Natura 2000 and Water Management

Synthesis Paper

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Introduction

Natura 2000 is a network of "*core breeding and resting sites for rare and threatened species, and some rare natural habitats types*"[1]. The network gathers all EU countries and aims at ensuring the long-term protection and survival of these threatened species and habitats through the designation of sites made by the Member States. Natura 2000 derives from the Habitats Directive (HD), implying the identification of Special Areas of Conservation (SACs) to ensure a favourable conservation status of the habitats, and the Birds Directive (BD) targeting Special Protection Areas (SPAs) for threatened species and migratory birds' species. Member States have to submit a list of proposed Sites of Community Importance (pSCIs) for the Habitats Directive which can be then adopted within scientific biogeographical seminars supported by the European Environment Agency. Once the Member States have chosen relevant scientific criteria according to the Birds Directive, they must ensure that all the "*most suitable territories*" are designated. They must then be approved by the European Commission and constitutes the Natura 2000 Network. The specificity of Natura 2000 relies on its original system since it is not preventing human activity as would traditional reserves. Indeed, most of the network's land is privately owned.

Thus, while the Member States must ensure that the sites are rightly managed, it mainly depends on the interaction between people working and nature. After the site's designation, the Member States need to adopt "*the necessary conservation measures*" and, if needed, "*appropriate management plans*"[2] or other measures. Article 6.1 of the Habitats Directive displays the different options in the establishment of the necessary conservation measures. Article 6 is a key article because it determines the link between the protected habitats and species and other types of land. Natura 2000 sites can be managed differently, there are for instance individual management plans of sectoral management plans. However, once should bear in mind that they are not mandatory: "*Although management plans for Natura 2000 sites are only suggested in the Habitats Directive, these plans seem to be a preferred option for most Member States and are even considered obligatory in many of them*"[3]. Consequently, there are various approaches to the management of Natura 2000 sites and its comprehensive logic. Several guidance documents have already been produced to assist the implementation of these Bird and Habitats Directives, also called BHD. Nonetheless, the issue of water management within Natura 2000 sites remains discussed and triggers some interrogation. As

[1] http://ec.europa.eu/environment/nature/natura2000/index_en.htm

[2] Habitats Directive, Article 6(1) : "*For special areas of conservation, Member States shall establish the necessary conservation measures involving, if needed, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I and the species in Annex II present on the sites*"

[3] European Commission, *Establishing Conservation measures for Natura 2000 sites*, 2014, p.7. (PDF document available on the Internet : http://www.ceeweb.org/wp-content/uploads/2015/01/EC2014-Establishing-conservation-measures.pdf)

many of Natura 2000 sites are water dependant sites or species, this paper seeks to better understand water management within the network and the link with Natural Water Retention Measures (NWRM), but also clarify the articulation with other Directives precisely targeting water such as the Water Framework Directive (WFD), the Flood Directive (FD) or even the Marine Strategy Framework Directive (MSFD).

Water Management in Natura 2000 sites

Natura 2000 sites can be water-dependent and water issues have raised numerous questions about water management within the protected areas or water management which could have potential influence in the Natura 2000 sites. Natural Water Retention Measures are measured aiming at improving "*the retention capacity of natural and manmade soil and aquatic ecosystems*"[4]. According to the European Commission, they are: "*multi-functional measures that aim to protect and manage water resources and address water-related challenges by restoring or maintaining ecosystems as well as natural features and characteristics of water bodies using natural means and processes*"[5]. There are different measures and most of them do not specifically target Natura 2000 sites. However, some can be implemented on that purpose and might influence biodiversity protection on habitats recovering. water management can thus rely on such measures, especially in special and fragile habitats such as wetlands and floodplains.

NWRM and Natura 2000

Natural Water Retention Measures can contribute to the protection of habitats and species as put in the Birds and Habitats Directives[6]. The NWRM dedicated website[7] lists the different measures and examples in the NWRM "Catalogue", evaluating their prospective impacts related to diverse Directives and the European biodiversity strategy. It presents a wide range of measures, here are some of them that can be used to serve the Biodiversity strategy purpose and Natura 2000 network:

- "Natural bank renaturation" aims at recovering the ecological components and stabilize the bank allowing the river to move more freely. This renaturation creates or preserves habitats allowing better protection of the green ecosystems[8].

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[4] European Commission, *A guide to support the selection, design and implementation of Natural Water Retention Measures in Europe*, p.11. (PDF document available on the Internet: http://nwrm.eu/guide/#1/z)
[5] http://nwrm.eu/concept/3857
[6] http://nwrm.eu/measuresbenefits?field_nwrm_benefits_tid=All&field_nwrm_benefits_tid_1=All&field_nwrm_benefits_tid_2=77
[7] http://nwrm.eu/measures-catalogue
[8] European Commission, *Individual NWRM Natural bank stabilization*, p.1-10. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/nwrm_ressources/n10_-_natural_bank_stabilisation.pdf)

- "Elimination of riverbank protection" consists of removing some parts of the bank protection and thus diversifies flows and habitats. It creates new habitats, improves the quality of water but also slows down the river flow during floods and can contribute to floodplain restoration[9].
- "Buffer strips and hedges": buffer strips enhance water infiltration thanks to their permanent vegetation but also help diminish the amount of suspended solids nitrates and phosphates whereas hedges help reduce soil erosion. They provide connectivity between habitats and offer new habitats if the required management is implemented[10].
- "Continuous cover forestry": this is a variety of forest management practices with hydrological effects. It "*ensures that there is an uninterrupted tree canopy and that the soil surface in never exposed*". It can improve or protect habitats with indigenous species providing a better ecosystem protection[11].

Wetlands and Floodplain: Natura 2000 sites in need of water management

Wetlands are a typical water-dependant habitat defined in the Convention on Wetlands from 1971. "*A wetland is an area of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters. It provides water retention, biodiversity enhancement or water quality improvement*."[12] Their restoration may improve the hydrological regime and habitat quality. Consequently, many wetlands projects target the restoration of habitats and the improvement of living conditions for species of community importance. The following different example emphasizes the necessity of true water management within wetlands and particularly Natura 2000 sites.

The restoration of Amalvas and Žuvintas Wetland in Lithuania contributed to the development of Natura 2000 network in the country after facing issues such as changes in the natural water regime because of drainage, peat extraction and intensification of forest management[13]. Once the project was decided, targets were identified: regulation of the hydrological cycle and water flow, self-regulation of water by filtration. These targets were a way to address WFD but also HD and BD through the achievement of good ecological status. After having clarified the site characteristics,

[9] European Commission, *Individual NWRM Elimination of riverbank protection*, p.1-10. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/nwrm_ressources/n11_-_elimination_of_riverbank_protection_0.pdf)
[10] European Commission, *Individual NWRM Buffet strips and hedges*, p1-13. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/nwrm_ressources/a2_-_buffer_strips_and_hedges.pdf)
[11] European Commission, *Individual NWRM Continuous cover forestry*, p.1-10. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/nwrm_ressources/f6_-_continuous_cover_forestry_0.pdf)
[12] European Commission, *Individual NWRM Wetlands restoration and management*, p.1-15. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/nwrm_ressources/n2_-_wetland_restoration_and_management.pdf)
[13] European Commission, *Case Study Restoration of Amalvas and Zuvintas Wetland*, p.1-13. (PDF document available on the Internet: http://nwrm.eu/sites/default/files/case_studies_ressources/cs-lt-01-final_version.pdf)

the implementation parameters were designed, once again we can observe the coordination between all stakeholders.

The project is worth-noticing because it points out the benefits of NWRM in this management plan. NWRM can help to improve coastal water quality and ecological status. The foreseen water pumping should reduce annual electricity bills while reducing seepage through the dikes. Moreover, reconstruction of the polder will allow developing grasslands which will improve the production of grass biomass for alternative fuels. The revival of the bogs should also increase the number of cranberries that local people harvest while the polder construction should help to observe an increase of migratory birds' population and restore the natural water fluctuations in a close lake. The Lake Zuvntas should thus have its water vegetation recover and species too.

The WETMAN project[14], in Slovenia, is a collaboration between many actors for the conservation of freshwater wetlands: municipalities, Radi-television Slovenia, sectorial partners (water, fisheries, forestry). It appeared in a context of lack of "*appropriate management*" for decades which led to wetland degradation intensified by agricultural intensification. The WETMAN project was made of 6 pilot areas with different targeted habitats to be restored or improved with their targeted species to re-establish a favourable conservation status. Hydrological conditions were restored through building dikes, gravel barriers and water holes. A wooden footpath was also built to prevent habitat destruction and disturbance from visitors by maintaining tourism and this crucial interaction between protected sites and humans. Invasive species were also removed such as Wels catfish with the help of a fishing competition. It proved to be a success since "*7 targeted habitats types were restored*" while "*8 targeted species were re-established or revitalized"*.

For the project to be fruitful, awareness was raised among the numerous stakeholders: landowners, local communities, local and national authorities, hunting and tourists' associations. But the project idea was also conveyed through national and local media. Therefore, it benefited from a growing awareness but also tourism thanks to its mediatization. The project chose "on-site management" and the "Nature conservation guidelines for pilot area management" were included in sectoral plans (fishing, hunting, forestry) thanks to the Operational Program – Program of Management of Natura 2000 sites in Slovenia.

Wetlands conservation and restoration in "Puszcza kampinoska" was also a Natura 2000 example in Poland[15]. Excavation works endangered the wetlands which faced gradual drying. Here

[14] European Commission, *WETMAN - Conservation and management of freshwater wetlands in Slovenia*, p.1-5. (PDF document available on the Internet: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3832&docType=pdf)

[15] European Commission, *LIFE KAMPINOS WETLANDS PL – Wetlands conservation and restoration in "Puszcza Kampinosca" Natura 2000 site*, p.1-4. (PDF document available on the Internet:

the character of the watercourses system required a proper water management plan since the main watercourses of the area drained water from neighbouring villages. The project goal was to identify and implement objectives to achieve a restoration of the wetlands: rehabilitation of 125 ha of land in Natura 2000 network site, increase the water content in the soil, slow down the water drainage, construct dikes, draft management guidelines. The project is expected to improve the conservation status of the Riparian forests, and Tilio-Carpinetum forests for instance but also to protect bird species such as the Eurasian bittern and the corncrake.

These projects underline the need for an integrated systematic approach for wetlands management through a better involvement of responsible sectors. The participation of all stakeholders to the elaboration and the implementation of the plan seems to be a prerequisite for a successful management plan for water dependant Natura 2000 sites. Nonetheless, the European Commission noticed that concerns are raising the potential linkage between BHD and other directives targeting the water that could influence the management of Natura 2000 sites.

Water management through a better directives' synergy

BHD is the core directives of the Natura 2000 project but a link can be conceived with other directives related to water such as Water Framework Directive (WFD) or Marine Strategy Framework Directive (MSFD). Indeed, some of these Natura 2000 sites are located in "rivers valleys" or in wetlands and are tightly linked to water resources management. By taking the example of Poland, the Global Water Partnership highlights the "*new challenges for water resources management*". Poland implemented measures to improve the consensus-building between nature protection professionals and water managers to develop a multi-stakeholder dialogue and implement improved management plans. Although the different directives have diverse targets and scopes, some overlaps must be explored.

The Water Framework Directive

EU's Biodiversity policy lies in two essential directives: Birds and Habitats Directives (BHD). The directives designated some protected areas which form the Natura 2000 Network. Nevertheless, another directive, the Water Framework Directive (WFD) aims at establishing "*a framework for the protection of all surfaces waters and groundwater*"[16]. WFD targets aquatic ecosystems, terrestrial ecosystems and wetlands with the following objectives: to prevent

http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=4579&docType=pdf)

[16] European Commission, *Links between the Water Framework Directive and Nature Directives*, p.1-34. (PDF document available on the Internet: http://ec.europa.eu/environment/nature/natura2000/management/docs/FAQ-WFD%20final.pdf)

deterioration, to reach good ecological/chemical status, to reduce pollution from priority substances. For groundwater, WFD objectives are good quantitative and chemical status in all groundwater bodies. Thus, "water dependant Natura 2000 sites" can be part of these targets where both BHD and WFD goals apply.

Most stringent objectives prevail (Art. 4.2 WFD)

If a linkage can be found for some objectives, they can also differ. What happens when there are two different objectives: "*which one applies*?[17] Art 4.2 WFD explains that "*where more than one of the objectives… relates to a given body of water, the most stringent shall apply*"[18]. Some "exceptional cases" underline the need for harmonization of objectives between the directives. For instance, when artificially created conditions have provoked the development of a Natura 2000 species while the environmental conditions do not meet WFD requirements. (Example of Veluwerandmeren in the Netherlands). There is however a consensus about the idea that "*where habitats or species are not characteristic of a water body type, their protection should not prevail over restoration of the water body unless they are important for the conservation status of a habitat or species of Community interest in the national biogeographical region*"[19].

Duplication can be observed between good ecological status from WFD and favourable conservation status from BHD.

EU tried to integrate biodiversity concerns into "all aspects of environmental legislation", as shown by the "good ecological status" for water promoted by the WFD[20]. It is: "*an expression of the quality of the structure and functioning of aquatic ecosystems associated with surface waters, generally based on the taxonomic composition and abundance of the biological quality elements*"[21] whereas "*conservation status of a natural habitat means the sum of the influences acting on natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species within the territory*."[22] Good ecological status might improve the conditions of species and habitats. When it is not sufficient to reach BHD objectives, additional measures must then be added in the management plan and the

[17] Ibid. p.12.
[18] Water Framework Directive, Article 4.2 (Online access: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060)
[19] European Commission, *Links between the Water Framework Directive and Nature Directives*, p.13. (PDF document available on the Internet: http://ec.europa.eu/environment/nature/natura2000/management/docs/FAQ-WFD%20final.pdf)
[20] European Commission, DG Environment, Ursula Schmedtje and François Kremer, *EU-Policies for Nature Conservation and Water Management*, p.1-31. (PDF document available on the Internet: https://www.bfn.de/fileadmin/MDB/documents/themen/wasser/teil02_1_schmedtje.pdf)
[21] Ibid. p.2.
[22] Ibid. p.2.

more stringent objective shall apply.

The word “biodiversity” does not appear in the WFD. It is though included in the definition of good ecological status according to the Article 2.21 WFD[23]. Good ecological status is distinguished from moderate and high status:

- High ecological status: totally or nearly undisturbed conditions
- Good ecological status: slight changes in the composition/no accelerated growth of algae/slight increase in the frequency and intensity of planktonic blooms
- Moderate ecological status: moderate change in composition and abundance/significant undesirable substance/moderate increase in the frequency and intensity of planktonic blooms

Furthermore, the river basin management plans (WFD) can be connected with the conservation plans of the HD. WFD tries to reduce pressure in river basin districts with management plans integrating measures from other relevant EU legislation such as the BHD. In Annex VI of the WFD, BD and HD are considered as basic measures, part of the program of measures (Art.11 WFD). As a consequence, the Programme of Measures has to take into account Article 12 of the HD on the protection of animal and plant species of Community interest (listed in Annex IV HD). Moreover, HD Annex 1 habitats are aquatic areas or water-dependent sites, thus it may promote the same measures as WFD. If water bodies are concerned by both directives, they need to be coordinated by the relevant authority and integrated into the Programme of Measures.

Establishing priorities after having designated a special area of conservation remains the State's duty. For these special areas, States must establish conservation measures and, if need be, management plans integrated into other development plans. Monitoring should take into account the difference in scale. Indeed, according to article 13 WFD, management plans have to concern the entire river basin district when the management plan of Natura 2000 are local and site-dependant. WFD aims to coordinate approaches in the same river basin district transcending national boundaries for instance. It requires thus cooperation between all the involved parties. The management plan has to inform and document the desired outcomes.

Marine Strategy Framework Directive

The Marine Strategy Directive is also an example with its "ecosystem approach" to reach “good environmental condition”. In other words, it focuses on the protection of the full range of marine biodiversity. As a consequence, interactions between Marine Strategy Framework Directive

[23] Water Framework Directive, Article 2.21 (Online access: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060)

(MSFD) and HBD can be observed[24]. They are both concerned with aspects of biodiversity conversation regarding the marine environment. Besides, the directives do not only focus on protection maintenance and management of an element but also on the restoration and recovery of species or habitats. Nonetheless, the objectives are different as the timetable and measures applied through measures implemented for one directive can help achieve the second one and vice versa. Art 6.1 of HD states that management plans for Special Areas of Conservation can be integrated into other development plans. Consequently, conservation measures of such a management plan could also be considered when the program of measures of the MSFD is established.

Integrated management examples

Different EU environmental directives target the protection and management of Europe's freshwater and marine environment. They all have different targets: natural and semi-natural habitats (HD), wild species (BD), inland surface waters, coastal waters and groundwaters (WFD), marine waters (MSFD), flood risk (FD). Nevertheless, there are overlaps although the difference of scope. Coastal waters are targeted by FD, WFD and MSFD, water-dependent area of Natura 2000 sites can be covered by WFD and marine Natura 2000 sites are part of the MSFD. Despite the transboundary nature of WFD and MSFD, all directives require States to implement a program of measures or measures at a state level. The European Commission is shedding the light, on its website, on numerous "successful" case studies taking place in Europe and coordinating the different practices of the directives25. This non-exhaustive paper displays some of the most unequivocal examples.

- "*Integrating conservation improvement measures for Natura 2000 sites into River Basin Management Plans in England*"

In 2013, Natural England (the authority responsible for nature in England) agreed with the Environment Agency (responsible for WFD) on a 2-year partnership. It aimed at developing an improvement program for Natura 2000 sites. It was thus financed under the EU LIFE+.

It led to:

[24] European Commission, *Links between the Marine Strategy Framework Directive (MSFD 2008/56/EC) and the Nature Directives (Birds Directive 2009/147/EEC (BD) and Habitats Directive 92/43/EEC (HD)), Interactions, overlaps and potential areas for closer coordination.*, 27 July 2012, p.1-31. (PDF document available on the Internet: http://ec.europa.eu/environment/nature/natura2000/marine/docs/FAQ%20final%202012-07-27.pdf)

[25] THE N2K GROUP European Economic Interest Group, *Working towards creating synergies between the WFD, MSFD and the Habitats and Birds Directives*, October 2015, p.1-61. (PDF document available on the Internet: http://ec.europa.eu/environment/nature/natura2000/management/docs/Compilation%20WFD%20MSFD%20HBD.pdf)

- Production of site improvement plans: outlining priority issues, identifying the required action
- Development of theme plans for tricky issues difficult to address on "*a pure site by site basis*"
- Development of a shared understanding between the actors and other key partners
- Identifying which actions are best tackled at which level

In that case, there were around 250 Natura 2000 water-dependent habitats sites that needed to be also considered through the WFD. The main issues were: water pollution, invasive and non-native species. These required to be addressed at a broader scale that BHD.

Because of this relation and the obligation in the WFD to comply with the standards and objectives of protected areas such as Natura 2000, the river basin planning process integrated the objectives of individual water bodies and water dependant Natura 2000 sites. This integrated approach offered more clarity for the stakeholders.

- "*Conserving the Freshwater Pearl Mussel in Ireland's sub-river basins*"

The freshwater pearl mussel needs near-natural clean flowing waters. Consequently, it is an indicator species for the quality of river ecosystems. However, its population declined due to pollution and fishing for instance. The species is protected under the HD 26 and the population is within 19 Natura 2000 sites. In 2009 national legislation was implemented to achieve a favourable conservation status, stating obligatory environmental quality objectives and requiring the sub-basin management plans to be prepared and a program of measures.

The link between BHD and WFD was early established since in 2009 the National Conservation Working group was created and charged of working upon the development of nature conservation aspects of the WFD.

- "*Towards an integrated approach of the implementation of the MSFD, WFD and Natura 2000 in the Belgian Part of the North Sea*"

After the adoption of a Marine Environmental law for the Belgian North Sea in 1999, a Marine Environment Unite was set up in 2004 to ensure its implementation. It had to identify Natura 2000 sites in this area. Four years later a Natura 2000 policy was adopted, willing to improve the collaboration with MSFD and WFD. The size of Belgium and the small number of actors strongly encouraged collaboration.

Since MSFD aims at improving the environmental quality of the entire environment whereas HD goal is to ensure the favourable conservation status of particular species or habitats, the first step

was to select common environmental quality indications for the marine environment and the threatened species and habitats.

Main Conclusions

Habitats and Birds Directives have created the Natura 2000 network, part of the biodiversity conservation strategy of the European Union. The water-dependence of some Natura 2000 sites raised a concern about the management of water within these sites. NWRM has proved to be meant to tackle the management of this critical resource for habitats and species. Nonetheless, due to the transboundary nature of water, considering other EU directives is an inescapable step in water management. Indeed, Nature Directives, WFD and MSFD might have common goals and the potential of joint implementation and a better synergy must be explored. The examples of such coordination, highlighted by the European Commission, emphasized the need for improved cross-sectoral communication and collaboration. All stakeholders must take part in the management of water and participate in raising awareness for such an issue. Reporting is often presented as a way to reach a better integration. For instance, "*National reporting pilots can bring together all people involved in reporting to build an improved work allocation and understanding of the different actors' responsibilities*"[26].

[26] European Commission, A Starter Guide, Overview on the main provisions of the Water Framework Directive, the Marine Strategy Framework Directive, the Birds and Habitats Directives, and the Floods Directive: similarities and differences, 2016, p.1-29. (PDF document available on the Internet: http://ec.europa.eu/environment/nature/natura2000/management/docs/starter_guide.pdf)