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Ecological connectivity in the Alps and beyond - a long term challenge

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Abstract

The alpine area is a particular challenge for ecological connectivity planning. Nevertheless ecological connectivity is a key element for nature protection also in this mountain area. The identification of strategic alpine connectivity areas allows focusing the efforts towards the most promising areas. Beyond planning aspects, the topic comprises further facets linked to its social (ex. Stakeholder involvement), political (effects of legal framework to connectivity implementation) and economic (ex. green economy) dimensions.

Keywords

Ecological connectivity, Alps, Protected areas, Nature Protection, EUSALP

Ecological connectivity as multi-dimensional approach

The perception that nature conservation in the Alpine region needs to be addressed at a transnational level has gained ground in the past decades. In this regard, the issue of ecological connectivity assumes a key role. The topic was taken up by the Alpine Convention, non-governmental initiatives and the European Union specifically as part of its Interreg Alpine Space Programme and, since 2015, within the EU Strategy for the Alpine Regions (EUSALP). In comparison to other mountain regions, the Alps therefore benefit from a broad range of different institutions and initiatives and a growing network of actors (HEDDEN-DUNKHORST 2017).

Since the first overview about individual initiatives on ecological connectivity in the alpine countries in 2004 (ALPARC 2004) and the first attempts to start pan-alpine activities on this issue (Ecological Continuum Initiative, ECONNECT, recharge.green,…) in 2005 (KOHLER 2016) the range of topics in this context has also significantly increased.

If the first concepts linked to ecological connectivity where principally focused on the nature protection aspects defining ecological networks for various species or of different habitat types (BENNETT 2004, BENNETT & MULONGOY 2006), recent development broadened the frame of the approaches including gradually aspects of climate change, ecosystem services, human wellbeing and economy. The latest concept of green infrastructure of the European Commission is therefore defined as '*strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation. This network of green (land) and blue (water) spaces can improve environmental conditions and therefore citizens' health and quality of life. It also supports a green economy, creates job opportunities and enhances biodiversity*' (EUROPEAN COMMISSION 2013).

This diversification of topics can also be observed in the alpine context. The first large international project in the Alps ECONNECT (2008-2012) focused on the identification of barriers and the development of methodologies to map ecological connectivity in the Alps but also included to analysis of legal barriers to connectivity implementation (FÜREDER et al. 2011).

The project Rercharge.green highlighted the interrelation between biodiversity conservation and the development of renewable energies in the Alps (BALEST et al. 2015), whereas greenAlps strongly focused on policy and planning aspects of ecological connectivity in the Alpine area (SVADLENAK-GOMEZ et al. 2014). The contribution of implementation measures in favor of ecological connectivity to an alpine green economy where highlighted by GreenConnect (KOHLER 2017).

Links to the EUSALP territories

Since 2015 the creation of the European Strategy for the Alpine Regions adds also a new geographic challenge to the alpine activities on ecological connectivity. Indeed, ecological connectivity is the topic of the Action Group 7 (AG7 - To develop ecological connectivity in the whole EUSALP territory). The cooperation with the territories around the Alps, especially also the metropolitan areas of the larger city located around the Alps, is a particular challenge that offers a series of interesting perspectives.

An analysis of land use impact and that of the main transit and transport axes on ecological connectivity in and around the Alps (PLASSMANN et al. 2016) clearly demonstrates that the most important challenges are not within but outside of the Alps. Indeed, only the most populated and fragmented inner Alpine valleys have an impact on connectivity comparable to that of the very important barriers in areas surrounding the Alps.

This statement leads to the acknowledgement that the future challenges to Alpine biodiversity have to be evaluated, at least partially, in regions outside of the proper Alpine space. It is not realistic to regard the Alps as an autonomous functioning entity when considering its biodiversity. The conservation of the enormous diversity of life within the Alps as well of fauna and flora depends largely on the management of those areas on the outer edge of the Alpine range that are economically intensively used. Of greatest concern here are the large flood plains of important European rivers like the Po, the Rhône and finally the Rhine and the whole riverine system of the Danube.

The important peripheral Alpine cities such as Marseille, Lyon, Torino, Milano, Geneva, Zurich, Munich, Venice, Ljubljana, Graz and Vienna have a significant impact on ecological fragmentation through their relative dispersal of human settlements, their con-urbanisation and satellite towns needing transport and energy infrastructure, as well as via their large footprints of economic activities (industry, commercial areas,…); the Alpine surroundings are like a continuous belt of towns with some more or less important hot-spots of settlements.

Even if Alpine connectivity still seems to be functioning in large parts of the Alps, this connectivity increasingly resembles a tenuous thread loosely linking a series of habitats, as connections to the surrounding European landscapes and mainly neighbouring massifs like the Jura, the Central Massif, the Apennine and the Carpathians are more and more disrupted. In any case, Alpine biodiversity will not survive in the long term if they are completely isolated from the outside, inaccessible for any kind of gene exchange. The growing disconnection in very large parts of the Alpine surroundings needs to be addressed through adapted measures. Especially the west (Rhone valley – France), the south (Po plain – Italy) and the east (axis Trieste – Ljubljana – Maribor) face major barriers. The northern part of the Alps seems more open to connectivity for its surroundings.

The cooperation with EUSALP offers the possibility to include new, central stakeholders such as for example issued from the private sector or from the administrations of the larger metropoles in the periphery of the Alps. Their involvement allows treating certain dimensions of the topic in a more comprehensive way, for example concerning effects of seasonal daily or weekend tourism coming from the urban areas towards the mountain regions for leisure and sport activities.

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