Connectivity: is Natura 2000 only an ecological network on paper?

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Introduction

The somewhat provocative question that is the title of this chapter is an important one. The famous European Natura 2000 network, designed in the late 1980s and early 1990s found its way into the EU’s Habitats Directive in 1992. The word ‘network’ indicates that protected areas are linked to each other and, thus, establish connectivity. It was only in the decade after the adoption of the Habitats Directive, that the term ‘connectivity’ was coined, mainly in connection to climate change. It is generally thought that connecting natural areas allows species and habitats to adapt to the changing climate. One would, therefore, think that the EU (a) was well ahead of time when instituting the Natura 2000 network, and (b) already has the legal tools available to facilitate or even require connectivity measures to be taken.

This chapter will show that this is true only to a certain extent. It shows that the current legislative framework depends much upon voluntary actions by the EU Member States and that more stringent formulations of connectivity requirements in the Habitats Directive are needed to ascertain connectivity conservation throughout Europe.

The main question addressed in this chapter is: does the current legislative framework establishing the EU’s Natura 2000 network require Member States to implement connectivity measures? The following steps will be taken to address this question. First, I will very briefly explain what connectivity is and show that there is a growing need for connectivity measures to be taken. Then I will deal with the Natura 2000 network, both the way it has been put into legal provisions (law in the books) and the way it works in practice (law in action). From this section, it will become apparent that current Natura 2000 law does not provide the robust legal framework that is needed to meet the growing need for connectivity as described previously. I will then discuss several ways forward, drawing on recent case law of the EU Court of Justice.

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Connectivity

What is connectivity?

In the 2013 IUCN study ‘Legal Aspects of Connectivity Conservation’, connectivity was described as follows:

Connectivity conservation and the management of connectivity conservation areas are emerging fields of scientific study and conservation management practice within the broader subject of nature conservation. In the most basic terms, connectivity conservation is a conservation measure in natural areas that are interconnected and in environments that are degraded or fragmented by human impacts and development where the aim is to maintain or restore the integrity of the affected natural ecosystems, linkages between critical habitats for wildlife, and ecological processes important for the goods and services they provide to nature and people. In fragmented ecosystems, wildlife corridors and other natural linkages such as green belts and large wildlife corridors (such as in Australia, Nepal and the USA) have been common representations of connectivity conservation. The scientific emphasis takes into account connectivity needs across landscapes and seascapes, and in some cases even across continents, where necessary to maintain or restore specific linkages for habitat or species populations, or to maintain or restore important ecosystem processes. Scientific study and conservation practice have made important strides in understanding and applying connectivity conservation across a range of scales and functions.¹

Connectivity now applies to all thinkable scales, from small-scale landscape elements connecting habitat patches or two natural areas, to an overarching land and seascape approach to biodiversity conservation in large terrestrial and marine areas. Examples of connectivity measures at the local scale are hedgerows, streams, roadsides, forest corridors, underpasses and overpasses. At the landscape scale, rivers and associated riparian vegetation and broad links between reserves provide connectivity. Connectivity at the bioregional scale can encompass measures aimed at major river systems, mountain ranges, whole continents, or even across continents for some migratory species, such as African-Eurasian flyway for a large number of species of birds.

A growing need for connectivity

There is a growing need for connectivity. A recent report by the European Environment Agency shows that landscape fragmentation has been increasing

over the past 20 years, despite many different policy measures that were taken in order to reduce fragmentation (including the Natura 2000 network). Some 29 per cent of the EU’s terrestrial landscape is very highly (3 per cent), highly (10 per cent) or moderate-highly (16 per cent) fragmented. Landscape fragmentation is considered to be one of the most important threats to biodiversity. Recent data show that Europe’s biodiversity generally is in a poor state. Only 17 per cent of the assessed habitats and species are in a favourable conservation status, almost 25 per cent of European animal species face the risk of extinction and most of Europe’s ecosystems are now assessed to be degraded.

This is not a typical European issue. The latest Global Biodiversity Outlook concluded that there is an overall significant decline in the genetic diversity of life on Earth and that extensive fragmentation and degradation of forests, rivers and other ecosystems have led to loss of biodiversity and ecosystem services.

Climate change acts as a further stressor for biodiversity. Climate change leaves some habitats no longer suitable for certain species. Climate change also influences animal and plant biorhythms: plants may flower earlier in the year, young may be born earlier, and animals may start to migrate earlier or later than they used to, all with repercussions for ecological relationships. A warmer climate permits new species to survive and spread in areas that were previously too cold for them. In addition, climate change has very specific influences for certain species; for instance, ‘[s]ome reptile species exhibit temperature-dependent sex determination during egg incubation that could be influenced by changes and variability in global climates’. It has been predicted that within this century, the majority of European breeding bird species’ ranges are likely to have shifted toward the north and northeast by around 500–1,000 km, but with a wide variation between species. Environmental policy documents and scholarly literature stress that the response to climate change should aim at taking measures to help species, habitats, and ecosystems adapt to climate change, primarily by restoring

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5 Ibid.
natural interconnections by means of redeveloping ecological coherence through networks.10

Many protected areas are badly suited to overcome climate change-induced shifts in species’ geographic ranges. Studies show that protected areas ‘have not been designed for efficient (or even complete) representation of species’.11 Fixed protected areas alone will not be sufficient to safeguard biodiversity from the impacts of climate change. Hannah et al. show that between 6 per cent and 22 per cent of species in their analysis failed to meet representation targets for future ranges that take into account the impact of climate change, with a further increase expected under more severe climate change scenarios.12 Connectivity measures, such as the creation of corridors or stepping stones compensate for such losses.13 This is also reflected in the Millennium Ecosystem Assessment: ‘[c]orridors and other habitat design aspects to give flexibility to protected areas are effective precautionary strategies. Improved management of habitat corridors and production ecosystems between protected areas will help biodiversity adapt to changing conditions’.14 A combination of several measures (enlarging areas, securing robust large areas, securing ecological connections between areas, and establishing real ecological networks), usually advocated under the name of ‘landscape approach’,15 therefore seems to be the best approach to maximize the ability of nature to cope with the pressure of climate change on biodiversity.

The goal of enhancing connectivity is also apparent from the recent discussions on introducing the concept of wilderness conservation.16 It is argued that relying on the wilderness concept would be beneficial for improving interconnectivity of protected areas to help species adapt to changing weather patterns and changing temperatures.17 However, the 2009 White Paper on adaptation only lists one concrete action with regard to the Natura 2000 regime: ‘draft guidelines by 2010 on dealing with the impact of climate change on the management of

12 Ibid, at 137.
13 Ibid.
14 Millennium Ecosystem Assessment (MEA), Ecosystems and Human Well-Being: Biodiversity Synthesis (Washington DC, World Resources Institute, 2005) 70.
Natura 2000 sites’. These draft guidelines were published in 2012. They acknowledge the importance of connectivity, and state that spatial planning and land-use law provide important instruments. The draft guidelines, however, remain rather general and do not explicitly link to legal requirements of the Birds and Habitats Directives.

Increased connectivity is also recommended for the EU’s Natura 2000 network by the European Environment Agency in its 2012 overview of protected areas in Europe. Finally, connectivity fits very well in the EU’s ‘green infrastructure’ initiative too. Green infrastructure has been defined as:

a strategically planned and delivered network of high quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering a wide range of benefits and services. Green Infrastructure includes natural and semi-natural areas, features and green spaces in rural and urban, terrestrial, freshwater, coastal and marine areas.

Natura 2000 sites are considered to be the core of green infrastructure. The EU 2020 Biodiversity Strategy emphasizes the importance of using green infrastructure, by setting it as one of its six targets.

The Natura 2000 network

The Natura 2000 network on paper

The two basic instruments through which the EU’s biodiversity is protected are the EU Birds Directive and the Habitats Directive. These directives together institute an ecological network through a legally binding set of rules for all of the

20 Ibid, at 72.
27 EU Member States. Article 3(1) of the Habitats Directive explicitly states: ‘A coherent European ecological network of special areas of conservation shall be set up under the title Natura 2000. This network . . . shall enable the natural habitat types and the species’ habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range’. All of the Member States have to designate the most important terrestrial and marine areas within their jurisdiction for certain listed species and habitat types. Once designated, a series of legal obligations, laid down in Article 6 of the Habitats Directive, apply:

- For each site, EU Member States have to establish necessary conservation measures to maintain, or where appropriate, restore relevant habitat types and species.\(^{26}\)
- Where a site is deteriorating or where there is a threat of deterioration, EU Member States have to take appropriate steps to protect these sites.\(^{27}\)
- Projects that potentially have a significant effect on a Natura 2000 site may proceed only after an assessment has shown that the site’s ecological integrity will not be adversely affected.\(^{28}\) In order to make sure that this test is passed, mitigation measures are increasingly designed into projects. In this way, developers aim to create an ‘ecological surplus’, which is anticipated to function as a buffer and enable the site to support the planned economic and social developments. This opens the opportunity for connectivity measures to be included in big infrastructure and other projects. The appropriate assessment has to show that the overall impact indeed is not negative.\(^{29}\)
- The Habitats Directive has a derogation clause in case an assessment of a project deemed of high public interest and utility reveals that it will harm the integrity of a Natura 2000 site, and hence the authorities will not be able to authorize the project. In these circumstances, a project can still be approved under certain conditions, one of which is that all compensatory measures necessary to ensure that the overall coherence of Natura 2000

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\(^{26}\) Art 4(1) of the Birds Directive and Art 6(1) of the Habitats Directive.

\(^{27}\) Art 6(2) of the Habitats Directive, which also applies to Natura 2000 sites designated under the Birds Directive.


\(^{29}\) In a recent decision, the Dutch Council of State submitted a case for preliminary ruling to the EU Court of Justice, questioning whether it is allowed to integrate mitigating measures into the project thus escaping the application of Art 6(4) of the Habitats Directive. Case submitted 19 November 2012, pending, C-521/12 ([2014] C-521/12 Briels and Others).
These compensatory measures may very well include measures aimed at creating or enhancing connectivity between Natura 2000 sites and/or other protected areas.

In addition to Article 6, Articles 3(3) and 10 of the Habitats Directive are particularly relevant for connectivity. Article 3(3) provides that ‘[w]here they consider it necessary, Member States shall endeavour to improve the ecological coherence of Natura 2000 by maintaining, and where appropriate developing, features of the landscape which are of major importance for wild fauna and flora, as referred to in Article 10’ (emphasis added, JV). The latter provision states that ‘Member States shall endeavour, where they consider it necessary in their land-use planning and development policies’ (emphasis added, JV), to maintain and develop ‘features of the landscape which are of major importance for wild fauna and flora’ as a possible way to improve the ecological coherence of the Natura 2000 network. The legal wording of both Article 3(3) and Article 10 indicates that these provisions are not goal oriented but effort oriented and leave a considerable amount of discretion to the Member States.

The European Commission issued a guidance document on Article 10 which, although not legally binding, aims to ‘help develop and implement integrated ecological connectivity related measures’ to maintain and restore connectivity and to respond to the impacts of climate change. The guidance document makes a big step forward by acknowledging that climate change requires flexibility in protected area management instead of only aiming for preservation within specific fixed locations. It only provides recommendations to the Member States for the implementation of Article 10, which is discretionary.

The Natura 2000 network in practice

By 2011, a total of 26,106 sites had been designated, totalling 949,910 km², which equals about 17.5 per cent of the EU’s terrestrial area and 21 per cent of the EU’s marine area. This is a remarkable result that can only be applauded. When looking at the current network in greater detail, however, other conclusions have to be drawn as well. Although the Habitats Directive is explicitly aimed at establishing a ‘coherent ecological network’, the above provisions do not necessarily

30 Art 6(4) of the Habitats Directive, which also applies to Natura 2000 sites designated under the Birds Directive.
32 Ibid, at 47.
lead to the creation of a real network, i.e., a network that consists of interlinked areas. In fact, when looking at the Natura 2000 map, it is obvious that some Member States have succeeded pretty well in using the instrument to create a network, whereas others have mainly designated isolated protected areas.34

A clear picture of the Natura 2000 network results in practice also arises from the 2012 EEA’s report ‘Protected Areas in Europe’.35 One conclusion that presents itself is that spatial and functional connectivity across 34 terrestrial political borders of the European vary greatly among state boundaries, with good and bad examples in all parts of the European Union.36 Another conclusion is that in many Member States, there is a complementarity and overlap between different designation types at various levels. When not focusing solely on Natura 2000 sites, designated as such under either the Birds Directive or the Habitats Directive, but also on other types of designations aimed at land use control in order to protect natural landscapes, then a different picture may emerge. The report produces an interesting map of Austria, which shows the Natura 2000 sites in one colour, and other protected sites in another colour.37 Without taking these other designations into consideration, there is not much connectivity in Austria. When, however, the other designations are taken into account as well, a clear nationwide corridor emerges.

The same is true for several other Member States as well, such as the Netherlands. The Netherlands has a nationwide ecological network in place, called the ‘Netherlands Ecological Network’. Designed in the 1980s, and developed from 1990 onwards, this network consists of core areas (Natura 2000 sites, national parks, estates, certain agricultural areas, large water bodies), nature development areas (areas with good opportunities to restore significant ecological values) and connectivity zones (corridors connecting core areas and nature development areas). In 2000, another category was added: robust connectivity zones. These were added to counter shortcomings that had been discovered in first decade, mainly consisting of persistent (large) blockades that had to be overcome in order to achieve major connectivity gains. In 2004, finally, a specific programme was started to address physical barriers to connectivity by infrastructure such as highways and railways. Over 215 major obstacles to connectivity were identified, and plans made and funds allocated to overcome these between 2005 and 2018.38

34 The EEA’s internet tool ‘Natura 2000 Viewer’ provides the opportunity to zoom from the continent level to the local level. See http://natura2000.eea.europa.eu. This allows one to discover the level of connectivity within the network on each and every spot in Europe. Compare, for example, areas in France (for instance the area around Rennes) to areas in Spain (for instance the area around Madrid).
35 Above n 21.
36 Ibid, at 77.
37 Ibid, at 103.
These projects included the construction of underpasses for smaller animals (badgers, foxes) and large overpasses ('ecoducts') suitable for large mammal species such as deer and wild boar.\(^{39}\)

The Netherlands Ecological Network, covering 17.5 per cent of the Dutch countryside, was set to combat habitat fragmentation. Now, the network also plays an essential role in the Dutch biodiversity adaptation policy as it establishes a coherent network throughout the entire country, effectively creating connectivity on a large, national, scale. Between 1990 and 2018, the network was to be established through a large suite of land purchases, land swaps, concluding agreements with private landowners etc. The last phase of establishing the network consists of creating the robust connectivity zones, mentioned above. So far, only smaller corridors were established. As part of an austerity package, adopted in 2012, however, the final phase of the establishment of the network has been delayed with at least three years.

Until 2009, total costs of the project amounted to €5.5 billion, 37 per cent of which was used to acquire lands, 17 per cent was spent on making necessary adjustments in the area to make the area suitable for its role in the network, and 46 per cent was spent on management of the area. Most of the acquired lands are actually managed by private NGOs that were instituted with the aim to preserve nature on their property. Private landowners, hence, play an important role in the establishment and protection of the ecological network. To save costs, the government is now relying more on voluntary contributions by farmers, stimulated by various subsidies, than on taking legal control over land by buying up properties.

The designation and legal protection of the areas within the network is done through a mix of instruments.\(^{40}\) The core areas are protected areas under nature conservation law, mostly areas designated as Natura 2000 sites under the EU Birds and Habitats Directives. Everything outside of these protected areas is designated as being part of the network under spatial planning law. This is done through designating areas in provincial and local zoning plans. These areas then are destined for nature conservation use only or for a combined nature conservation/agricultural use with limited agricultural activities that are not harmful for the conservation objectives of the area. A set of requirements is laid down in local zoning plans to prevent unwanted development within the network, or even outside of the network when the development is thought to have a negative impact on the network. These requirements can for instance include the prohibition to erect buildings within the network or set minimum distances for certain activities outside of the network. The latter is for instance true for large-scale cattle breeding or other bio-industry activities emitting nitrates that have a negative impact on the quality of the natural habitats within the network. In addition, environmental standards, set through pollution control laws (either in national regulations or in individual permits) sometimes refer to the Netherlands Ecological Network by

\(^{39}\) Ibid.

\(^{40}\) See in great detail, ibid, at 4–8.
setting maximum emission levels aimed at limiting the deposition of pollutants within the network. A variety of tax benefits and subsidies has been put in place to support farmers and other private landowners in the management of lands that are part of the Netherlands Ecological Network. In essence, though, the implementation of the Netherlands Ecological Network mainly relies on the application of spatial planning law.

Providing nature compensation is part of the scheme designed to protect the network. According to Netherlands spatial planning laws, infringements on the national ecological network are only allowed under certain conditions, one of which is that any loss of area, quality or connectivity within the ecological network has to be compensated following a detailed scheme which basically states that there should be no net loss of area size, of environmental quality, or of connectivity within the network. This usually leads to the recreation or restoration of new areas to be included in the network, often through land swaps or land purchases by the project developer.41

There is some criticism on using spatial planning law to legally establish and protect the ecological network. Local zoning plans are drafted by local authorities. These have a fairly large discretion as to land use decisions and are not always eager to cooperate in the establishment of the ecological network. They are obliged to follow directions given in a national spatial plan on the ecological network in which the indicative network has been laid down on a map of the country, and in which 132 habitat and landscape types with minimum aggregate total areas have been fixed. Local authorities, though, can influence the success of the network at the local level through poor local delineation and implementation. In practice, the exact delineation of the network is regularly changing because of changing developmental preferences at the local level. To meet this criticism, it was suggested to regulate the establishment and management of the ecological network under nature conservation legislation rather than through spatial planning, thus effectively reducing the power of local authorities to determine the exact location and size of the network. A recent Nature Conservation Bill, however, decentralizes most of the powers to the 12 provinces.42 Provinces can, through spatial planning law, influence planning at the local level and thus have the power to overrule the local authorities when necessary. This is a slight improvement compared to the previous situation, but with twelve authorities in control, the risk of a locally uncoordinated establishment of a national network remains.

The Natura 2000 network in practice is not only supported by domestic nature conservation and spatial planning law, but also by EU financial incentives aimed at achieving concrete projects at the local level. Projects at the local level are essential to create or enhance connectivity, and, therefore, financial instruments aimed at achieving such projects form an indispensable element of connectivity

41 Ibid, at 5.
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law. The LIFE+ programme, for instance, the EU’s most important financial instrument supporting voluntary environmental and nature conservation projects throughout the EU, spends billions of euros on connectivity projects each year.\(^43\) Recently, this programme is considered to make a significant contribution to strengthening ‘green infrastructure’ (see above). The practical experiences of the LIFE+ projects can provide support for future policy and funding for green infrastructure initiatives. However, it is generally believed that in order to achieve a sustainable improvement of EU green infrastructure, other funding sources, apart from LIFE+, need to be identified as well.\(^44\)

The current phase of the LIFE+ programme runs from 2007–13 and has a budget of €2,143 billion.\(^45\) Each year, the European Commission launches a call for LIFE+ project proposals. Any public or private body, actors or institutions registered in the European Union, can enter the programme, for example, individual farmers, farmers or other landowners joined together in an association of any kind, NGOs, local governments, etc. Project proposals can be either national or transnational, as long as they take place within the territory of the 27 EU Member States. Some concrete examples of LIFE+ co-funded connectivity projects are:

- **Conservation of Atlantic salmon in Scotland.** The objective of the programme was to protect and contribute to the recovery of salmon, which were disappearing due to migration problems. The actions that have been taken include the removal of 25 obstacles to migration. This allowed salmon to access spawning grounds in the river system, which had been inaccessible before. The LIFE programme contributed €2,347,908 in this four year project.\(^46\)

- **Demonstration project on land use and environmental management of the physical planning in Gallecs as a biological and stable connector in the fringe space of the Barcelona metropolitan area.** The objective of the project was to protect Gallecs (the rural area in Barcelona which is serving the role of a metropolitan greenbelt) from urban and industrial pressures and subsequent environmental degradation. By contributing €700,691, the LIFE programme has helped to contain the fragmentation of natural landscapes and habitats in Gallecs and to reduce the pressure of neighbouring settlements and industry.\(^47\)

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43 See in more detail: J Verschuuren and M Gromilova, ‘Case study: European Union’ in Lausche et al (above n 38). Part of this text is taken from this case study document.


47 LIFE02 ENV/E/000200, GALLECS, Demonstration project on land use and environmental management of the physical planning in Gallecs as a biological and stable connector in the fringe space.
• **Corridors for Cantabrian Brown Bear Conservation.** The overall objective is to contribute to the recovery of the Brown Bear in the Cantabrian Mountains by promoting connectivity between isolated bear populations. This was done by supporting local councils and the public living in the inter-populated corridor area to undertake bear conservation and habitat enhancement measures, and by reducing threats such as illegal snares and poisoning in the inter-population corridor. The total LIFE contribution into this project programme is €825,000.48

**Discussion**

The question that arises is whether the relevant EU law described above adequately promotes, enables and/or regulates connectivity conservation in practice, and if not, what improvements could be made. It is obvious that the Natura 2000 network, as regulated under the Birds and Habitats Directives, forms an essential building block of connectivity law in Europe. Throughout the continent, large areas have been designated as protected areas, and the regulatory system that applies to these areas is sufficiently strict to offer long-term conservation. Thanks to an effective enforcement mechanism, exercised by the European Commission and the EU Court of Justice, the Birds and Habitats Directives are taken very seriously in the Member States, not just by the competent authorities, but by domestic courts as well.

We must also conclude that other instruments, both at the domestic level and at the EU-level, greatly help to achieve connectivity in Europe. Domestic level instruments that help achieve connectivity mainly are domestic nature conservation law and spatial planning/land use law instruments. Together with the ‘official’ Natura 2000 sites, the other designations may provide the connectivity that is needed. It should be stressed, though, that land use law, in general, has some disadvantages over nature conservation law mainly because it leaves more room for economic interests to be taken into account and because it is only aimed at having negative controls in place (and not at requiring protective management activities to be developed).

Perhaps even more important is the availability of funds that can function as a kind of lubricant to stimulate local farmers and other land-owners to take the necessary conservation measures on their lands if located within the ecological network, as was shown in the Dutch example. This is true for the EU as a whole as well. An especially strong feature of EU connectivity law is the fact that the strict command-and-control type of rules present in the Birds and Habitats Directives, are accompanied by a range of instruments that offer positive incentives for

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land-owners and farmers. As shown above, the LIFE+ programme spends billions of Euros on connectivity projects each year and thus greatly contributes to creating and enhancing connectivity at the local level throughout the EU.

Enhancing connectivity: possible ways forward

In this section, I will discuss three possible ways forward, all aimed at enhancing the need to take connectivity measures under the EU’s Birds Directive and Habitats Directive. First, I will discuss the option that connectivity may be essential to achieve a favourable conservation status and to meet the requirements under Article 6(2) and 6(3). Second, one might argue that Articles 3(3) and 10 are legally binding, when considered in the light of the conservation objectives of a specific site. The third option is to reformulate some of the provisions of the Habitats Directive.

Connectivity may be required under Article 6(2) and 6(3)

Despite the fact that many EU Member States use the Birds and Habitats Directives as a basis for far reaching connectivity policies and projects, there is some doubt as to the existence of a firm legal obligation that forces the authorities to implement the Natura 2000 connectivity practices described above. As stated above, the wording of Articles 3(3) and 10, which focus on connectivity, is not particularly strong. More and more authors, though, argue that from the combinative impact of this provision and the other provisions of both Directives, Member States in fact are required to take connectivity measures.49

Recent case law, albeit not based on Articles 3(3) and 10, seems to underpin this. In a 2011 case, the EU Court of Justice found that a mining project within a Natura 2000 site created a barrier between two breeding areas of the brown bear because of noise and vibrations.50 Between those two areas there is a transit route with a width of 10 km, that is of great importance for the western population of the brown bear. The Court found that there was a risk of deterioration, and closure of the corridor might result in the western population being fragmented into two sub-populations and even in the species finally being divided into three populations. Hence, it concluded that the mining operations were contrary to Article 6(2) of the Habitats Directive and that:

the loss of habitats for the Cantabrian brown bear caused by the [project] has been significant within what is called the ‘Leitariegos corridor’, that the bears


50 Case C-404/09 European Commission v Spain (Alto Sil) [2011] not yet published.
move 3.5 to 5 kilometres from the areas of impact of the noise and vibrations caused by mining operations, and that that operation will prevent access for the brown bear to that corridor, or make it much more difficult, whereas that corridor is a north-south transit route of critical importance for the western population of that species.

... that the Leitariegos corridor, with a width of 10 kilometres, is a transit route of great importance for the western population of the said species, allowing in particular communication between two very important pockets of reproduction...

[these] constitute disturbances of the ‘Alto Sil’ SCI, which are significant having regard to the conservation of the brown bear.\textsuperscript{51}

The Court found that there was also a breach in Article 6(2) regarding the cutting of a corridor between two subpopulations of capercaillie, one of which was located outside the site. This is even more interesting, as it seems to indicate that this provision also protects the subpopulations located outside the site to which the site’s population is connected:

there is a risk that operations currently being carried out, in conjunction with projects the implementation of which is imminent, form a continuous east-west barrier for the capercaillie, capable of leading to the isolation of population pockets of that species, and, over time, to the disappearance of pockets located to the south of that barrier.

... it must be held that the [mines] are capable of producing a barrier effect likely to contribute to the fragmentation of the habitat of the capercaillie and the isolation of certain sub-populations of that species.\textsuperscript{52}

Although this case does not clearly indicate that connectivity measures between protected areas are required, it does show that the authorities must have an eye on populations of species outside of the protected area. Additionally, it is fixed case law of the EU Court of Justice that activities outside of a Natura 2000 site that have a negative impact on the site, fall under the scope of the Directive.\textsuperscript{53}

Taking this case law into account, the conclusion cannot be other than that destroying a corridor that leads to the deterioration of a site is prohibited by Article 6(2). With connectivity becoming increasingly important, for instance due to the emerging impact of climate change on biodiversity, it is not unimaginable that case law will further develop along this line on the basis of Article 6(2) and 6(3).

\textsuperscript{51} Ibid, at paras 188–191.
\textsuperscript{52} Ibid, at paras 147–148.
\textsuperscript{53} Case C-96/98 Commission v France (Poitevin marshes) [1999] ECR I-8531.
Are Articles 3(3) and 10 legally binding in the light of conservation objectives?

The Habitats Directive sets a result obligation for Member States to ensure a favourable conservation status for all species of Community interest and for typical species in natural habitats of Community interest (Art 2(2)). Such status cannot be reached without ensuring that a population ‘is maintaining itself’ on a long-term basis as a viable component of its natural habitats’ (Art 1(i)). No doubt, from a scientific point of view, connectivity is an important factor of population viability.54 In cases where connectivity measures indeed are required to get or keep the species or habitat types for which a given area was designated in a favourable conservation status, it can be argued that connectivity is required.55 In such cases, it may very well be inevitable to improve the ecological coherence of Natura 2000 by developing features of the landscape which are of major relevance, for instance in land-use planning. Such a line of reasoning would, at least in cases where it is clear that connectivity measures are essential to ensure a favourable conservation status, render Articles 3(3) and 10 a stricter legal status than what follows, at first sight, from the wording of these provisions. So far, the EU Court of Justice did not follow this line of reasoning. As shown above, the EU Court of Justice, in the Alto Sil case, based its arguments on Article 6(2).

Adapting the legal wording of the Habitats Directive

In its White Paper on adaptation, the European Commission states that ‘in future it may be necessary to consider establishing a permeable landscape in order to enhance the interconnectivity of natural areas’,56 thereby seemingly acknowledging that the current Natura 2000 regime does not sufficiently require connectivity between natural areas to allow for species migration when climatic conditions change. Like the White Paper, the aforementioned ‘Biodiversity Strategy 2020’, which was published in a reaction to the conclusion that the 2010 target to halt the loss of biodiversity had not been met, for the time being almost completely relies on existing legal instruments. The strategy does state that spatial planning is essential to ensure better functional connectivity between ecosystems within and between Natura 2000 areas and in the wider countryside.57 It does not, however, propose to set new rules to force Member States to create connectivity. The 2011 policy document only suggests using the EU’s financial

55 Trouwborst, above n 49, at 75.
instruments, such as the LIFE+ instrument discussed above, to stimulate stakeholders to create connectivity.\footnote{Ibid.}

It can be concluded that at the moment, there are no clear plans to change the current legal texts of the Habitats Directive. The recent initiative by the European Commission to ‘climate proof’ all relevant EU legislation, which would have been a great opportunity to include binding connectivity requirements in the Habitats Directive, apparently does not encompass such a proposal.\footnote{See https://ec.europa.eu/clima/sites/change/what_is_eu_doing/index_en.htm. In addition, in 2013, the European Commission is expected to publish its Adaptation Strategy, which will probably include a proposal for an Adaptation Directive, requiring EU Member States to develop national adaptation policies.}

Regulatory action by the European legislature could speed up the process of designing and implementing connectivity measures in the Member States. The legislature could, for instance, reformulate Articles 3(3) and 10 of the Habitats Directive so as to require Member States to take connectivity measures.\footnote{Ibid.} New rules could cover the obligation to create corridors (including those across political boundaries and national borders), buffer zones, and more stepping stones, and to eliminate barriers preventing species to migrate to new areas. Such measures can be established domestically either through spatial planning law or otherwise, depending on the role of spatial planning law in each Member State. Putting too much emphasis on taking obligatory spatial planning measures would be difficult, because spatial planning is not regarded as an issue on which the EU has regulatory competence.

Since taking such connectivity measures, at least in heavily developed parts of the EU, would require substantial restoration measures, provisions on restoration should be scrutinized as well. The current legal text of both the Birds and Habitats Directives pay only poor attention to restoration. Although the words ‘re-establish’ ‘restoration’ and ‘restore’ are frequently used in the Birds and Habitats Directives,\footnote{In Art 3(1) and 3(2) of the Birds Directive and in Arts 1(a), 1(k), 1(l), 2(2), 3(1) and 4(4) of the Habitats Directive. The obligation to compensate loss that occurs through projects permitted under Art 6(4) of the Habitats Directive in practice usually also leads to restoration measures.} there are no further rules on restoration in both legal instruments. Much of the current experience with and thoughts about restoration is only reflected in non-binding guidelines, such as the European Commission’s Guidance Document on Article 6(4).\footnote{European Commission, Guidance Document on Article 6(4) of the ‘Habitats Directive’ 92/43/EEC. (Brussels, 2007/2012). As I argued earlier, the state of Europe’s biodiversity is so poor, that any nature conservation policy should to a large

\footnote{Ibid.}
Elements of restoration policies that should be regulated in the Habitats Directive, for example, are the condition that compensatory measures based on Article 6(4) should be in effect before the degradation from the project kicks in, the condition that at the time of decision-making, proposed compensatory measures must be shown to be legally and technically feasible (for instance, by showing that the necessary funds are available and the necessary lands have been purchased). More in general, it should be regulated that Member States adopted a robust restoration policy when implementing the Habitats Directive. Including such obligations in the Habitats Directive can be done without big amendments, simply because the duty in fact already is there, be it unarticulated. It is just a matter of making the duty to develop robust restoration policies and measures more explicit.

Conclusion

The main question addressed in this chapter is: does the current legislative framework establishing the EU’s Natura 2000 network require Member States to adopt connectivity measures to help biodiversity adapt to climate change? Or, more provocatively put in the title of the chapter: is Natura 2000 only an ecological network on paper? There is more than one answer to this question. First of all, it is clear that Natura 2000 alone does not constitute a coherent network in the sense of truly interconnected protected areas throughout an entire country or throughout the whole of the EU. Additional, domestic instruments, mainly in the field of nature conservation law and spatial planning law are needed to create connectivity between the Natura 2000 sites. Even in case domestic instruments are applied, in addition to the EU’s Natura 2000 legal framework, to achieve connectivity, we still cannot be certain that the network remains just an ecological network on paper. Much depends on the actual application of all the laws and policies on activities within the areas that constitute the network. Farmers and other local landowners have to refrain from harmful activities, and/or have to actively manage the area to support the area’s connectivity function. Financial incentives are needed to make this happen.

Fortunately, we can observe that EU Member States increasingly do apply such domestic instruments in order to achieve connectivity. Domestic policies in various Member States provide for additional connectivity instruments that add to the Natura 2000 network. Domestic subsidy schemes across the EU exist as well, and the EU’s LIFE+ scheme provide important financial incentives for connectivity.

This, however, is largely due to national policy initiatives, and based upon national law instruments. At the EU level, there seems to be a slow movement towards accepting that connectivity measures are legally required by the current

63 Verschuuren, above n 7.
64 Ibid, at 437.
texts of the Birds and Habitats Directive. The Alto Siā judgment of the EU Court of Justice, as well as a range of policy documents go into that direction.

In my view, however, there is much to say for more explicit regulating connectivity (and restoration) requirements in binding legal instruments, such as the Habitats Directive. There is a fear that altering the current text of the Habitats Directive will open Pandora’s Box, leading to a decline of the impact of this Directive on nature conservation in Europe. Fear, however, generally is a bad advisor. The Habitats Directive is getting outdated, caught up by climate change and by large-scale landscape fragmentation in Europe.