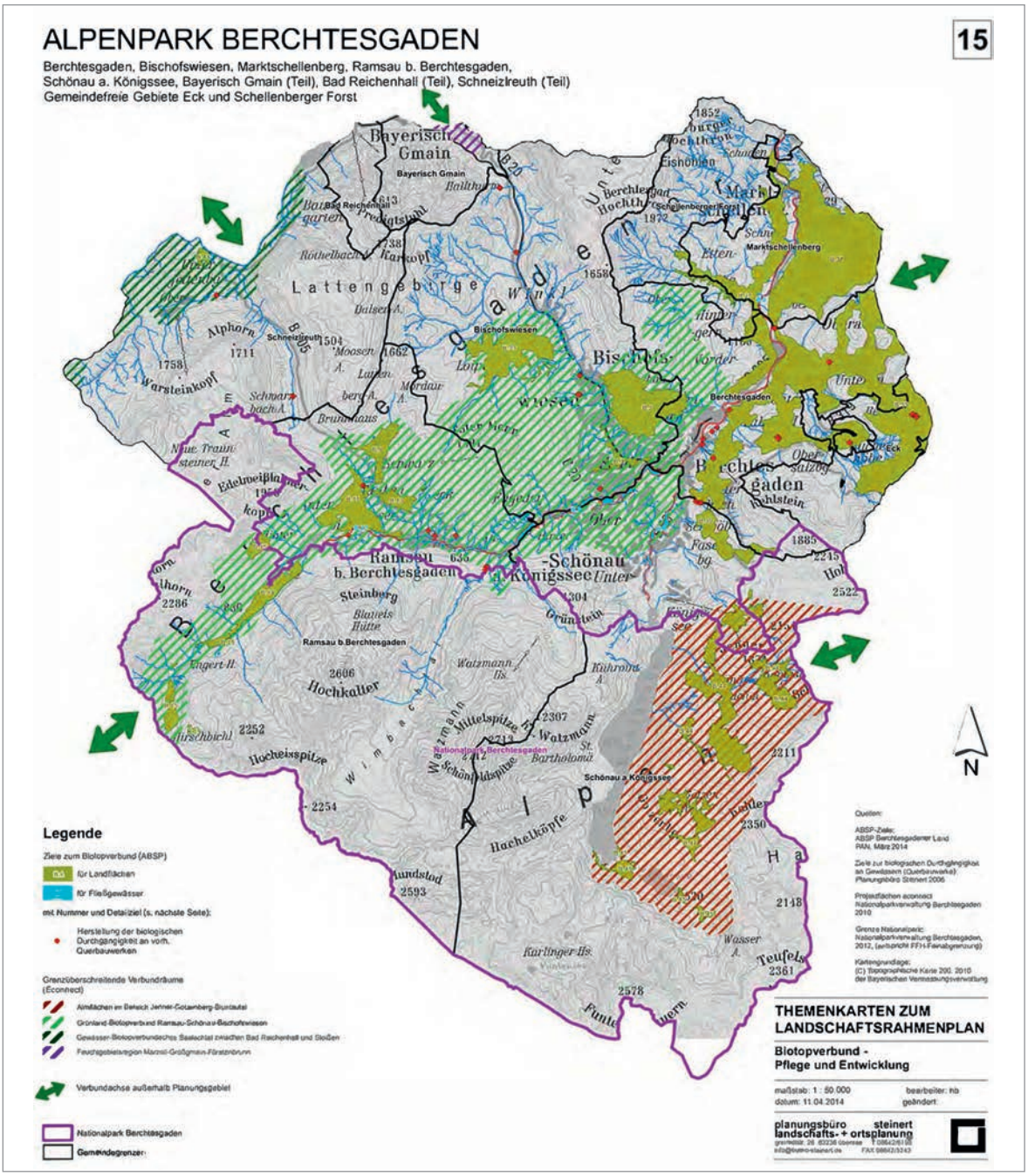
The objective of increasing the surface of protected areas remains valid both at the international level (cf. the objectives set by the Convention on Biological Diversity CBD in its new "post-2020 global biodiversity framework" agreement) and at the national level, as for example in France with the "national strategy for protected areas 2030". The number of protected areas and managers of such areas is therefore also set to increase.

While, as we have described in this article, the willingness to take up and become involved in the establishment of ecological networks is easier for actors in certain categories of protected areas, especially when it comes to the land-use aspect, we have also shown that all of these areas are potentially capable of doing so.

In the Alpine Arc, the will to pursue actions on the theme remains present with a greater focus precisely on planning issues (within the OpenSpaceAlps project for example) as well as more operational issues (implementation of ecological connectivity measures).

The achievement of ecological connectivity in the territory will be achieved on the one hand through the place given to nature and functional ecosystems in planning documents and on the other hand through the modification of particularly impacting practices (land artificialisation and urbanisation as well as intensive agricultural and forestry practices). Although protected area managers have neither the mission nor the legal skills to significantly influence these factors, they have proven their ability to support the improvement of ecological connectivity across the territory through their knowledge and know-how.

Figure ❹ – Thematic map "Ecological network" of the intermunicipal landscape framework plan Berchtesgaden. © Büro Steinert.



Références

Interreg Alpine Space project ALPBIONET2030 (2019). *Spatial analysis and perspectives of [ecological] connectivity in the wider Alpine areas*, **https://alparc.org/fr/alpine-resources/atlas-alpbionet2030**.

Kohler, Y. (2016). Alpine Protected Areas and their contribution to the Alpine ecological network. *In: Plassmann, G., et al., 2016, Alpine Nature 2030 – Creating [ecological] connectivity for generations to come*, Berlin, BMUB, 252 p., p. 51-53, **https://www.bmu.de/fileadmin/Daten_BMU/Pools/Broschueren/alpine_nature_2030_broschuere_en_bf.pdf**.

Hilty, J., Worboys, G. L., Keeley, A., Woodley, S., Lausche, B. J., Locke, H., Carr M., Pulsford, I., Pittrock, J., White, J. W., Theobald, D. M., Levine, J., Reunling, M., Watson, J. E. M., Ament, R., Groves, C., Tabor, G. M. (2020). *Guidelines for Conserving Connectivity through Ecological Networks and Corridors*. Best Practice Protected, Area Guidelines Series No. 30. Gland, Switzerland, International Union for the Conservation of Nature (IUCN), 122 p., **https://doi.org/10.2305/IUCN.CH.2020.PAG.30.en**.

Perrin, M., Bertrand, N., Kohler, Y. (2019). *PLACE Report: Spatial Planning & Ecological Connectivity – an analytical overview across the Alpine Convention area*. Grenoble: Irstea, with the contribution of the Platform Ecological Network of the Alpine Convention and ALPARC, and the support of the French Ministry for the Ecological and Inclusive Transition (MTES), 114 p..