EU policy opportunities to improve the conservation of the Swimways of European Importance

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2 INTRODUCTION

Many migratory freshwater fish are listed in the annexes of the EU Habitats Directive, and the Critically Endangered European eel (*Anguilla anguilla*) even has its own EU regulation. Nevertheless, these species have suffered a dramatic 75% decline in Europe since 1970[1]. Many of these species are still important for commercial and recreational fisheries, or were so before the collapse of their stocks. The key threats affecting migratory freshwater fish are migration barriers, pollution, fishing, invasive alien species, water abstraction and climate change.

The Trans-European Swimways Programme[2] has already identified some of the key policies directly supporting the conservation of migratory freshwater fish species and their habitats: the Habitats Directive, the Eel Regulation, the Water Framework Directive, the EU Biodiversity Strategy, the Pan-European Action Plan for Sturgeons, but also recognised that more detailed policy analysis is needed to identify EU policies that affect these species either positively or negatively.

In 2023, Wetlands International Europe and its partners developed a set of biological criteria based on the criteria of the Global Swimways initiative[3] for Europe[4]. This resulted in the identification of 392 Swimways of European Importance (SEIs)[5]. This initial list of SEIs will be further refined by developing additional criteria reflecting also the economic and cultural significance of swimways in Europe.

Swimways are practically rivers that connect the breeding and nursery areas of migratory freshwater fish. They often stretch from the sea to the upper sections of rivers. Suitable habitat conditions and connectivity is needed to ensure that these species can complete their life cycle and maintain their populations. However, rivers are increasingly exploited for navigation, energy production, irrigation, provision of drinking water and other uses. Consequently, the conservation of migratory freshwater fish is affected by a wide range of policies.

[1] Deinet, S., Flint, R., Puleston, H., Baratech, A., Royte, J., Thieme, M. L., Nagy, S., Hogan, Z. S., Januchowski-Hartley, S. and Wanningen, H. (2024) The Living Planet Index (LPI) for migratory freshwater fish 2024 update - Technical Report. World Fish Migration Foundation, 2024.

[2] Wetlands International Europe, Trans-European Swimways Programme, 2022.

[3] Worthington, T., van Soesbergen, A., Berkhuysen, A., Brink, K., Royte, J., Thieme, Mi., Wanningen, H., & Darwall, W. (2022). Global Swimways for the conservation of migratory freshwater fishes. Frontiers in Ecology and the Environment. 10.1002/fee.2550

[4] Wetlands International Europe, Report on the SEI selection criteria development, 2023.

[5] Wetlands International Europe, Inventory of Swimways of European Importance, 2024.

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In this report, Wetlands International Europe reviews the policy opportunities for better conservation of swimways in the European Union building on the findings of various research projects[6] and reviews[7,8,9,10].

2.1 Materials and methods

This report aims to identify policy opportunities in the medium term to improve the conditions of SEIs. The analysis concentrates on policies that are active or expected to become active within the next five years, excluding those not likely to become active in the upcoming term of the European Parliament and Commission (2024-2029). This time frame aligns the scope of this review with that of the EU political calendar and make this report actionable and purpose-specific.

Only the policy files that directly impact SEIs are assessed in this report. The policies will be evaluated based on their potential to contribute to two fundamental areas of habitat conservation – connectivity and quality – and their potential to contribute to the conservation and sustainable use of freshwater fish for which SEIs have been designated. Therefore, three filters are applied.

2.1.1 Filter #1 : Policies relevant to SEIs

First, the policies that are considered relevant for the SEIs were identified:

- Biodiversity Strategy for 2030,
- Habitats Directive,
- Eel Regulation,
- Invasive Alien Species Regulation (IAS Regulation),
- Groundwater Directive,
- Drinking Water Directive,
- Bathing Water Directive,
- Marine Strategy Framework Directive (MSFD),
- Renewable Energy Directive (RED),
- Nitrates Directive,
- Water Framework Directive (WFD) and
- Nature Restoration Regulation (or Nature Restoration Law, NRL),
- Pan-European Sturgeon Action Plan (PANEUAP),

[6] MERLIN Project, BioFresh Project, Rest-Coast Project
[7] Solheim A, Persson J, Austnes K, Kampa E, Moe J, Stein U, Feher J, Poikane S, Kristensen P, authors. European Freshwater Ecosystem Assessment: Cross-walk between the Water Framework Directive and Habitats Directive types, status and pressures . ETC/ICM; 2015. JRC97418
[8] Rouillard, Josselin, et al. 'Protecting and Restoring Biodiversity across the Freshwater, Coastal and Marine Realms: Is the Existing EU Policy Framework Fit for Purpose?' *Environmental Policy and Governance*, vol. 28, no. 2, Mar. 2018, pp. 114–28. https://doi.org/10.1002/eet.1793
[9] European Environment Agency, Europe's State of Water 2024 : The need for improved water resilience. Publications office, 2024.
[10] European Environment Agency, State of Nature in the EU, 2020.

- Common Fisheries Policy (CFP),
- Trans-European Transport Network (TEN-T),
- Floods Directive,
- EU Action Plan on protecting and restoring marine ecosystems for sustainable and resilient fisheries
- Water Resilience Strategy and,
- European Oceans Pact.

2.1.2 Filter #2 : Policies that are active or likely to be active within the upcoming legislature

Second, the following directives have been removed due to an unlikely reactivation within the next institutional cycle:

Groundwater Directive[11]: The Priority Substance List revision was on the calendar for the Hungarian Presidency, with great potential to affect both the Surface Water Directive and Water Framework Directive. However, the trilogue is expected to conclude in 2024. Therefore, it is out of the scope of this report. There will be little chance of this legislation being influenced in the coming period.

Drinking Water Directive[12]: The Directive will not be addressed in this report due to its scope, focusing water quality for human consumption. The Directive sets points of compliance in its Article 6 outside of freshwater fish habitats (i.e. taps, tankers). Risk assessment and risk management of catchment areas for water abstraction i) have to comply with WFD's environmental objectives (Article 4 WFD) and monitoring of surface, groundwater and protected areas statuses (Article 8 WFD) and ii) solely focus on human health. Furthermore, the Directive was revised in 2020: no reopening nor policy opportunities for SEIs are foreseen in the next institutional cycle. Hence, there are no opportunities for enhanced water quality in SEIs in the Drinking Water Directive apart from the ones explored in the section on the WFD.

2.1.3 Filter #3: Policies that are likely important to contribute to SEIs, in terms of improving connectivity or habitat quality

Finally, as connectivity and habitat quality are particularly important to protect swimways, policies that are unlikely to contribute to connectivity or habitat quality were excluded:

- Nitrates Directive,
- Bathing Water Directive,
- Floods Directive.

The Nitrates and Bathing Water Directives have been excluded from this review because, although they have some potential to improve water quality. However, no short-term policy opportunity was identified to improve them. They do not have a significant influence on habitat connectivity, and have a minimal impact on habitat quality. However, the restoration of healthy ecosystems under the NRL will support achieving the objectives of these directives. Restoration was recognised in the State of the Water Report

[11] Directive 2006/118/EC of 12 December 2006 on the protection of groundwater against pollution and deterioration, *OJ L 372.*

[12] Directive (EU) 2020/2184 of 16 December 2020 on the quality of water intended for human consumption, *OJ L 435*

2024[13] as the best measure to improve water quality: "*Loss of large freshwater fish that are top predators of smaller fish may result in higher biomass of small fish, lower biomass of invertebrates and therefore more algae, impacting the ecological status of water bodies*". Thus, measures that improve SEIs will indirectly contribute to the objectives of both Directives. For example, water quality and connectivity could be enhanced under Article 8.2 of the Bathing Waters Directive. Restoring free-flowing rivers would reduce the health risks associated with cyanobacteria proliferation that occurs in dammed, slow-moving rivers.

The Nitrates Directive was also excluded from this review because its revision is likely to be limited to to including updated rules on the use of certain fertilising materials from livestock manure (RENURE)[14] in its annexes. Hence, it offers no realistic opportunity for advocacy at the EU level to improve SEIs.

The Floods Directive has been eliminated because flood risk management should be closely coordinated with the WFD and should not impair the achievement of its objectives. Therefore SEI conservation will therefore be explored within the WFD rather than through the Floods Directive.

2.2 Scope of the report

Therefore, the report focuses on the

- Biodiversity Strategy for 2030,
- Habitats Directive,
- Eel Regulation,
- Invasive Alien Species Regulation,
- Marine Strategy Framework Directive,
- Renewable Energy Directive,
- Nature Restoration Law,
- Water Framework Directive,
- Common Fisheries Policy,
- EU Action Plan on protecting and restoring marine ecosystems,
- Water Resilience Strategy and
- European Oceans Pact.

These policies will be assessed for their relevance to migratory freshwater fish and their potential to contribute to maintaining or restoring SEI.

[13] European Environment Agency, Europe's State of Water 2024 : The need for improved water resilience. Publications office, 2024.
[14] European Commission, Public Consultation on the Nitrates initiative on updated rules on the use of certain fertilizing materials from livestock manure (RENURE), 2024.

The review of each policy follows the following structure:

1. **Introduction:** provides an overview of the policy.
2. **Key provisions:** highlights the main provisions of each policy that are relevant to migratory freshwater fish, focusing on two core areas:
    - Conservation of the habitat, in terms of:
        - Connectivity;
        - Quality, including pollution control;
    - Species conservation and sustainable use.
3. **Opportunities within the institutional cycle:** this section reviews the upcoming key milestones, identifying potential opportunities for influence.
4. **Conclusions:** that identifies specific policy recommendations.

3 EU POLICIES

3.1 Biodiversity Strategy for 2030

3.1.1 Introduction

The *EU Biodiversity Strategy 2030 - Bringing nature back into our lives*[15] (aka *EU Biodiversity Strategy for 2030*) is a Communication of the European Commission published in 2020. It sets out a long-term plan to protect nature and reverse the degradation of ecosystems. The strategy guides the Union's actions contributing to the 2030 Kunming-Montreal Global Biodiversity Framework targets. It aims to put Europe's biodiversity on a path to recovery by 2030. It contains specific actions and commitments highly relevant to conserving migratory freshwater fish.

The conservation of swimways should benefit from the strategy's intent to

i) protect at least 30% of EU land and sea areas respectively;
ii) strictly protect a third of those areas, while
iii) ensure that all areas are effectively managed with clear conservation objectives and appropriate monitoring;
iv) improve the conservation status of at least 30% of species and habitats listed in the annexes of the Habitats Directive that are currently not in a favourable conservation status (FCS) by 2030;
v) establish legally binding EU nature restoration targets that contribute to the United Nations Decade on Ecosystem Restoration 2021-2030[16].

3.1.2 Key provisions

Habitat Conservation – Connectivity

The EU Biodiversity Strategy's targets on protected areas (PAs) aim to fully implement the requirements of the Habitats Directive. It addresses not only the expansion of the protected area network, but it also promotes defining clear conservation objectives at each PAs. The protected and strictly protected area targets are to be achieved through voluntary pledges of the Member States that list existing PAs, propose new PAs and identify conservation objectives and measures. The European Commission has drawn up guidance and criteria for designating PAs to assist Member States in this process and facilitated technical discussions with Member States and stakeholders through EU Biogeographical Seminars at the regional level.

[15] European Commission, EU Biodiversity Strategy 2030 – Bringing back nature into our lives, 2020.
[16] United Nations Decade on Ecosystem Restoration 2021 – 2030, 2021.

The concept of *strict protection*[17] implies areas that are fully protected legally and left essentially undisturbed from human activities. In the context of swimways, such areas may include fish spawning and nursery areas.

The targets on (strictly) protected areas are complemented by the objective to restore at least 25,000 km of free-flowing rivers, which is implemented through Article 9 of the Nature Restoration Law. The potential of the free-flowing river restoration target is detailed in the Nature Restoration Law section of this report.

The restoration of free-flowing rivers is in line with the Strategy's target of setting up ecological corridors to establish a truly coherent and integrated Trans-European Nature Network of PAs, notably through increased investments in blue-green infrastructure. As stressed in the Strategy, this goal will directly benefit migratory species, including freshwater fishes. According to the Commission's guidance on blue-green infrastructure[18] establishing methods, criteria and standards to support the implementation of the EU Green Infrastructure Strategy[19], such infrastructure establishing ecological corridors implies strategic planning integrating biodiversity-rich natural and semi-natural areas managed to deliver ecosystem services. Increasing the deployment of blue-green infrastructure can enhance swimway conservation and seamlessly align with planning processes under the WFD and the NRR in river basins, including international ones, constituting migratory fish habitats, as well as connecting elements such as fish ladders to enable migration.

Habitat Conservation – Quality

The Strategy recognises that freshwater biodiversity is suffering from the release of nutrients, chemical pesticides, pharmaceuticals, hazardous chemicals, urban and industrial wastewater, and other waste, including litter and plastics and that all of these pressures must be reduced. As commitments to tackle this, the strategy foresees to i) put forward a Zero Pollution Action Plan for Air, Water and Soil, ii) reduce the risk and use of chemical pesticides by 50% and the use of more hazardous pesticides by 50%; iii) reduce losses of nutrients from fertilisers by 50% and iv) increase investments on freshwater ecosystems to remove nutrient pollution and the reduction of pollution with fertilisers by developing an Integrated Nutrient Management Action Plan and strengthening the environmental risk assessment of pesticides.

Species conservation and sustainable use

The Strategy also aims to improve the conservation status of at least 30% of species and habitats currently not in FCS. Similarly to the target on PAs, Member States had to submit voluntary pledges listing the species and habitats whose status they intend to improve and maintain by 2030. The Commission published guidance on selecting and prioritising species for status improvement measures and facilitated technical discussions through biogeographical seminars. This process also attempts to reduce the number of species and habitats whose conservation status is assessed as "unknown".

In parallel, the strategy aims to step up the implementation of the Invasive Alien Species (IAS) Regulation, targeting a 50% reduction in the number of red-listed species threatened by invasive alien species. The IAS Regulation is to be assessed later in this report. Still, there are potential synergies amongst the conservation status objectives of the strategy and the IAS and Nature Restoration Regulations.

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[17] https://environment.ec.europa.eu/system/files/2022-01/SWD_guidance_protected_areas.pdf
[18] European Commission, SWD – Guidance on a strategic framework for further supporting the deployment of EU-level green and blue infrastructure, 2019
[19] European Commission, Communication – Green Infrastructure : Enhancing Europe's Natural Capital, 2013

With regards to diadromous fish species, which evolve in estuaries and marine water during some parts of their lifecycles and are therefore subject to fisheries activities and associated disturbances, an 'Action plan to protect and restore marine ecosystems for sustainable and resilient fisheries' has been adopted in 2023[20]. The potential of this action plan for swimways species and habitats conservation is explored later in this report.

3.1.3 Opportunities within the institutional cycle

EU Biodiversity Strategy's direct impact on swimways conservation is limited because of the voluntary nature of the pledges. Out of 27 EU Member States, only seven submitted PAs pledges, and only six submitted conservation status improvement pledges. Unfortunately, only a few (e.g. of Spain) pledges fulfil the requirements set out in the Commission's guidance documents. However, the Commission has the opportunity to enhance progress towards the objectives of the Biodiversity Strategy through stricter enforcement of the requirements of the Habitats Directive and through the implementation of the Nature Restoration Regulation (NRL). Both will be discussed in more detail later.

It is more important that the EU Biodiversity Strategy provides an overall framework for legislative and policy processes and funding for biodiversity conservation. As such it provides an enabling framework. In this respect, it is important to note the commitment of the Biodiversity Strategy to unlock €20 billion annually for nature and that 25% of the EU budget dedicated to climate action should be invested into biodiversity conservation and green infrastructure. This resulted in the commitment made in the EU's Multiannual Financial Framework (MFF) for 2021–2027 to dedicate 7.5% of the EU budget to biodiversity in 2024 and this should increase to 10% in 2026 and 2027. This funding commitment provides an opportunity for swimway conservation and restoration. The discussions on the new MFF allow for reconsidering the effectiveness of mainstreaming biodiversity into other funding schemes, or dedicated biodiversity funding would be necessary, as external experts have suggested.

The EU's progress toward meeting the Strategy's targets was reviewed in 2024 and results will be made available early 2025, guiding next steps to be taken to fully deliver on its objectives.

The new 'state of nature' report in 2026 will be a critical milestone in determining whether the EU is on track to put Europe's biodiversity on a path to recovery by 2030. It will measure progress towards the 30% PA, 10% strict protection, the 30% status improvement and the ecosystem restoration targets.

Policy recommendations

1. Maintain the 10% biodiversity spending target in the EU MFF for 2028–2034.
2. Establishing dedicated biodiversity funding in the new MFF to avoid that biodiversity conservation is deprioritised at national level.
3. Develop an action plan for boosting the implementation of the EU Biodiversity Strategy in the light of the State of Nature 2026 report
4. Assess critically Member States' progress towards the targets of the EU Biodiversity Strategy

[20] European Commission, Communication – EU Action plan : Protecting and Restoring Marine Ecosystems for sustainable and resilient fisheries, 2023

5. Step-up enforcement of the relevant EU legislation contributing to the delivery of the targets of the Strategy.

3.2 Habitats Directive

3.2.1 Introduction

The Habitats Directive (92/43/EEC)[21] represents one of the cornerstones of EU policy on nature conservation. The Directive sets out requirements to protect species of flora and fauna, including fish, and habitats listed in its Annexes.

3.2.2 Key provisions

Habitat Conservation – Connectivity and Quality

According to the provisions of the Directive, Member States must ensure that sites are designated and protected in accordance to the provisions of Art. 3-11 for the 33 fish species listed in Annex II of the Directive. Once the Commission approved Sites of Community Importance (SCIs) proposed by Member States, Member States had six years to designate them as Special Areas of Conservation (SACs). Together with Special Protection Areas (SPAs) designated under the Birds Directive, they form the Natura 2000 network of PAs. Member States shall establish the necessary conservation measures, including management plans. Article 10 of the Directive has some relatively soft provisions for conserving landscape features that enhance the coherence of the Natura 2000 network and highlights rivers in this respect.

As pointed out in the Trans-European Swimways Programme, the Natura 2000 coverage for most migratory freshwater fishes in Annex II is rather low. Sites were selected for only 28 migratory freshwater fish species, and only support a small proportion of the species national population[22]. A lot of threatened migratory freshwater fish are even not listed in Annex II of the Directive. Consequently, Member States have no legal obligation to identify and designate SACs for them, which leaves a large proportion of Europe's threatened fish species neglected by the Habitats Directive.

Simply designating Natura 2000 sites is just a start of conservation, but also the management requirements set out in Article 6 should be implemented. However, only 56% of Natura 2000 sites had management plans in place in 2018[23]. Improved conservation of migratory fish requires to develop adequate management plans for SACs addressing the needs of the migratory fish species for which they were selected (and which are listed as such in the Natura 2000 Standard Data Form for the site). Ideally, such management plans and conservation measures should consider comprehensively the ecological requirement of the species for which the site has been designated for. Projects and plans that are not directly connected to the conservation of the site should be subjected to *appropriate assessment* of their implications for achieving the site's conservation objectives.

Species conservation and sustainable use

In addition to the protection of the habitats for species listed in its Annex II, the Habitats Directive lays down requirements to i) establish strict protection for the 5 migratory fish species listed in its Annex IV (Art. 12)

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[21] Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora'. *OJ L*, vol. 206, 21 May 1992.
[22] Wetlands International Europe, Trans-European Swimways Programme, 2023.
[23] European Environment Agency, State of Nature in the EU, 2020.

and ii) ensure that any taking, killing or exploitation of the 31 migratory fish species in Annex V is compatible with maintaining their FCS (Art. 14)[24].

However, Member States can derogate from some of the species conservation provisions through derogations. The provisions for species protection and sustainable use under the Habitats Directive provide a framework for commercial, recreational and scientific activities such as angling, aquaculture or breeding for restocking purposes of migratory fish species.

LIFE funding support the conservation of migratory freshwater fish[25], and often involves activities such restocking, monitoring or awareness raising. These projects are essential to connect fish and local communities, identify best practices and improve the knowledge base.

3.2.3 Opportunities within the institutional cycle

The wolf's (*Canis lupus*) was recently downlisted from strictly protected to protected status by the Bern Convention[26] on the recommendation of the EU Member States. They argued that the species' listing should reflect its improved conservation status. This may lead to a proposal to amend the annexes of the Habitats Directive. However, it will undermine the credibility of the European Union if the Habitats Directive is amended only for this one species and it does not extend its protection to the numerous species with deteriorating conservation status, as evidenced by their listing in the IUCN EU Red List that are not yet listed in the annexes of the Directive. This could be a possibility for also listing several migratory freshwater fish species.

Policy recommendations

1. Create a framework to track the development of conservation objectives for Natura 2000 sites and monitor changes in the conservation status of their qualifying species and habitats.
2. Implement fully the provisions of Article 6.
3. Share best practices for swimway conservation through biogeographical processes.
4. Maintain an ambitious LIFE budget to support the management of Natura 2000 areas, species and habitats listed in the annexes of the Nature Directives.
5. If the Council opens up the annexes of the Habitats Directive include all species listed in the latest IUCN EU Red List, including also the threatened migratory fish.

[24] Wetlands International Europe, Trans-European Swimways Programme, 2023.
[25] European Commission. Directorate General for the Environment. *LIFE and Freshwater Fish.* Publications Office, 2015. *DOI.org (CSL JSON)*, https://data.europa.eu/doi/10.2779/534632.
[26] Council of Europe – Newsroom : Bern Convention Standing Committee Approves EU Proposal to Modify Wolf Protection, 3 December 2024

3.3 EU Eel Regulation

3.3.1 Introduction

The European eel (*Anguilla Anguilla*) is classified as Critically Endangered by the IUCN Red List Threat Status assessment since 2008 and its stocks have dramatically declined. Once one of the most abundant fish species in European rivers, the species has suffered a 90% to 95% decline of its population since the 1980s[27]. The EU Eel Regulation (1100/2007)[28] aims to recover European eels stocks in Europe by allowing for the management of eel fisheries through long-term Eel Management Plans (EMPs) developed by Member States at the river-basin level. The EMPs shall include measures for habitat restoration and non-fishery conservation efforts. The Regulation is mostly relevant to countries in the Baltic, Atlantic and Mediterranean regions reflecting the distribution of the species. The European Commission and international sea conventions such as the Convention for the Protection of the Marine Environment in the North-East Atlantic (OSPAR)[29], Helsinki Convention (HELCOM)[30] and General Fisheries Commission for the Mediterranean (GFCM)[31] oversee its implementation.

The EU Eel Regulation aims to i) improve eel migration by facilitating their movement through rivers; ii) allow at least 40% of adult eels to return to sea to spawn (*escapement target*); iii) set restrictions on professional and recreational fishing; and iv) restock suitable inland waters with young eels.

3.3.2 Key provisions

Habitat Conservation – Connectivity

One of the key objectives of the Eel Regulation relates directly to river connectivity, i) downstream, to allow at least 40% of silver eels to reach the open sea to complete their life cycle and return to their spawning grounds in the Sargasso Sea and ii) upstream, for glass eels arriving on EU coasts to migrate to their freshwater habitats.

The Regulation entails provisions to mitigate the heavy impact of barriers such as hydropower turbines and sluices on eel populations. Key measures to enhance connectivity in national river basins that can be included in the national EMPs include:

i) *structural measures to make rivers passable and improve river habitats, together with other environmental measures* and
ii) *temporary switching off of hydro-power turbines.*

The Eel Regulation also considers the needs of this highly migratory species to exploit transboundary coastal habitats and facilitate its migration inland beyond national borders. Its Article 6 foresees the adoption of

[27] European Parliamentary Research Service, Addressing the critical state of European eel stocks – Briefing, 2024
[28] Council regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel
[29] Convention for the Protection of the Marine Environment of the North-East Atlantic, 1992.
[30] Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992
[31] General Fisheries Commission for the Mediterranean

transboundary EMPs for river basins extending to the territory of more than one Member State or beyond the territory of the European Community. This cooperation and coordination between Member States and with third countries could lead to better management of swimways for many other migratory freshwater fish species.

Species conservation and sustainable use

The Eel Regulation complements the Common Fisheries Policy (CFP) to ensure the application of appropriate measures aiding the recovery of eel stocks. It follows the scientific advice provided by the International Council for the Exploration of the Sea (ICES) and its working group on eels (WGEEL), which includes advice from the FAO's European Inland Fisheries and Aquaculture Advisory Council (EIFAAC) and regional sea conventions such as HELCOM, OSPAR or GFCM.

The main measure in the Eel Regulation to ensure sustainable use of eels is the annual fishing closure during peak migration periods. Over the last decade, the duration and time of these closures has been at the core of heated debates in the EU Fisheries Council setting fishing opportunities for the following year. The agreements reached in the EU Fisheries Council are often limited to closures between 3 and 6 months, including a 30 to 50 days allowance for glass eels with additional 30 days entirely dedicated to restocking purposes. Unfortunately, these closures are not aligned with the ICES scientific advice on fishing opportunities for European eel, which recommended zero catches for all life stages, including catches for restocking and aquaculture for 2024 and 2025[32].

3.3.3 Opportunities within the institutional cycle

The Eel Regulation addresses various causes of the steep decline of European eel populations. The European Commission concluded in its 2020 evaluation of the Eel Regulation[33] that one of the main targets of the Regulation: the escapement of at least 40% of adult silver eels remains far from being met. It also noted that "*no evidence to suggest that the measures implemented by Member States have enabled significant progress towards this target*". The report also stressed that glass eel recruitment to European waters fell at an all-time low. This is the consequence of severely delayed and unbalanced implementation of the Regulation. Measures targeting fisheries are implemented to a larger extent (although they are also far from being sufficient) while only limited actions are taken to tackle non-fisheries pressures. As underlined in the Regulation's evaluation and recalled in a 2023 European Parliament resolution[34], measures on non-fisheries factors should be stepped up urgently.

The Eel Regulation could significantly support swimway conservation and restoration measures (such as barrier removals) if properly implemented and enforced. The EMPs are expected to be based on sufficient scientific data, reflecting regional and local conditions to enable close collaboration between stakeholders

[32] ICES, European eel (Anguilla anguilla) throughout its natural range - Report of the ICES Advisory Committee, 2024. ICES Advice 2024, ele.2737.nea. https://doi.org/10.17895/ices.advice.27100516.
[33] European Commission, SWD – Executive Summary of the evaluation of Council Regulation (EC) No 1100/2007 of 18 September 2007 estblishing measures for the recovery of the stock of European Eel, 2020.
[34] European Parliament Resolution of 21 November 2023 on the Implementation of Council Regulation (EC) No 1100/2007 establishing measures for the recovery of the stock of European eel, http://data.europa.eu/eli/C/2024/4214/oj/eng.

at all governance levels. The governance structures used for the implementation of the EMPs, as well as the measures themselves, can benefit many other diadromous migratory fish species in the same swimway.

Policy recommendations

- Accelerate the adoption (and revision) of fit-for-purpose EMPs with particular focus on Joint Eel Management Plans for transboundary river basins.
- The EU Fisheries Council should adopt closures in line with ICES advice of zero catch for all life stages.
- Enforce the implementation of the provisions of Article 2(6) on connectivity.
- Include EMPs in River Basin Management Plans under the WFD and NNRPs under the NRL.

3.4 Invasive Alien Species Regulation

3.4.1 Introduction

Invasive alien species (IAS) are animals, plants or other organisms introduced by humans, either deliberately or unintentionally into places outside their natural range where they have an adverse impact on native biodiversity, ecosystem services or human economy and well-being. The Invasive Alien Species Regulation (1143/2014)[35] applies in all EU Member States since 2015. It sets out rules to prevent, minimise and mitigate the impact of these species across the Union. A List of Invasive Species of Union concern was adopted in 2016 based on scientific risk assessments. For species identified therein, Member States are required:

i) within 3 years following the listing of species, to take action on pathways of unintentional introduction by drafting national Action Plans and within 18 months after their listing, to
ii) take measures for the early detection and eradication of these species and
iii) establish management measures species that have already widely spread in their territory. This List, reviewed every six years, was updated in 2022[36].

The Regulation is the main tool to reach the EU Biodiversity Strategy's objective to manage established invasive alien species and decrease the number of Red List species they threaten by 50% by 2030. Invasive alien species affect 21% of the assessed freshwater fish species in Europe according to the IUCN Red list threat assessment[37], which includes 18 Red List migratory freshwater fish species as threatened by IAS[38].

3.4.2 Key provisions

Habitat Conservation – Quality

The Art. 20 of the IAS Regulation dictates that "*Member States shall carry out appropriate restoration measures to assist the recovery of an ecosystem that has been degraded, damaged, or destroyed by invasive alien species of Union concern*" including "*measures to increase the ability of an ecosystem exposed to disturbance caused by the presence of invasive alien species of Union concern to resist, absorb, accommodate to and recover from the effects of disturbance"*. The implementation of this article has synergies with planning processes under the NRR. Freshwater ecosystems referred to in this article could be included as priorities in the National Restoration Plans and contribute to nature restoration objectives in the EU Biodiversity Strategy and NRR, while preventing further deterioration by IAS.

Environmental DNA (eDNA) monitoring could be considered an appropriate surveillance system in the national IAS Action Plans (Article 13) for invasive alien fish species (in accordance to Articles 14 and 19). Using eDNA could increase the success of early detection of invasion and of rapid response to it, enable

[35] Regulation (EU) No 1143/2014 of the European Parliament and of the Council of 22 October 2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species'. *OJ L*, vol. 317, 22 Oct. 2014
[36] Commission Implementing Regulation (EU) 2022/121203 of 12 July 2022 amending Implementing Regulation (EU) 2016/1141 to update the List of Invasive Alien Species of Union Concern, *OJ L*, vol. 186, 12 July 2022
[37] IUCN Red List
[38] Wetlands International Europe, Trans-European Swimways Programme, 2023.

effective monitoring of eradication, population control and containment measures[39] and thus help prevent the introduction and spread of invasive fish species in water bodies. This could eventually complement monitoring processes under the Habitats Directive and WFD and contribute to reducing data and knowledge gaps.

Species conservation and sustainable use

Recreational fishing is the main source of the introduction of invasive alien fish species that threaten native and endemic species[40]. Stocking by anglers occurs in almost every impoundment in the EU and can easily spread to entire river basins, sometimes leading to eradicating entire fish assemblages. This is exacerbated in "insular" conditions, where endemic species often occur and are replaced by ecologically more competitive species valued for angling activities and recreational fishing[41].

Aquatic IAS that require concerted action at the Union level are identified in the List of IAS of Union Concern following Article 4. This list falls short of preventing the threat posed by IAS in regions with particular fish assemblages and high endemism, where species native to other EU Member States could have an adverse impact on swimways. However, the Regulation's Articles 11 and 12 require tackling also those species not included in the list but pose an issue at the regional or MS level. However, the provisions of these articles are voluntary. Member States may identify such species to apply the provisions of the Regulation and stir regional cooperation to limit their spread but are neither required to do so nor to draft dedicated Action Plans tackling the threats they might pose.

Additionally, illegal introductions continue to occur primarily due to recreational angling, as with the European catfish (*Silurus glanis*)[42]. Working closely with stakeholders involved in or benefitting from recreational fisheries and with government agencies and citizens will be key to success. There is a need to combat the lack of awareness of the risks of introducing species for "trophy" angling (Rees et al. 2017)[43] by providing scientific advice and appropriate training to these stakeholder groups. Multiple voluntary codes of best practices, such as the European Code of Conduct on Recreational Fishing and Invasive Species[44], the Bern Convention's Charter for Recreational Fishing and Biodiversity[45] or the EIFAAC Code of Practice on Recreational Fisheries[46] can support sustainable use of IAS species within swimways.

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[39] Parrondo, M., Clusa, L., Mauvisseau, Q. and Borrell, Y.J. (2018). Citizen warnings and post checkout molecular confirmations using eDNA as a combined strategy for updating invasive species distributions. Journal for Nature Conservation, 43: 95-103, DOI: 10.1016/j.jnc.2018.02.006

[40] Freyhof, J. and Brooks, E., European Red List of Freshwater Fishes. Luxembourg: Publications Office of the European Union, 2011

[41] Ibid.

[42] Verreycken, H. Invasive alien species native to parts of the EU: The European catfish (Silurus glanis). Technical note prepared by IUCN for the European Commission. 2019

[43] Rees, E.M.A., Edmonds-Brown, V.R., Alam, M.F., Wright, R.M., Britton, J.R., Davies, G.D. and Cowx, I.G. (2017). Socio-economic drivers of specialist anglers targeting the non-native European catfish (Silurus glanis) in the UK. PLoS ONE, 12: e0178805, https://doi.org/10.1371/journal. pone.0178805

[44] Council of Europe, Bern Convention Standing Committee, Recommendation n 170 (2014) on the European Code of Conduct on Recreational Fishing and Invasive Alien Species, 2014.

[45] Council of Europe, Bern Convention Standing Committee, European Charter on Recreational Fishing and Biodiversity, 2010

[46] FAO. EIFAC Code of Practice for Recreational Fisheries. Food and Agriculture Organization, 2008.

3.4.3 Opportunities within the institutional cycle

The 2021 review of the application of the IAS Regulation[47] confirmed its positive impact, and no revision of the Regulation is foreseen. The only opportunities for SEI conservation linked to the IAS Regulation lie in the Revised Action Plans to be transmitted to the Commission by the end of 2025 and the revision of the Union list in 2028. LIFE projects, such as the LIFE Invasaqua[48] in the Iberian Peninsula, play an important role in supporting the implementation of the IAS Regulation in swimways where IAS threatens migratory freshwater fish species.

Policy recommendations

1. Ask Member States to submit requests by 2028 for the inclusion on the Union list of additional IAS identified as threats to migratory freshwater fish species included in the EU Red List or species not currently in favourable conservation status or on the basis of reports submitted pursuant to Art. 17 of the Habitats Directive.
2. The Invasive Alien Species Expert Group (IASEG) and Working Group on IAS should advocate for:
    - The inclusion of aforementioned codes of conduct and good practices on recreational angling in their revised Action Plans as an awareness raising measures in accordance with Art. 13(4(a))
    - Where necessary, greater coordination between Member States to manage IAS threatening migratory fish in transboundary swimways.

3. The Working Group on IAS and Scientific Forum on IAS should support:
    - The identification and management of species other than those of Union concern having an adverse impact along swimways at regional or national level.
    - The integration of local knowledge and scientific advice on IAS threatening migratory fish, gathered through swimways working groups, into revised National Action Plans
    - The inclusion of eDNA monitoring in revised Action Plans as a measure to prevent the introduction and spread of IAS in SEIs.
4. Maintain LIFE support for addressing the threat of IAS.

[47] European Commission, Report on the Review of the Application of Regulation (EU) No 1143/2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species, 2021.
[48] LIFE Invasaqua, https://lifeinvasaqua.com/en/life-invasaqua-iberian-project/

3.5 Marine Strategy Framework Directive

3.5.1 Introduction

The Marine Strategy Framework Directive (MSFD) (2008/56/EC)[49] aims to achieve Good Environmental Status (GES) of the EU's marine waters by 2020 and protect the resource base. It was adopted in 2008, with iterative assessments and reviews. It covers territorial waters (12 nmi [50]) and expands to each Member States' Exclusive Economic Zone (200 nmi [51]).

The initial objective of this Directive was to harmonise marine management policy (such as the Common Fisheries Policy), with marine protection policy (such as the Habitats and Birds Directives) and lay the groundwork for a synchronised maritime spatial planning (which later became the Marine Spatial Planning Directive[52]).

3.5.2 Key provisions

Habitat Conservation – Connectivity

The MSFD has potential to improve SEIs in terms connectivity as one of its main purposes is an active attempt to harmonise all water legislation, in a source-to-sea approach[53]. The Water Framework Directive (WFD) is the most useful tool to promote SEI conservation, therefore the value of the MSFD derives from the extent to which italigns with the WFD. The concept of GES, although in no way analogous, was replicated as a yardstick measure in the MSFD to align it with the WFD. The integrated ecosystem based approach is mirrored in the operationalisation of both Directives: Marine & Water Directors now meet together, reporting for both Directives is done on a 6-year cyclical basis and using the same structure and branding, and both Directives are reported together under the WISE[54].

The MSFD also makes an effort to align itself with the WFD by setting its scope right to the border of the WFD, and including transitional ecosystems (Estuarine ecosystems) in implementing GES. Its definition of 'marine', includes those "*coastal waters as defined by Directive 2000/60/EC, their seabed and their subsoil, in so far as particular aspects of the environmental status of the marine environment are not already addressed through that Directive or other Community legislation*" (Article 3(1)(b)). The MSFD applies to coastal waters as defined by the WFD and therefore there is a minor overlap in terms of geographical scope, but the MSFD only applies for the practical aspects of environmental status that are not already addressed through the WFD.

Importantly the MSFD, in its Article 13(4), calls onto Member States to include, in the programme of measures for each marine region, "*spatial protection measures contributing to coherent and representative networks of marine protected areas*" such as SACs under the Habitats Directive or Marine Protected Areas

[49] Directive 2008/56/EC of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive), *OJ L 164*
[50] Per UNCLOS, found here: UNTC
[51] Per UNCLOS, found here: UNTC
[52] Directive 2014/89/EU of 23 July 2014 establishing a framework for maritime spatial planning, *OJ L 257*
[53] https://eba.eu.com/environmental/msfd-and-wfd/
[54] Found here: WISE - Water Information System for Europe

(MPAs). As Swimways encompass rivers and their associated ecosystems supporting the entire migration routes of freshwater fishes, MPAs are relevant tools to protect diadromous fish species in the marine phase of their life stages by protecting crucial spawning, nursery or feeding grounds. Beyond the sole designation of legally protected areas, management plans for diadromous fish species in MPAs are however necessary to ensure their effective conservation.

Habitat Conservation - Quality

The MSFD aims to achieve GES of marine ecosystems similar to the WFD that also aim to achieve riparian and lacustrine ecosystems. However, GES means Good Environmental Status for the MSFD and Good Ecological Status for the WFD. The two terminologies use different sets of indicators.

Qualitative descriptors for determining GES as mentioned in Annex I MSFD aim, for most of them, to safeguard the quality of marine habitats of anadromous and catadromous fish species during the marine stage of their lifecycles. The first Descriptor directly mentions *"the quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions"*, including the maintenance of all marine food webs' elements to ensure '*long-term abundance of the species and the retention of their full reproductive* capacity'(Annex I, (4).However, non-indigenous species need to be controlled and maintained at levels which do not alter ecosystems (Annex I (2)), in accordance with the provisions of the IAS Regulation.

Threats to marine waters quality such as contaminant pollution, marine litter and human-induced eutrophication are also included in GES descriptors (Annex I (5),(8),(9),(10)), although Descriptor 9 only limits the presence of contaminants *in* fish to species destined to human consumption. Adverse effects of contaminants on other fish species, not destined to human consumption, could be explored and limited in the future.

Diadromous fish habitats, as part of marine ecosystems, shall not be affected by permanent alteration of hydrographical conditions (Annex I, (7)) nor by renewable energy deployment (Annex I (11)), and shall benefit from efforts to maintain sea-floor integrity at a level ensuring structure and functions of ecosystems (Annex I (6)).

The GES qualitative descriptors, provided they are identified by the Member States as descriptors to determine GES in each marine region or subregion, can contribute to conserving the quality of diadromous fish' marine habitats.

Species conservation and sustainable use

Qualitative Descriptor 3 defining GES (under the MSFD – Annex I) include "Populations of all commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock". Meaning that the health of commercially exploited fish, many of which are also diadromous species, is an indicator for GES. This also means threatened species' populations and other species not commercially exploited fall out of the scope of this GES descriptor, which is a shortcoming. Therefore, measures pursued under the MSFD to achieve GES are a useful tool to promote the conservation and sustainable use of only some diadromous species.

3.5.3 Opportunities within the institutional cycle

The MSFD includes interesting leverage points to improve the conservation and sustainable use of species highlighted diadromous species. The integrated, source-to-sea approach of water management at an EU level is a leverage point to utilise the MSFD to improve SEIs. For example, this year the Sustainable Eel Group has made a petition to expand eel fisheries closures to freshwater and estuarine ecosystems, and not only limit them to the marine[55]. This approach could be applied in case of other commercially exploited stock of diadromous species.

Finally, a review of the MSFD was planned for 2023 in accordance with Article 23 of the Directive. The outcome of this review has not been presented yet. On the basis of this report, amendments could be suggested to improve the protection and management of MPAs designated for migratory freshwater fish species.

Policy recommendations

1. Extend fisheries closures to freshwater ecosystems in case of commercially exploited diadromous species if the status of the stock so requires.
2. Develop measures under the MSFD that would also improve the status of the related SEIs
3. Suggest improvements to the designation and management of MPAs designated for diadromous fish species.

[55] Sustainable Eel Group (SEG), SEG Recommendations 2024 on the protection of European eel, 2024.

3.6 Renewable Energy Directive

3.6.1 Introduction

The EU Renewable Energy Directive (RED) (2023/2413)[56] is part of the legal framework that drives the increase of renewable energy across all sectors to achieve at least 42.5% of renewable energy sources in the EU's overall energy mix by 2030, with an aspirational target of 45%. Revised in 2023 to align with the European Green Deal[57], it emphasizes integrating renewable energy in areas like heating, transport, and industry, and accelerates permitting for renewable projects to enhance EU energy security and climate resilience. It covers all renewable energy sources, including wind, solar, biomass, and hydropower – this last one being the most relevant for the conservation of SEIs.

The opportunities arising from implementing this new revised Directive are not positive. The RED implementation does not foresee many chances to improve SEIs, but it is included in this report because it has the potential to have a significantly detrimental impact on them, especially in terms of habitat connectivity. It is essential to limit further fragmentation of SEIs and direct renewable energy development towards biologically less important rivers.

3.6.2 Key provisions

Habitat Conservation – Connectivity

As the 'state of water' 2024 report[58] states, "*… sectors such as energy production and inland navigation continue to impair the natural flow and physical features of European rivers, posing barriers to fish passage*" [59]. This Directive has the potential to significantly increase river fragmentation. Increased fragmentation can shorten Swimways, reduce feeding, nursery, or breeding habitats, and increase mortality as migratory freshwater fish pass through an increasing number of barriers.

3.6.3 Opportunities within the institutional cycle

The deployment of renewable energy areas will follow the designation of Acceleration Areas (AAs) by February 2026, which will, in turn, be subject to public consultation at the national and possibly regional levels, depending on the jurisdiction. The RED includes the possibility of excluding hydropower plants from the designation of AAs. Excluding hydropower from AAs is the best chance to avoid further damaging the connectivity of SEIs, which is similar to avoiding wind power development in the vicinity of important areas for migratory birds.

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[56] Directive (EU) 2023/2014 of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards to the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652)
[57] European Commission, The European Green Deal, 2019.
[58] European Environment Agency, Europe's State of Water 2024 : The need for improved water resilience. Publications office, 2024.
[59] Ibid.

The European Commission is offering significant funds[60], such as the Recovery and Resilience Facility[61] and the Connecting Europe Facility[62], to promote the green transition. One way to mitigate damages to SEIs is to condition the granting of funds to projects that have demonstrated, through an adequate Environmental Impact Assessment, that they will not adversely affect habitat connectivity.

Policy recommendations

1. Consider SEIs when defining Acceleration Areas.
2. The RED Expert Group created by the European Commission to facilitate implementation should develop guidelines how to safeguard the integrity of SEIs and preserve the ecological coherence of Natura 2000 sites designated for migratory freshwater fish.
3. The Nature Directives Expert Group (NADEG) should consider requesting to exclude hydropower plants from acceleration area designations.

[60] Such as the Recovery and Resilience Facility, the Connecting Europe Facility - European Commission (europa.eu)
or the REPowerEU (europa.eu) .
[61] Regulation (EU) 2021/241 establishing the Recovery and Resilience Facility, *OJ L,* vol. 057.
[62] European Climate, Infrastructure and Environment Executive Agency, Connecting Europe Facility (CEF) Energy.

3.7 Nature Restoration Regulation

3.7.1 Introduction

The EU Nature Restoration Regulation (2024/1991)[63] (aka Nature Restoration Law, NRR or NRL) aims to restore degraded ecosystems across the European Union to combat biodiversity loss and strengthen climate resilience. This law sets legally binding restoration targets, focusing on diverse habitats like wetlands, rivers, forests, and marine areas. By 2030, it requires at least 20% of EU land and sea areas to undergo restoration, with plans to extend this to all degraded ecosystems by 2050.

Member States must develop National Nature Restoration Plans (NNRPs) by 2026, detailing how they will meet these goals. The Law encourages protecting biodiversity while addressing climate adaptation and environmental health. It prioritises natural solutions for ecosystem services, aiming to improve water quality, soil health, and carbon sequestration. Aligning with existing EU strategies like the Biodiversity Strategy and the European Green Deal, it emphasises collaborative action across sectors to make the restoration process efficient and inclusive, with funding mechanisms and accountability measures to support long-term success.

The NRL benefits the conservation of SEIs by addressing freshwater habitats and habitats of fish species protected by the Habitats Directive in Article 4, and river connectivity in Article 9. It can also improve SEIs by promoting public engagement and cooperation among EU countries.

3.7.2 Key provisions

Habitat Conservation – Connectivity

The general tone of the NRL is one of interconnection, between policies (Article 14.14), multi-benefit measures (Article 14.9), and between Member States (Article 14.17). This reflects the interconnected structure of the restoration measures envisaged within the Law and the way that they jointly deliver on improving SEI habitat conservation in terms of connectivity. The following section focuses on Article4 and Article 9 of the NRL, followed b a brief mention of Article 14.

Article 9 focuses primarily on connectivity, although improving connectivity is also mentioned in Article 4. Article 9 begins by requiring Member States to identify barriers and categorise them as to whether they need to be removed to achieve the obligations of Article 4. Therefore, Article 9 makes barrier - such as dams and weirs - removal an obligatory restoration measure to improve the conservation status of certain Annex I habitats and species referred to in Article 4.7. Through this obligation, Article 9 enables migratory paths for fish species to be reopened, enabling fauna to reach upstream habitats for spawning and feeding. This river connectivity restoration is crucial, especially for diadromous species like salmon, sturgeon, and eel, whose populations have declined due to interrupted migratory routes. Article 9, therefore, functions jointly with Article 4 to improve the connectivity of SEIs, as well as being the first-ever binding codification of the 25,000km Free Flowing Rivers target, further incentivising Member States to restore connectivity of SEIs.

[63] Regulation (EU) 2024/1991 of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869.

Article 14(17) is worth mentioning due to its transboundary dimension. It obliges Member States to foster synergies with the NNRPs other Member States, in particular for ecosystems that span across borders. This Article is especially important for those SEIs that extend to two or more countries.

Habitat conservation – Quality

Habitat quality of SEIs can be improved by the NRL mainly through restoration measures referred toin Article 4. Annex I type habitats are under obligatory restoration measures; since Annex I contains a number of alluvial and riparian ecosystems, this Law is an excellent way to achieve healthier, free-flowing SEIs, with improved water quality and reduced sediment build-up, both of which essential for aquatic habitats and fish health. Riparian restoration enhances biodiversity and the resilience of river ecosystems, ensuring that migratory fish can thrive once again in European waters.

Member States are required to implement restoration measures to improve habitats listed in Annex I to a "good condition," targeting 30% by 2030, 60% by 2040, and 90% by 2050. In this context, Member States could factor SEIs in their reflections and include, restoration measures for SEIs within Natura 2000 sites until 2030 in their NNRPs. Member States must also restore Annex I habitat types in areas where they currently don't exist, reaching 30% of the target by 2030, 60% by 2040, and 100% by 2050 to achieve favourable reference areas, so this Law has the potential to even expand existing SEIs.

When preparing their NNRPsas required by Article 14(14), Member States shall take into account the conservation measures and prioritized action frameworks established for Natura 2000 sites in accordance with the Habitats Directive as well as measures for achieving good quantitative, ecological and chemical status of water bodies included in the Programmes of Measures and River Basin Management Plans (RBMPs) prepared in accordance with the WFD and Flood Risk Management Plans established in accordance with the Floods Directive. This means that the NRL serves as a useful way to bolster and amplify existing conservation structures for SEIs.

Species conservation and sustainable use

In terms of species conservation and sustainable use, Article 4.7 is relevantand reads:

> *Member States shall put in place restoration measures for the terrestrial, coastal and freshwater habitats of the species listed in Annexes II, IV and V to Directive 92/43/EEC and of the terrestrial, coastal and freshwater habitats of wild birds falling within the scope of Directive 2009/147/EC that are, in addition to the restoration measures referred to in paragraphs 1 and 4 of this Article, necessary to improve the quality and quantity of those habitats, including by re-establishing them, and to enhance connectivity, until sufficient quality and quantity of those habitats is achieved.*

Annex II of the Habitats Directive lists species that require SACs, including some fish species like the European sturgeon (*Acipenser sturio*), bullhead (*Cottus gobio*), and Atlantic salmon (*Salmo salar*). The Directive aims to protect and restore these habitats, often essential for spawning and migration, thereby supporting biodiversity and sustainable populations of these species. The NRL therefore obliges for restoration measures to be set for those SEIs with presence of these three species.

3.7.3 Opportunities within the institutional cycle

The implementation of the Nature Restoration Law will be a priority within the Biodiversity Strategy during the upcoming institutional cycle. It helps achieving many of its targets including its status improvement

one. Therefore, the NRL offers the strongest opportunities to improve the status of the SEIs. The NNRPs will be submitted to the European Commission by the national governments after public consultations. The European Commission will evaluate these plans as well as provide guidance to Member States. This guidance will be developed at the NRL Expert Group set up by the Commission.

Policy recommendations

1. Ensure that the requirements of SEIs and their qualifying species in terms of habitat connectivity, habitat quality and recognised by the Expert Group.
2. Members of the Trans-European Swimways Network engage with the development of the National Nature Restoration Plans at the national level.
3. Provide legal briefing concerning the requirements of Article 9 and its better use for conserving and restoring the SEIs.
4. Provide briefing on the implementation of Article 4 to improve habitat quality in the SEIs.
5. Provide briefing on the implementation of habitats for species under Article 4.7 in the context of migratory fish and the SEI.
6. Support piloting large scale SEI restoration measures and monitor their benefits not only for biodiversity but also for climate change mitigation and adaptation.

3.8 Water Framework Directive

3.8.1 Introduction

The Water Framework Directive (WFD) (2000/60/EC)[64] is the cornerstone of European Union water policy. It was established to protect and enhance the quality of water resources across Europe. The WFD's primary goal is to achieve GES (Good Ecological Status—not to be confused with the MSFDs Good Environmental Status) for all EU waters, fostering sustainable water use and ensuring the long-term protection of aquatic environments.

The WFD covers all surface waters (rivers, lakes, transitional, and coastal waters) and groundwater within the European Union. It applies to all aspects of water management, including water quality, ecological health, and hydrological balance, in all Member States.

The WFD calls for a management plan to be developed for each river basin district. After years of preparatory work, the first WFD RBMPs were published in 2009 and 2010 in most Member States. These plans set out the Programme of Measures that are required to achieve good ecological & chemical status in water bodies that are *at risk* of failing to meet the GES requirements. The first Programme of Measures to achieve good status (or potential) had to be in place by 2012 with the intention of achieving the objectives by 2015. Progress with WFD implementation is reviewed on a six-yearly basis. Currently, the third cycle is running until 2027.

As the most recent 'state of water' report[65] of the European Environment Agency revealed no significant progress has been made in improving the status of water since 2009, and the chemical status of rivers, lakes, and coastal waters has even further deteriorated. Less than 30% of the water bodies meet the pollution standards set by the WFD.

3.8.2 Key provisions

The environmental objectives set out in Article 4(1) are the centrepiece of the WFD. They oblige the Member States to prevent deterioration (Article 4(1)(a)(i), (b)(i)) and achieve good status for both surface and groundwater bodies, except for artificial and heavily modified bodies of surface water (Art. 4(1)(a)(ii), (b)(ii)).

The obligations under preventing deterioration can help to maintain the current status of SEIs, but they do not offer many opportunities to improve them. Therefore, focus should be on the obligations to achieve good status. Good status for surface water requires that both their chemical and ecological status are good. For artificial or heavily modified surface waters, only achieving good chemical status and good ecological potential is required. Groundwater is considered to be in good status when both its chemical and quantitative status is good.

[64] Directive 2000/60/EC of 23 October 2000 establishing a framework for Community action in the field of water policy
[65] https://eba.eu.com/environmental/msfd-and-wfd/

The chemical status of water depends on the concentration of certain pollutants, these pollutant thresholds can be found in Section 2.3.2 Annex V, WFD; Article 4 Groundwater Directive; Environmental Quality Standards for the pollutants so-called priority substances - listed in Annex X of the WFD; and, Annex V WFD also specifies the biological quality elements that are important for the classification of a body of surface water to be in good ecological status. The biological quality elements include also fish. The quantitative status reflects how much a body of groundwater is affected by abstractions and is specified in table 2.1.2 Annex V WFD.

The main means to improve the SEIs in terms of habitat connectivity, habitat quality and sustainable use of species is leveraging the Good Ecological Status (GES) requirement. The WFD mandates that all water bodies in the EU must reach "Good Ecological Status", which includes biological, hydromorphological, and chemical elements. The WFD recognises river continuity as crucial for achieving good ecological status and requires continuity for all EU river water bodies to support good ecological status.

Since the specifics regarding *quantitative* status as a determining factor for GES only affect ground water, this element will not be further evaluated as SEIs are by nature surface water bodies. Hence, the elements of habitat quality and connectivity will be explored together, since they can be achieved through analogous provisions.

Habitat Conservation – Quality & Connectivity

In order to understand the thresholds or benchmarks to achieve Good Ecological Status, as contained in Article 4.1, hydromorphological quality must be regarded as a key component of the WFD's ecological status. Proper connectivity and secure e-flows are vital for healthy hydromorphology, as it ensures natural water flow, sediment transport, and habitat connectivity.

The WFD's focus on hydromorphology can be leveraged to encourage projects that restore riverbeds, improve riparian zones, and remove barriers that disrupt natural river processes.

There is an argument to be made that the gradual improvement of SEIs is already an existing obligation under the WFD by interpreting the hydromorphological criteria defining GES a baseline requirement for a healthy SEI. As shown in the table below that is from Annex V of the WFD and defines the "*Quality elements for the classification of ecological status*" of rivers, crucial elements to SEIs such as '*Composition, abundance and age structure of fish fauna*', '*River continuity*' or '*Structure and substrate of the river bed*' are already identified as criteria of the GES, and therefore obligatory elements to consider when determining the Programme of Measures. The table below (from Annex V of the WFD) shows that river continuity is considered being a precondition for achieving the biological quality elements. Therefore Member States should include activities to improve river continuity in their Programme of Measures.

Hydromorphological quality elements

Element	High status	Good status	Moderate status
Hydrological regime	The quantity and dynamics of flow, and the resultant connection to groundwaters, reflect totally, or nearly totally, undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
River continuity	The continuity of the river is not disturbed by anthropogenic activities and allows undisturbed migration of aquatic organisms and sediment transport.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.
Morphological conditions	Channel patterns, width and depth variations, flow velocities, substrate conditions and both the structure and condition of the riparian zones correspond totally or nearly totally to undisturbed conditions.	Conditions consistent with the achievement of the values specified above for the biological quality elements.	Conditions consistent with the achievement of the values specified above for the biological quality elements.

Figure 1. Hydromorphological quality elements in Annex V of the WFD

Article 4.1 of the WFD includes also the "non deterioration" principle. This can also be leveraged to improve SEIs since it states that the status of water bodies should not be worsened. Based on the arguments above, this principle should prevents new projects that would harm river quality and connectivity, such as new dams or modifications that restrict natural flows.

Article 13 on the RBMPs can also be used to improve SEIs since this is where actions related to habitat quality and connectivity, such as depollution, restoration, dam removal, fish passages, or floodplain restoration are included. In this process, the WFD mandates public participation in RBMPs allowing stakeholders, including environmental groups and local communities, to advocate for habitat improvement measures in the RBMPs.

The WFD requires continuous monitoring (and reporting) of the ecological and hydromorphological quality of water bodies (under Article 8). River quality and connectivity indicators (like fish migration and sediment flow) inclusion in this monitoring should be more widespread to highlight fragmentation issues. This monitoring data is then essential to hold authorities accountable for non-compliance. If a water body fails to meet connectivity targets, this can be reported as part of compliance evaluations, pushing for further actions to protect the SEIs.

The obligation to achieve GES has a series of exceptions under the WFD (Article 4(4) to (7)), in cases of when they are technically not feasible, would lead to disproportionate cost, or in case of overriding public interest. According to Article 4(7), exemptions can be approved by the authorities for new modifications and sustainable human development activities, which result in the deterioration of the status of the water body or which prevent the achievement of good ecological status or potential. The text in the related chapter indicates what can be done to check whether the right procedures for issuing a permit have been followed and what opportunities exist to challenge the decision of a competent authority. Habitat quality, as a source of water for human uses, should automatically be considered as a competing overriding public interest that would disqualify derogation under this regime, and subsequently an argument could be made that connectivity being fundamental to ecological status, itshould be compromised only under strict exemptions. Habitat quality and connectivity can also be advocated for in terms of co-benefits with adaptation measures by enhancing ecosystem resilience to floods and droughts, making them less likely to qualify for exemptions. Similarly, the WFD's goals align with the Habitats Directive, which aims to protect and restore natural habitats for certain migratory fish included in the annexes. This synergy can also strengthen conservation measures for the SEIs against plans that would damage them.

Species conservation and sustainable use

Improving species conservation and sustainable use is not directly achievable using provision of the WFD since this legislation relates to habitats more than species. Nonetheless, indirectly there are several options that can be used to improve the status of the SEIs.

All of the measures highlighted above can be used to improve species conservation within SEIs, including the hydromorphological criteria of GES, the non-deterioration principle, the Programme of Measures within the RBMPs and the monitoring obligations. The table below from Annex V shows that fish fauna is one of the ecological quality elements for the GES. This means that improving the ecological status of the waterbodies require measures targeting the fish fauna and their habitat.

Element	High status	Good status	Moderate status
Fish fauna	Species composition and abundance correspond totally or nearly totally to undisturbed conditions. All the type-specific disturbance-sensitive species are present. The age structures of the fish communities show little sign of anthropogenic disturbance and are not indicative of a failure in the reproduction or development of any particular species.	There are slight changes in species composition and abundance from the type-specific communities attributable to anthropogenic impacts on physico-chemical and hydromorphological quality elements. The age structures of the fish communities show signs of disturbance attributable to anthropogenic impacts on physico-chemical or hydromorphological quality elements, and, in a few instances, are indicative of a failure in the reproduction or development of a particular species, to the extent that some age classes may be missing.	The composition and abundance of fish species differ moderately from the type-specific communities attributable to anthropogenic impacts on physico-chemical or hydromorphological quality elements. The age structure of the fish communities shows major signs of anthropogenic disturbance, to the extent that a moderate proportion of the type specific species are absent or of very low abundance.

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Figure 2. Fish fauna as one of the ecological quality elements for GES in Annex V of the WFD

Annex VI also lists a series of measures to be included in the Programme of Measures, and it includes measures required under the Habitats Directive (92/43/EEC). Conservation measures to achieve FCS of species as required under the Habitats Directive, shall be included in RBMPs.

3.8.3 Opportunities within the institutional cycle

2027 is an important year for the WFD implementation. Firstly, it concludes the implementation of the third cycle of RBMPs. Second, according to the WFD, Member States should have achieved the GES by 2027. If not, they can be in noncompliance with the requirement of the Directive due to their failure to achieve its required outcome. This horizon is especially relevant after the release of the above-mentioned 'state of the water' report[68], which highlights how far EU Member States are from achieving the binding targets of the WFD. After 2027, Member States that have not achieved the GES can face possible legal action.

The European Commission will release its evaluation of the third cycle of RBMPs at the end of 2024. In it, it will assess the adequacy of the measures to achieve GES. This report will highlight specific deficiencies that need to be addressed, providing many policy opportunities to improve the conservation of SEIs.

The WFD, as a keystone of land management policy is subject to heavy funding opportunities. The next MFF is set to be developed and approved within this current institutional cycle.

There is also a possibility that the European Commission will reopen the WFD this upcoming legislature. This course of action would be highly unfavourable for the conservation of SEIs sinceit is likely that the ambitions of the WFD would be weakened rather than strengthened in the current political climate.

Nonetheless, a potential reopening could be a theoretical opportunity to include more biological criteria for migratory freshwater fish and even recognising the SEIs concept.

The definition of a free-flowing river unit[66] was developed under the ECOSTAT expert group of the WFD Common Implementation Strategy. The criteria for identifying free-flowing river stretches in the context of the 25,000 km target of the EU Biodiversity Strategy for 2030 includes considerations which are useful for river connectivity. The next step in the process is the endorsement of the ECOSTAT free-flowing river unit guidance by the Water Directors and the thorough implementation of this definition to meet the objectives Biodiversity Strategy and the requirements of NRL.

The Priority Substance List is also under revision. Due to delays in the commencement of trialogue, this is signaled as another policy opportunity, due to its (albeit limited) potential to improve habitat quality.

Policy recommendations

1. The considerations of freshwater migratory fish and their habitat quality and connectivity to be included in the qualifier for GES, and the SEIs should be recognized in the WFD.
2. Evaluate the current cycle of RBMPs:
    - The European Commission should consider how the RBMPs support the maintenance and improvement of the SEIs.
    - Assess noncompliance of the Water Framework Directive consider the possibility of legal action against Member States that have failed their obligations under the WFD.
3. Follow the next cycle of RBMP development:
    - The new plans should include river connectivity projects that would improve the SEIs.
    - Measures like barrier removal, floodplain reconnection, or natural riverbank restoration should be widely integrated into the RBMPs.
4. The Trilogue for the Priority Substance List revision should consider improving habitat quality by identifying those substances that present particular risks to fish through poisoning or eutrophication.
5. Include the ecological requirements of migratory freshwater fish in the Free Flowing Rivers criteria.
6. Keep WFD exemptions exceptional. The exemptions to the obligation to achieve GES are due to be evaluated in this upcoming legislative cycle and it is necessary to prevent erosion of the current legal protection.
7. Improve funding opportunities for swimway conservation in the CAP funds, LIFE funds, EMFAF, Cohesion Fund, European Structural and Investment Fund.

[66] Van De Bund et al. Criteria for identifying free-flowing river stretches for the EU Biodiversity Strategy for 2030, Publications Office of the European Union, Luxembourg, 2024, doi:10.2760/402517, JRC137919.

3.9 Common Fisheries Policy

3.9.1 Introduction

The Common Fisheries Policy (CFP) (1380/2013)[67] sets out rules for the sustainable management of European fishing fleets and the conservation of fish stocks. The policy was revised in 2013 ('*new CFP*'). It consists of three main pillars: i) the new CFP, ii) the common organisation of the markets in fisheries and aquaculture products[68] and iii) the European Maritime, Fisheries and Aquaculture and Fisheries Fund (EMFAF)[69].

The new CFP only addresses marine fisheries, leaving inland fisheries of migratory freshwater fish species out of its scope. Nonetheless, a few provisions could enhance swimways conservation[70]. Firstly, it does apply to fisheries of diadromous species such as the European eel or Baltic salmon during the marine part of their life cycles. As these species are threatened by overexploitation and low recruitment, the new CFP can help to alleviate fisheries' pressure on them. Recommendations for the eel are detailed earlier in this report. Secondly, the financial pillar of the CFP for the period 2021-2027, the EMFAF, encompasses inland fisheries and related aquatic species; it could thus support research schemes or restoration projects benefiting also migratory freshwater fish species.

3.9.2 Key provisions

Habitat Conservation – Quality

Under the CFP, the EMFAF represents the main opportunity to improve swimways, as it mentions the restoration and conservation of aquatic biological resources among its main priorities, including inland waters (Recital 37). Therefore, the fund can support i) '*actions to achieve or maintain a good environmental status in the marine environment*' as well as ii) '*the implementation of spatial protection measures established pursuant to that Directive*' in relation to the MSFD.

The EMFAF also mentions i) '*the management, restoration and monitoring of Natura 2000 areas*" and ii) the protection of species referred to in the Habitats Directive. Finally, it can support '*the restoration of inland waters*' in accordance with programmes of measures developed under the WFD.

The EMFAF is a pertinent financial tool supporting the conservation and restoration of migratory freshwater fish habitats. It presents synergies with the Habitats Directive and the WFD, as well as with the NRR restoration's objectives, which should be exploited to improve species' habitat quality and connectivity.

Species conservation and sustainable use

For the diadromous species falling under the scope of the CFP in the marine stage of their life cycles, the new CFP aims to bring harvested populations above levels which can produce the Maximum Sustainable Yield while driving long-term management through the required establishment of multi-annual plans. The

[67] Regulation (EU) No 1380/2013 of 11 December 2013 on the Common Fisheries Policy
[68] Regulation (EU) No 1379/2013 of 11 December 2013 on the common organization of the markets in fishery and aquaculture products
[69] Regulation (EU) No 508/2014 of 15 May 2014 on the European Maritime and Fisheries Fund
[70] European Parliament - DG IPOL, Note on Inland Fisheries and the Common Fisheries Policy, 2014

revised CFP also introduced an obligation to land all catches, which should prevent unnecessary mortalities due to discarding, as it is the case with the Baltic sea salmon[71].

Through the EMFAF, Member States and their regional or local authorities, as the principal guarantors of inland fisheries' sustainability, are encouraged to create support units for national networks of Fisheries Local Action Groups (FLAGs). FLAGs bring together fisheries actors and local private and public stakeholders to design and implement local strategies tailored to the needs of their areas, including environmental needs[72]. Usually skewed toward coastal and estuarine fisheries, these groups ease the dissemination of information, scientific advice and best practices through training and adopting measures that alleviate inland fisheries' pressures on the aquatic environment. It could be possible to explore the development of FLAGs in inland areas, and better integrate freshwater fish considerations in existing coastal FLAGs, with the support of Swimways Working Groups.

3.9.3 Opportunities within the institutional cycle

A few opportunities are expected through the CFP in the next legislature for improved swimways conservation. The European Commission is currently reviewing the policy and a report assessing its performance, including an *ex-post* evaluation of the EMFAF, is expected in early 2025[73]. This evaluation will provide insights into a potential revision of the CFP to address its shortcomings. Its results related to the EMFAF will feed into the debates on the MFF in 2025.

Policy recommendations

1. Maintain an ambitious EMFAF budget to support MSFD GES objectives, conservation objectives of Natura 2000 areas and the WFD objectives on restoration of inland waters.
2. If the CFP is revised, include inland fisheries and related species in its scope in a source-to-sea approach.
3. Explore the role of FLAGs in supporting the sustainable use and conservation of migratory freshwater fish species along swimways.

[71] Ibid.
[72] https://maritime-forum.ec.europa.eu/contents/map-week-fisheries-local-action-groups-flags_en
[73] European Commission, DG MARE – News : Commission launches consultation on the common fisheries policy, 20 June 2024.

3.10 Trans-European Transport Network

3.10.1 Introduction

The Trans-European Transport Network (TEN-T) policy[74], initially based on Regulation (EU) No 1315/2013, supports the development of a Europe-wide network of transport infrastructure, including railway lines, roads, airports, railroad terminals, maritime shipping routes, ports, and inland waterways. The regulation has been reviewed by the Commission in April 2019. A revised proposal was published two years later in December 2021, followed by an amended proposal issued in 2022. The revised proposal introduced, in relation to inland waterways, the requirement to ensure good navigation status for a minimum of days per year, while additional rivers were included as extensions of the waterway network. The revised regulation was adopted by the Council in June 2024 and entered into force in July.

3.10.2 Key provisions

Habitat Conservation – Connectivity

Transport infrastructure of inland waterways, which include rivers, canals, lakes, locks, reservoirs, floods and drought prevention measures or ports, among other elements (Article 21), overlap with freshwater fish habitats. Inland waterways and inland ports are the most problematic components of the TEN-T due to the channelisation of rivers and due construction of locks and dams. These impede or entirely block migratory pathways up- and downstream. Embankments and dykes destroy areas previously used as spawning, feeding or sheltering grounds.

The revised TEN-T Regulation addresses the maintenance and expansion of the waterways network and mentions connectivity considerations in its recitals, both regarding barriers (longitudinal connectivity), channel depth (vertical connectivity), and the sufficiency of reference water levels defined in days per year *(temporal connectivity*).

Recital 52 of the Regulation mentions network requirements should consider '*the specific hydro-morphology of each waterway',* e.g, free-flowing rivers, and '*the objectives of environmental and biodiversity policies'*. In line with the objectives of the Biodiversity Strategy and NRR, '*particular attention should be given to avoiding potential barriers to the connectivity of free-flowing rivers'* (Recital 53). However, Article 23 on the definition of Good Navigation Status requires Member States to ensure, by the end of 2030, that transport infrastructure of inland waterways *'provide a navigable channel depth of at least 2.5 m'* at reference water levels. This will likely imply further deterioration of hydro-morphological characteristics of freshwater fish habitats.

The Regulation entails only a few environmental safeguards. Recital 13 of the Regulation recalls the need to ensure the coherence of the TEN-T with environmental policy objectives of the Union, inviting Member States and promoters to carry out environmental assessments of plans and projects for which the environmental assessment has not been initiated in accordance with the 'do not significant harm'

[74] Regulation (EU) No 1315/2013 on Union guidelines for the development of the trans-European transport network

assessment and related latest guidance[75] and best practice. Accordingly, Article 5(3) states that have new plans and projects to expand the Network need to go through an environmental assessment carried out in accordance with the provisions and objectives of the Habitats, Birds, Water Framework, Environmental Noise[76] and Strategic Environmental Assessment[77] Directives, in order to avoid or mitigate or compensate '*for negative impacts on the environment'* and to *'protect biodiversity effectively'* (Recital 15).

Mitigating impacts on *'water bodies and water dependent biodiversity'* is set as an additional priority for inland waterway infrastructure development (Article 24). However, for migratory freshwater fish this is a question of survival not just an '*additional priority*'.

Habitat Conservation – Quality

Inland waterways and ports support navigation activities which negatively impact water quality of rivers. Shipping operations and vessels can discharge pollutants such as heavy metals, organic substances or mineral oils, and can sometimes result in large oil spills[78]. Furthermore, vessels navigating in the TEN-T waterways affect the entire riverine ecosystem by transferring hydraulic forces into the water column[79] and creating waves and currents which disturb shoreline habitats. This has consequences on entire fish assemblages, with juvenile fish struggling to withstand currents while sheltering, spawning and nursery habitats on the river banks are degraded[80]. As a meagre safeguard, Article 5(1(g)) mentions the development of the Network shall "*reduce as much as possible the negative impact on […] the environment, including from air and noise pollution, and degradation of ecosystems".*

Species conservation and sustainable use

Although it does not directly address freshwater fish, the TEN-T regulation lays the groundwork for the development and increase of inland navigation, which will be accelerated in the context of the Green Deal and the transition towards low-carbon transports. Species conservation within the waterways network is complicated due to habitat degradation, while some species, such as sturgeons, are directly threatened by propeller suction and dredges[81].

3.10.3 Opportunities within the institutional cycle

While the final act entered into force and will not be subject to changes in the medium-term, its While the final act entered into force and will not be subject to changes in the medium-term, its implementation for inland waterways will require vigilance to ensure it does not significantly harm freshwater ecosystems and

[75] European Commission, Commission Notice Technical guidance on the application of the 'do no significant harm' under the Recovery and Resilience Facility Regulation 2021/ c 58/01, *OJ C 58, p.1-30,* 2021
[76] Directive 2002/49/EC of the European Parliament and of the Council of 25 June 2002 relating to the assessment and management of environmental noise (OJ L 189, 18.7.2002, p. 12). 48
[77] Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (OJ L 197, 21.7.2001, p. 30). 47
[78] Deltares, Diffuse water emissions in E-PRTR, 2013.
[79] Gabel, Friederike, et al. 'Effects of Ship-Induced Waves on Aquatic Ecosystems'. Science of The Total Environment, vol. 601–602, Dec. 2017, pp. 926–39. ScienceDirect, https://doi.org/10.1016/j.scitotenv.2017.05.206.
[80] Zajicek, Petr, and Christian Wolter. 'The Effects of Recreational and Commercial Navigation on Fish Assemblages in Large Rivers'. *Science of The Total Environment*, vol. 646, Jan. 2019, pp. 1304–14. *ScienceDirect*, https://doi.org/10.1016/j.scitotenv.2018.07.403.
[81] WWF, Saving Sturgeons – A global report on their status and suggested conservation strategy, 2016

biodiversity. The implementation of the 2.5m depth standard throughout the network of inland waterways and the development of several rivers identified as SEIs, such as the Oder, Elbe and Sava, could heavily affect migratory freshwater fishes populations. In the long-term, and where possible, consider downlisting from “core” to “comprehensive” node of the inland waterway network, or even exclude, rivers identified as SEI. This could lead to a drastic reduction in the impact of navigation.

Finally, the existence of guidance published by the European Commission on inland waterway transport and Natura 2000[82] can be recalled. Aimed to assist Member States in aligning their waterways and further developments with the requirements of the Birds and Habitats Directives, this guidance document provides tools and methods which can be applied outside of Natura 2000 areas and along SEIs. It showcases successful restoration projects as good practices to be upscaled. Integrated waterway planning and management under the EU environmental and water acquis will be the way forward to gradually decarbonise the transport sector without negatively affecting migratory freshwater fishes that use entire river networks often outside of Natura 2000 areas.

Policy recommendations

1. Ensure that potentially harmful projects in SEIs undergo environmental assessments (EIA/SEA procedures) that consider the conservation of migratory freshwater fish species (including threatened species according to the latest IUCN Red List which are not listed in the annexes of the Habitats Directive).
2. Include the swimway and the SEI concept in guidance and best practices to be considered in environmental assessment of projects.
3. Where possible, exclude or downlist from ‘core’ to ‘comprehensive’ nodes of the inland waterway network rivers identified as SEIs.

[82] European Commission, DG Environment, Guidance Document on Inland Waterway Transport and Natura 2000: Sustainable Inland Waterway Development and Management in the Context of the EU Birds and Habitats Directives. Publications Office of the European Union, 2018. https://data.europa.eu/doi/10.2779/779218.

3.11 Pan-European Sturgeon Action Plan

3.11.1 Introduction

The Pan-European Sturgeon Action Plan (PANEUAP)[83] is intended to serve as a guiding framework for the conservation of all 8 sturgeon species occurring in European waters at a pan-European level : Beluga (*Huso huso*), European sturgeon (*Acipenser sturio*), Ship sturgeon (*Acipenser nudiventris)*, Sterlet (*Acipenser ruthenus*), Baltic sturgeon (*Acipenser oxyrinchus),* Russian sturgeon (*Acipenser gueldenstaedtii*), Stellate sturgeon (*Acipenser stellatus*), and the Adriatic sturgeon (*Acipenser naccarii*). Sturgeons are among the most threatened groups of animals globally: seven out of the eight abovementioned species are critically endangered according to the IUCN Red List assessment[84] and all are in unfavourable conservation status under the Habitats Directive.

The PANEUAP was adopted in 2018 by the Standing Committee of the Bern Convention and was approved also by the NADEG as a species action plan under the Habitats Directive. It applies throughout the entire European geographical scope of Bern Convention. In particular, it focuses on countries with shared basins and on main rivers hosting historic sturgeon populations such as the Danube, supporting species like the Beluga and Sterlet, and the Black Sea and Caspian sea basins which are sturgeon marine habitats. It also covers other European rivers such as the Gironde, the Rhine and the Elbe.

3.11.2 Key provisions

Habitat Conservation – Connectivity and quality

The PANEUAP addresses the threats to the sturgeons' habitats and migration routes. These arise mainly from the need for using the rivers by different sectors, such as hydropower, flood prevention or navigation, which result in the multiplication of longitudinal and lateral barriers (e.g. dams, dykes and impoundments). Barriers reduce sturgeon habitats and alter natural hydro morphological processes necessary for them to survive and fulfil their life cycles. The PANEUAP contains advice how to provide unhindered fish passage and remove barriers to migration to allow for both up- and downstream migration, advocating for the restoration of swimways supporting sturgeons' migrations.

The Action Plan also addresses the detrimental (noise and pollution) and fatal (propellers suction and dredges) consequences of navigation activities on the few remaining sturgeon populations. Through collaboration with sectors responsible for sturgeons' habitat degradation and destruction, knowledge sharing and capacity building, the PANEUAP incentivizes the implementation of mitigation measures and proven best-practices to have a positive effect on sturgeons' habitats connectivity and quality.

Species conservation and sustainable use

Sturgeons have long been over-exploited for their meat and caviar production. Fisheries activities contributed heavily to the collapse of wild sturgeon stocks across Europe[85]. Although fishing for sturgeon is now illegal in Europe, the species remain threatened by poaching and by-catch in commercial fisheries. The action plan provides measures to be implemented by European countries to reduce these threats.

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[83] Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Pan-European Action Plan for Sturgeons, 2018
[84] IUCN, Red List
[85] Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), Pan-European Action Plan for Sturgeons, 2018

Increased enforcement of existing regulations is essential and will require efforts to raise awareness and involve stakeholders such as fishers, anglers and local-communities still participating in illegal sturgeon fishing deliberately or, in the case of by-catch, unintentionally.

3.11.3 Opportunities within the institutional cycle

The PANEUAP is a ten-year action plan. Faced with the continuous decline of populations and threat of imminent extinction, it is highly likely its implementation will continue over the next decades. Most countries are aware of the existence of the PANEUAP and its added value as a guiding framework enabling cooperation to enhance sturgeon conservation throughout Europe. However, as revealed in the first evaluation of its implementation, great discrepancies exist between countries in their situations, uptake of the plan's provisions and implementation of the latter. As a result, some adopted national sturgeon action plans, while others incorporate measures from the PANEUAP into other documents.

A mid-term evaluation of the PANEUAP's implementation was conducted in 2024[86] and a final one is planned for 2029. The Action Plan as such does not provide specific hooks for improved conservation of SEIs, as it is in itself a tool advocating, through the prism of sturgeon conservation, for the implementation of measures benefitting most migratory freshwater fishes' habitats and species.

Policy recommendations

1. Enforce provisions of the PANEUAP in the EU Member States, including adoption of national strategies, appointment of national focal points, protection of habitats assorted with conservation measures.
2. Build on sturgeons conservation efforts and related provisions of the PANEUAP to improve the conservation of the SEIs and of migratory freshwater fish species evolving in overlapping habitats and/or suffering from identical threats.

[86] https://rm.coe.int/tpvs11e-2024-bureau-meeting-10-12-september-2755-8761-8314-1/1680b1ea91

3.12 EU Action Plan: Protecting and Restoring Marine Ecosystems

3.12.1 Introduction

To step up its efforts and attain the objectives laid out in the EU Biodiversity Strategy 2030, the European Commission adopted in 2023 an EU Action Plan: Protecting and Restoring marine ecosystems for sustainable fisheries[87]. This Action Plan draws on the contributions of stakeholders and citizens during a broad consultation to gather both opinions and updated scientific advice. In this communication, the European Commission formulates its commitment to improve fishing selectivity and reduce the impact of fisheries on sensitive or critically endangered species. This Action Plan is particularly relevant for the European Eel and sturgeon species, which are Critically Endangered species according to the IUCN Red List and remain dramatically threatened by fisheries such as overfishing permitted against ICES scientific advice in the case of the Eel, or by bycatch in the case of sturgeons.

3.12.2 Key provisions

Habitat Conservation – Connectivity

The action plans recalls the objective to create new MPAs by 2030 according to the PA targets of the EU Biodiversity Strategy and the Union's international commitments under the Global Biodiversty Framework (GBF). The European Commission mentions its intention to strictly protect important fish spawning grounds and nursery areas. Together with the full implementation and enforcement of the Eel Regulation and the undertaking of appropriate measures to limit fisheries pressure, this could lead to the strict protection of numerous coastal areas and estuaries used as nursery areas by glass eels.

Species conservation and sustainable use

The Action Plan also calls on Member States to develop threshold values for the maximum allowable mortality rate from bycatch of the species selected by Member States as part of the implementation of the MSFD, and to adopt management measures in fisheries to achieve these thresholds. These national measures, or joint recommendations where relevant, to reduce by-catch shall be adopted by the end of 2024 for all sturgeon species. Incidental bycatch of threatened and protected species shall be addressed via the adoption of implementing rules under the Technical Measures Regulation to improve the selectivity of fishing gears.

The Action plan also recalls the requirements of the Eel Regulation, and asks Member States to adopt or update their Eel Management Plans under the Eel Regulation by the end of June 2024. This shall be done in accordance with the most recent scientific advice and on the basis of the Eel Regulation's Art. 9 monitoring reports.

[87] European Commission, Communication – EU Action plan : Protecting and Restoring Marine Ecosystems for sustainable and resilient fisheries, 2023

3.12.3 Opportunities within the institutional cycle

The EU Action Plan on protecting and restoring marine ecosystems is meant to accelerate the implementation of the existing legislation protecting marine ecosystems and includes also diadromous species. It also advocates stepping up efforts in designating MPAs and limiting the impacts of fisheries activities. The action plan sets out a series of actions to assist Member States in this endeavour, such as guidance and capacity building, as well as, facilitated access to funding schemes such as the EMFAF to deliver on the objectives by 2030.

Policy recommendations

1. Ensure implementing rules under the Technical Measures Regulations promote fishing gear limiting sturgeon bycatch.
2. Accelerate the adoption (and revision) of fit-for-purpose Eel Management Plans with particular focus on Joint Eel Management Plans for transboundary river basins.
3. Include marine habitats of diadromous fish in existing and future MPAs as well as in NRPs
4. Improve funding opportunities for swimways conservation in LIFE funds, EMFAF, Cohesion Fund, European Structural and Investment Fund.

3.13 Water Resilience Strategy

3.13.1 Introduction

Water resilience is one of the hottest topics for the new legislature. Between 2000 and 2019, 29 per cent of the EU's territory was affected by water scarcity in at least one season, while no progress has been observed in addressing water stress conditions[88]. In her State of the Union Address 2023[89], Ursula von der Leyen announced a Water Resilience Initiative to safeguard freshwater resources and ecosystems' health. This lead to the inclusion of water resilience as a priority in the European Council's Strategic Agenda 2024-2029[90]. The topic is recalled in the Political Guidelines for the new Commission's mandate[91] and in multiple mission letters of several Commissioner designates. It has crystalised in Commissioner Jessika Roswall's portfolio whose title now includes the term 'water resilience'[92]. The Strategy will be part of a European Climate Adaptation Plan and complement the Water Framework Directive. It will also feed into other files such as the Ocean's Pact, the upcoming MFF and the Vision for the Future of Agriculture.

3.13.2 Key provisions

Key provisions benefiting SEI conservation cannot be identified yet as the content of the Water Resilience Strategy is still to be developed. The Strategy will likely further the implementation of the existing EU' water acquis, on the basis of the 3rd RBPMs assessment. In the meantime, it will aim to improve water efficiency. Building on the recommendations from recent work on energy efficiency, a water efficiency first principle shall be defined to establish a water hierarchy going beyond existing initiatives that can be operationalised in specific sectors such as energy, agriculture, or industries.

3.13.3 Opportunities within the institutional cycle

Therefore, the Water Resilience Strategy should ensure sufficient water in the EU by limiting water intake from ground and surface waters and restoring the broken water cycle. This represents an opportunity for SEIs, as some migratory freshwater fish rely on sufficient river flow and velocity to migrate (ecological water requirements).

The Strategy will also address the critical water investment gap to implement the water acquis, and fund further actions to restore freshwater ecosystems to a healthy state. The Commissioner for Fisheries and Oceans[93] will also contribute to the Strategy, which incentivises integrating swimway conservation in both documents following a source-to-sea approach.

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[88] European Environment Agency, European Union 8th Environment Action Programme: Monitoring report on progress towards the 8th EAP objectives 2023 edition, 2023
[89] European Commission, Political Guidelines for the next European Commission 2024-2029, 2024.
[90] European Council, Strategic agenda 2024-2029, 2024.
[91] European Commission, Europe's Choice – Political Guidelines for the next European Commission 2024-2029, 2024.
[92] European Commission, Mission letter from Ursula von der Leyen, President of the European Commission, to Jessika Roswall, Commissioner for Environment, Water Resilience and a Competitive Circular Economy
[93] Questionnaire to the Commissioner-designate Costas Kadis – Fisheries and Oceans, 2024.

The Water Resilience Strategy is still under development, which leaves room to ensure it is sufficiently ambitious to deliver on its main objective most relevant to SEI conservation: restoring and protecting the broken water cycle. Water availability and uses are highly political themes, riddled with disinformation in public debates and political campaigns to win the opinion of voters. In the context of growing pressure for environmental deregulation, grey infrastructures such as water reservoirs and maladaptation, it is important to ensure that the proposed Strategy does not fall short on its promises.

Policy recommendations

- Ensure that the Strategy prevents grey-infrastructure and maladaptation and upholds NRL's free-flowing river target and freshwater ecosystems restoration commitments.
- Ensure that the ecological requirements of freshwater fish such as respecting ecological water requirements are included in the Strategy.
- Align funding dedicated to addressing the water investment gap with the biodiversity funding gap[94] by directing investments toward freshwater ecosystems conservation and restoration, focusing on swimways in water-scarce regions.

[94] Euronatur, Joint Statement – Unlocking funds for nature : how the next EU Budget must deliver for biodiversity, 2024.

3.14 EU Oceans Pact

3.14.1 Introduction

In the Commission Priorities for 2024-2029[95], the President of the Commission pledged the production of a new European Oceans Pact and subsequently she appointed a new Commissioner for Fisheries and Oceans.

Similarly to the Water Resilience Strategy, this document is still at a very early stage of development. The Mission letter for the Commissioner for Fisheries and Oceans[96] and his oral and written responses[97] to MEPs ahead of his confirmation have disclosed a few elements of this future Strategy.

3.14.2 Key provisions

The European Oceans Pact is intended to be a '*single strategic reference framework for all ocean-related policies*[98] ensuring coherence across all policy areas linked to the oceans. It will likely guide the EU's position on ocean diplomacy, aiming to confirm its '*leading role in setting the ocean agenda at global level*'[99].

Commissioner Kadis notably mentioned the plan will strive to reconcile '*the need for nature protection and offshore renewable energy […] with the needs of the fisheries and aquaculture sectors*'[100]. The balance between sustaining a competitive and resilient blue economy and ensuring that marine ecosystems are effectively preserved will be a challenge, although the ambitions on the marine environment shall be upheld if the EU wishes to present this plan at the UN Ocean Conference in June 2025.

The Fisheries and Oceans Commissioner promised '*to ensure targets to protect our seas'* and '*its biodiversity will be achieved during this mandate*'. He promised that the Oceans Pact will adopt an ecosystem-based approach to the management and use of seas, oceans and related blue economy[101]. Ensuring enhanced protection and conservation of marine ecosystems, including marine habitats of diadromous fish, shall be helped by a strong commitment to improve ocean knowledge, notably through investments in research and innovation. This commitment is already exemplified through the EU Mission 'Restore our Ocean and Waters'[102], which amended the Horizon Europe work programme to unlock funding opportunities directly targeting freshwater and marine ecosystems.

3.14.3 Opportunities within the institutional cycle

The European Oceans Pact is likely to emphasise environmental requirements already entailed in existing pieces of EU legislation such as the Marine Strategy Framework Directive, Common Fisheries Policy, Water Framework Directive and Habitats and Birds Directives. Our ambitions on this file are aligned with the ones

[95] European Commission, Europe's Choice – Political Guidelines for the next European Commission 2024-2029, 2024.
[96] European Commission, Mission letter from Ursula von der Leyen, President of the European Commission, to Costas Kadis, Commissioner-designate for Fisheries and Oceans, 17 September 2024.
[97] Questionnaire to the Commissioner-designate Costas Kadis – Fisheries and Oceans, 2024.
[98], 99, 100,101 Ibid.
[102] European Commission, EU Mission : Restore our Oceans and Waters, 2024.

shared in the Blue Manifesto, a roadmap for a healthy ocean developed and supported by numerous environmental NGOs[103]. A source-to-sea approach to ecosystems protection, conservation and sustainable use will be crucial for Swimways conservation. With Commissioner Kadis will also work on the Water Resilience Strategy, it is expected that both documents will deliver on environmental objectives in this source-to-sea approach, from streams through rivers and estuaries to oceans.

Policy recommendations

1. Apply a sea-to-source approach to the preservation of the marine environment in the Oceans Pact using swimways as practical geographic units to deliver on diadromous fish conservation.
2. Dedicate a section of the Oceans Pact to diadromous fish conservation (commercially and non-commercially exploited) with commitments to enhance protection of their marine habitats, monitoring of their marine life-stages and to limit the pressures they face therein.
3. Maintain financial support to diadromous fish and habitat conservation through EMFAF, LIFE funds, Cohesion Fund, European Structural and Investment Fund.

[103] Seas at Risk et al, Blue Manifesto : The roadmap to a healthy ocean in 2030, 2024.

4 LIST OF ABBREVIATIONS

AAs: Acceleration Areas (under RED)

CAP: Common Agricultural Policy

CFP: Common Fisheries Policy

EIFAAC: European Inland Fisheries and Aquaculture Advisory Council

EMFAF: European Maritime, Fisheries and Aquaculture Fund

EMPs: Eel Management Plans (under Eel Regulation)

EU: European Union

FAO: Food and Agriculture Organization of the United Nations

FCS: Favourable Conservation Status (under Birds and Habitats Directive)

FLAGs: Fisheries Local Action Groups

GBF: Global Biodiversity Framework

GES: Good Ecological Status (under WFD)

GES: Good Environmental Status (under MSFD)

GFCM: General Fisheries Commission for the Mediterranean

HELCOM: Baltic Marine Environment Protection Commission (or Helsinki Commission)

IAS: Invasive Alien Species

IASEG: Invasive Alien Species Expert Group (under IAS Regulation)

ICES: International Council for the Exploration of the Sea

IUCN: International Union for Conservation of Nature

MFF: Multiannual Financial Framework

MPAs: Marine Protected Areas (under MSFD)

MSFD: Marine Strategy Framework Directive

NADEG: Nature Directives Expert Group (under Birds and Habitats Directive)

NNRPs: National Nature Restoration Plans (under NRL)

NRL: Nature Restoration Law (also NRR – Nature Restoration Regulation)

OSPAR: Convention for the Protection of the Marine Environment of the North-East Atlantic

PANEUAP: Pan-European Sturgeon Action Plan

PAs: Protected Areas

RBMPs: River Basin Management Plans (under WFD)

RED: Renewable Energy Directive

SACs: Special Areas of Conservation (under Habitats Directive)

SCIs: Sites of Community Importance (under Habitats Directive)

SEIs: Swimways of European Importance

SPAs: Special Protection Areas (under Birds Directive)

UN: United Nations

WFD: Water Framework Directive

WGEEL: Working Group on Eels (under ICES)

Further information

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Wetlands International Europe

Inspiring and mobilizing society to safeguard and restore wetlands

Wetlands International Europe is the single network organization in Europe united by the vision of a world where wetlands are treasured and nurtured for their beauty, the life they support and the resources they provide.