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Joana Boavida-Portugal, Elisabeth Julien, Pedro R. Almeida, Carlos Alexandre, Sara Silva, Bernardo Quintella, Rui Monteiro, Inês Oliveira, Ana Filipa Belo, José Lino Costa, Ciara O'Leary, Anthony Brett, Russell Poole, Rufino Vieira, Laurent Beaulaton, Geraldine Lassalle, Aurore Baisez, Catarina Mateus

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Document abstract

This document presents an overview of the current legislation and common management practices for diadromous fishes across the Atlantic Area (Portugal, Spain, France and Ireland), produced within the scope of Work Package 4 of the DiadSea project. We give an overview of the shared EU framework, national and regional contexts which shape management priorities and approaches. Diadromous fish populations in the region face a range of complex pressures, and the management responses - including regulatory measures, scientific knowledge, habitat restoration and community involvement- are implemented through cooperation between agencies, research institutions and local stakeholders.

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3 Abbreviations

Abbreviations	
CCDR-N	*Comissão de Coordenação e Desenvolvimento Regional do Norte*
CFP	Common Fisheries Policy
COGEPOMI	*Comité de Gestion des Poissons Migrateurs (comittee for migratory fish managment)*
DF	Diadromous Fishes
DGRM	*Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos*
EC	European Commission
EEC	European Economic Community
EMP	Eel Management Plan
EPA	Environmental Protection Agency
ERDF	European Regional Development Fund
ESB	Electricity Supply Board
EU	European Union
GNR-SEPNA	*Guarda Nacional Republicana-Serviço de Protecção da Natureza e do Ambiente*
GNR-UCC	*Guarda Nacional Republicana-Unidade de Controlo Costeiro e de Fronteiras*
ICNF	*Instituto da Conservação da Natureza e das Florestas*
IFI	Inland Fisheries Ireland
INRAE	*L'Institut national de recherche pour l'agriculture, l'alimentation et l'environnement*
IPMA	*Instituto Português do Mar e da Atmosfera*
MPA	Marine Protected Area
MSFD	Marine Strategy Framework Directive
OFB	Office Français de la Biodiversité
PSP	*Polícia de Segurança Pública*
SAC	Special Areas of Conservation

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Views and opinions expressed are those of the author(s) only and do not necessarily reflect those of the European Union or the Norte Portugal Regional Coordination and Development Commission (Comissão de Coordenação e Desenvolvimento Regional do Norte - CCDR-N). Neither the European Union nor the granting authority / CCDR-N can be held responsible for them.

5 Summary

5.1 Summary (EN)

Across the Atlantic Area (Portugal, Spain, France and Ireland), the management of diadromous fishes is shaped by a shared foundation of EU legislation, national policies and local contexts. Portugal, Spain, France and Ireland all operate under the Water Framework Directive, Habitats Directive, Marine Strategy Framework Directive and the Eel Regulation, leading to aligned objectives focused on restoring river connectivity, improving water quality and ensuring sustainable or reduced resource exploitation. Diadromous fish in the Atlantic Area face pressures from hydropower barriers, pollution, invasive species, illegal fishing and climate change. The threatened state of the resource and its associated ecosystem services, as well as the many stakeholders make sustainable management of the resource complex. Different national and regional contexts (e.g. varying pressures, such as the extent of hydropower development, habitat degradation, and the socio-economic relevance of local fisheries) produce distinct management concerns and priorities in the countries of the Atlantic Area. The main management tools for diadromous fishes include scientific research, regulatory fishing measures, habitat restoration, and community engagement, implemented through cooperation between governmental agencies, research institutions and local communities. While France and Ireland follow more restrictive conservation strategies concerning extractive use of the resource, Spain and Portugal continue to support small-scale traditional fisheries where stocks and social importance allow. While diadromous fish management in Ireland and Portugal is centralized, regional governance and basin-level authorities influence policy application in France and Spain. The monitoring and enforcement of compliance pose a significant challenge in the face of illegal fishing of diadromous species, which occurs across all regions. The countries of the Atlantic Area are converging toward increasingly restrictive, science-based, and habitat- centred management approaches, reflecting the declining status of many diadromous fish populations and the shared need for coordinated management at local, regional, national and international scale.

5.2 Resumo (PT)

Na área atlântica (Portugal, Espanha, França e Irlanda), a gestão dos peixes diádromos esta baseada na legislação da UE, políticas nacionais e contextos locais. Portugal, Espanha, França e Irlanda operam ao abrigo da Diretiva-Quadro da Água, da Diretiva Habitats, da Diretiva-Quadro Estratégia Marinha e do Regulamento da Enguia, o que conduz a objetivos alinhados, centrados na restauração da conectividade fluvial, na melhoria da qualidade da água e na exploração sustentável ou reduzida dos recursos. Nestes países, os peixes diádromos enfrentam pressões decorrentes de barragens hidroelétricas, poluição, espécies invasoras, pesca ilegal e alterações climáticas. O estado ameaçado do recurso e dos serviços ecossistémicos associados e as diversas partes interessadas (“stakeholders”) tornam a gestão sustentável um desafio. Os diferentes contextos nacionais e regionais (por exemplo, pressões variáveis, tais como a extensão do desenvolvimento hidroelétrico, a degradação do habitat e a relevância socioeconómica das pescas locais) geram preocupações e prioridades de gestão distintas nos países da Área Atlântica. Os principais instrumentos de gestão das espécies diádromas incluem a investigação científica, regulamentação da pesca, a restauração de habitats e o envolvimento das comunidades, implementados através da cooperação entre organismos governamentais, instituições de investigação e comunidades locais. Enquanto a França e a Irlanda seguem estratégias de conservação mais restritivas quanto à extração do recurso, a Espanha e Portugal continuam a apoiar a pesca tradicional, onde as populações e a importância social o permitem. Enquanto a gestão dos peixes diádromos na Irlanda e em Portugal esta centralizada, a governação regional e as autoridades a nível da bacia hidrográfica influenciam a aplicação das políticas em França e Espanha. A monitorização e a aplicação das normas de conformidade representam um desafio significativo perante a pesca ilegal

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de espécies diádromas, que ocorre em todas as regiões. Os quatro países estão a convergir para uma gestão cada vez mais restritiva, baseada na ciência e centrada no habitat, refletindo o declínio de muitas populações de peixes diádromos e a necessidade comum de uma recuperação coordenada à escala local, regional, nacional e internacional.

5.3 Résumé (FR)

Dans la zone atlantique (Portugal, Espagne, France, Irlande), la gestion des poissons diadromes repose sur un socle commun constitué de la législation européenne ainsi que sur des politiques nationales et des contextes locaux. Ces pays appliquent tous la directive-cadre sur l'eau, la directive «Habitats», la directive-cadre «Stratégie pour le milieu marin» et le règlement sur l'anguille, ce qui se traduit par des objectifs axés sur la restauration de la connectivité fluviale, l'amélioration de la qualité de l'eau et la garantie d'une exploitation durable ou réduite des ressources. Les poissons diadromes de la zone atlantique sont soumis à des pressions liées aux barrages hydroélectriques, à la pollution, aux espèces invasives, à la pêche illégale et au changement climatique. L'état menacé de la ressource et des services écosystémiques qui y sont associés, ainsi que les nombreux partis preneurs («stakeholders») concernés rendent la gestion durable complexe. Les différents contextes nationaux et régionaux (par exemple, les pressions variables, telles que l'ampleur du développement hydroélectrique, la dégradation des habitats et l'importance socio-économique des pêcheries locales) génèrent des préoccupations et des priorités de gestion spécifiques à chaque pays de la zone atlantique. Les principaux outils de gestion des espèces diadromes comprennent la recherche scientifique, la réglementation de la pêche, la restauration des habitats et l'implication des communautés, mis en œuvre grâce à la coopération entre les autorités publiques, les institutions de recherche et les communautés locales. Alors que la France et l'Irlande suivent des stratégies de conservation plus restrictives au niveau de l'exploitation extractive des ressources, l'Espagne et le Portugal continuent de soutenir la pêche traditionnelle à petite échelle lorsque les stocks et l'importance sociale le permettent. Si la gestion des poissons diadromes est centralisée en Irlande et au Portugal, la gouvernance régionale et les autorités au niveau des bassins fluviaux influencent la gestion en France et en Espagne. La réglementation et le contrôle du respect des règles constituent un véritable défi face à la pêche illégale des poissons diadromes, présente dans toutes les régions. Les pays de la zone atlantique convergent vers des approches de gestion de plus en plus restrictives, fondées sur la science et axées sur l'habitat, reflétant le déclin de nombreuses populations de poissons diadromes et la nécessité commune d'une restauration coordonnée à l'échelle locale, régionale, nationale et internationale.

5.4 Resumen (ES)

En la zona atlántica (Portugal, España, Francia e Irlanda), la gestión de los peces diádromos se basa en un fundamento común de legislación de la UE, políticas nacionales y contextos locales. Portugal, España, Francia e Irlanda operan en virtud de la Directiva Marco del Agua, la Directiva sobre Hábitats, la Directiva Marco sobre la Estrategia Marina y el Reglamento sobre la Anguila, lo que da lugar a objetivos alineados y centrados en restaurar la conectividad fluvial, mejorar la calidad del agua y garantizar una explotación sostenible o reducida del recurso. En todos estos países, los peces diádromos se enfrentan a presiones ligadas a las centrales hidroeléctricas, la contaminación ambiental, las especies invasoras, la pesca ilegal y el cambio climático. El estado de amenaza del recurso, sus servicios ecosistémicos y las diversas partes interesadas («stakeholders») hacen que la gestión sostenible sea compleja. Los diferentes contextos nacionales y regionales (por ejemplo, las diferentes presiones locales, como el alcance del desarrollo hidroeléctrico, la degradación del hábitat y la relevancia socioeconómica de la pesca local) generan

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preocupaciones y prioridades de gestión distintas en los países de la zona atlántica. Las principales herramientas de gestión de las especies diádromas incluyen la investigación científica, la reglamentación pesquera, la restauración de hábitats y la participación comunitaria, aplicadas mediante la cooperación entre organismos gubernamentales, instituciones de investigación y comunidades locales. Mientras que Francia e Irlanda siguen estrategias de conservación más restrictivas (a nivel de actividad extractiva del recurso), España y Portugal siguen apoyando la pesca tradicional a pequeña escala cuando las poblaciones y la importância social lo permiten. Mientras que la gestión de los peces diádromos en Irlanda y Portugal está centralizada, en Francia y España la aplicación de las políticas está influenciada por la gobernanza regional y las autoridades a nivel de bacias hidrográficas. Los cuatro países están convergiendo hacia una gestión cada vez más restrictiva, basada en la ciencia y centrada en el hábitat, lo que refleja el estado de muchas poblaciones de peces diádromos y la necesidad compartida de una recuperación coordinada a escala local, regional, nacional e internacional.

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6 Introduction

The Atlantic Area, which includes the coastal and riverine systems of countries such as Portugal, Spain, France and Ireland, is home to numerous diadromous fish species such as shads (*Alosa alosa* and *Alosa fallax*), European eel (*Anguilla anguilla*), sea lamprey (*Petromyzon marinus*), and Atlantic salmon (*Salmo salar*). Diadromous fishes possess inherently complex life cycles, characterized by obligatory migrations between freshwater and marine ecosystems at key developmental stages. They play essential ecological roles and support important socio-economic activities across their distribution ranges. Diadromous species are classified as anadromous or catadromous according to the location of their reproduction. Anadromous species—such as salmon, sea lamprey and shads— spend most of their adult lives at sea and migrate into rivers to spawn. Conversely, catadromous species, including eels and mullets, grow and mature in freshwater or estuarine habitats and return to the ocean to reproduce. Because of these extensive migrations, diadromous fish frequently cross multiple administrative boundaries, river basins and national jurisdictions, making their effective management inherently transboundary. Ecologically, they act as key components of aquatic food webs, contribute to nutrient transfer between ecosystems, and help maintain biodiversity and ecosystem functioning. Economically and culturally, they support traditional and commercial fisheries, provide recreation opportunities, and hold strong heritage value in many riverine and coastal communities. Despite their importance, numerous diadromous fish populations have undergone marked declines in recent decades in the Atlantic Area. Habitat loss and fragmentation—particularly due to dams and weirs—along with water pollution, invasive species, climate change impacts and unsustainable or illegal fishing have all contributed to their deteriorating status.

In response, countries within the Atlantic Area have developed a robust framework of legislation and management practices aimed at conserving diadromous species and their habitats. These measures are guided by international agreements, European Union directives, and national and regional laws, and are complemented by habitat restoration efforts, scientific monitoring, and community involvement.

This framework prioritizes sustainable use and long-term recovery of declining populations. Key strategies include habitat restoration through the removal of barriers to migration, strict fishing regulations such as catch limits and closed seasons, and the designation of protected areas for critical habitats. Collaborative management, involving government agencies, research institutions, and local stakeholders, ensures that conservation objectives align with socio-economic needs.

This document examines the current legislative frameworks and management practices across the Atlantic Area, highlighting efforts to balance biodiversity conservation with the sustainable use of diadromous fish populations.

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7 Current legislation and common management practices of diadromous fishes in the AA region

7.1 Diadromous Fish Management at EU Level

In member states of the EU, the management of diadromous fishes such as shads (*Alosa alosa* and *Alosa fallax*), European eel (*Anguilla anguilla*), sea lamprey (*Petromyzon marinus*), and Atlantic salmon (*Salmo salar*) is framed by European Union directives, national laws, and local practices (Figure 1). These efforts aim to balance conservation with sustainable fishing practices, recognising the ecological, cultural, and economic importance of these species.

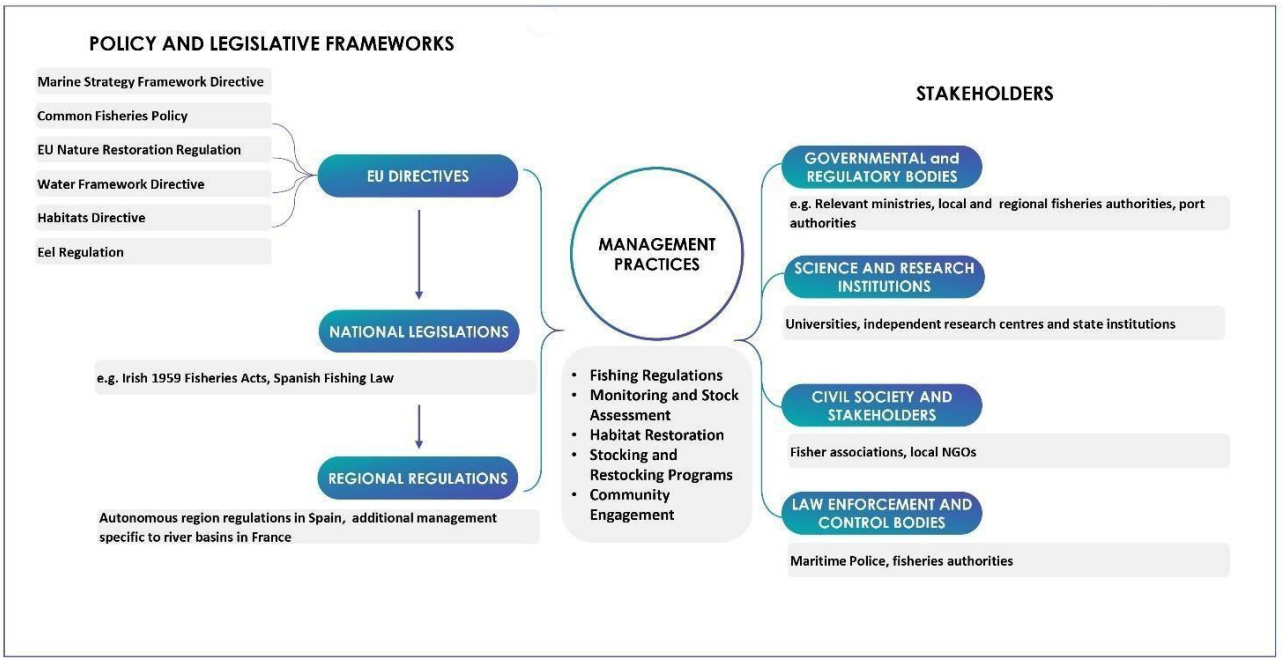

Figure 1. Overview of current frameworks and actors influencing diadromous fish management across the AA.

7.1.1 Legislation

European Legislation:

- **Water Framework Directive (WFD)** (2000/60/EC): Establishes goals for achieving good ecological status in aquatic ecosystems, emphasizing the protection of migratory pathways and habitats.
- **Habitats Directive** (92/43/EEC): Provides legal protection to habitats and species, requires member states to design conservation sites such as Special Areas of Conservation (SACs) (e.g., spawning and nursery grounds for shad and salmon).
- **Eel Regulation** (EC 1100/2007): Requires identifying and defining individual river basins within a national territory that constitutes natural habitats for the European eel, which may include maritime waters, and create an Eel Management Plan. If properly justified, the entire national territory can be designated as one eel management unit, thus one Eel Management Plan.

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- **Marine Strategy Framework Directive (MSFD)** (Directive 2008/56/EC): Requires improvement of the health of marine ecosystems, protecting critical habitats, and monitoring environmental pressures. The MSFD can complement other legislation, to help protect diadromous fish species across both their marine and freshwater environments.
- **Common Fisheries Policy (CFP):** The CFP is a set of EU rules aimed at conserving fish stocks, managing fishing fleets and guaranteeing incomes and stable jobs for fishers.
- **EU Nature Restoration Regulation** (EU Regulation 2023/1115): Regulation including target of restoring connectivity to 25,000 km of European rivers.

7.1.2 Conservation status

The conservation status of diadromous fishes in the Atlantic Area (AA) — namely *Alosa alosa, A. fallax, Anguilla anguilla, Petromyzon marinus* and *Salmo salar* — reflects widespread population declines and fragmented recovery efforts across Europe. These species are listed under various conservation frameworks, including the **IUCN Red List**, the **European Red List of Freshwater Fishes**, and the **National Red Lists of Portugal, Spain, France, and Ireland**. Their status categories highlight a continuum of concern, from **Least Concern (LC) to Critically Endangered (CR),** depending on species, life stage, and regional context.

Among these, the **European eel (*Anguilla anguilla*)** remains one of the most critically threatened species in Europe. It is listed as **Critically Endangered (CR**) by the IUCN due to drastic declines (>90 %) in recruitment since the 1980s, driven by a combination of overexploitation, habitat fragmentation, pollution, parasitism, and oceanic climate changes. Despite the implementation of the **EU Eel Regulation (EC 1100/2007)**, recovery has been limited, and recruitment remains at historically low levels.

The **Allis shad (*Alosa alosa*) and Twaite shad (*Alosa fallax*)** are both listed as **Vulnerable (VU)** on the European Red List and most national assessments, due to extensive habitat loss, river barriers blocking spawning migrations, and hybridisation between species. While some local recovery efforts (e.g. reintroduction and dam removal in French and Iberian rivers) have shown positive signals, populations remain fragmented and below historical abundance.

The **Atlantic salmon (*Salmo salar*),** an iconic species of high ecological and cultural importance, is globally listed as **Least Concern (LC)** but classified as **Vulnerable (VU)** or **Endangered (EN)** in several European regions, including parts of the Iberian Peninsula, where southern populations are at the limit of their climatic tolerance. Declines are linked to hydropower barriers, water abstraction, temperature rise, and reduced marine survival. Conservation measures under the **Habitats Directive** and **WFD River Basin Management Plans** have led to local improvements in habitat connectivity, though recovery remains uneven.

The **Sea lamprey (*Petromyzon marinus*)** presents a more complex picture. While it is **Least Concern (LC)** at the global IUCN level, regional populations in the AA show considerable variability. In Portugal and parts of Spain, where lamprey supports traditional fisheries, the species is still locally abundant but under increasing pressure from habitat degradation and illegal harvest. In northern regions (*e.g.* Ireland, France), populations are more stable but face similar barriers to migration and climate-induced habitat alterations.

Overall, the conservation status of diadromous fishes in the Atlantic Area underscores a **shared conservation concern** across Member States, despite differing local trends. National Red Lists often reflect finer-scale data, revealing higher concern categories for local populations than global assessments. Monitoring programmes and population indicators from the **Water Framework Directive,**

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Habitats Directive, and Eel Management Plans provide essential, but often fragmented, information on status and trends. This heterogeneity calls for **harmonised transnational monitoring and adaptive management frameworks** that can capture the dynamic responses of these species to cumulative pressures and climate change. The current conservation designations are summarized in **Table 1**, which compiles the status of diadromous species of interest according to **IUCN, European Red List, and National Red List**s.

*Table 1. Conservation status of diadromous species of interest, as per National Red Lists, European Red List and IUCN Red list. In order of concern: Data Defficient (DD), Least Concern (LC) in blue < Near Threatened (NT) in green < Vulnerable (VU) in yellow< **Endangered (EN)** in orange < **Critically Endangered (CR)** in red. Sources: IUCN (2023), European Red List of Freshwater Fishes (2022), National Red Lists of Portugal (ICNF, 2023), Spain (MITECO, 2022), France (INPN, 2023), Ireland (NPWS, 2022).*

	Portugal	Spain	France	Ireland	Europe (European Red List)	Global status (IUCN Red List)
Alosa alosa	VU	EN	VU	NT	VU	VU
Alosa falax	NT	VU	NT	NT	NT	VU
Anguilla anguilla	CR	CR	CR	CR	CR	CR
Petromyzon marinus	NT	LC	LC	LC	LC	LC
Salmo salar	EN	VU	NT	NT	LC	NT

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8 Legislation and management in AA National Contexts

The following sections (7.2–7.5) provide a comparative overview of current management systems in Portugal, Spain, France, and Ireland, following a consistent structure that examines national legislation, management practices, key agencies, recreational fishing rules, enforcement mechanisms, and the main challenges each country faces. This approach highlights both shared priorities and country-specific differences, offering insight into how EU-level requirements are translated into national policy and on-the-ground action for the conservation of diadromous fish species.

8.1 Portugal

8.1.1 Legislation

National Legislation:

- **National Fisheries Law**: Regulates fishing activities, including closure seasons, size limits, and gear restrictions, to ensure sustainable management.
- **National Fishing in Inland Waters law**: Regulates fisheries in inland waters, under the Nature Conservation and Forests Institute - *Instituto da Conservação da Natureza e das Florestas*- (ICNF) jurisdiction (e.g. Decree Law No. 112/2017; Law nº 7/2008, modified by Decree Law No. 221/2015 1.st Series and Decree Law No. 97/2021 - 1.st Series).
- **Decree Law No 73/2020**: Regulates the exercise of commercial maritime fishing and establishes the legal regime applicable to the authorisation, registration and licensing of ships or vessels used in this activity.
- **Protected Areas Designation**: Some sections of critical rivers and estuaries for diadromous belong to protected areas, and international (upstream) sections are included in Portugal's Natura 2000 network, ensuring additional protections.
- **Portuguese Nature Restoration Law:** National transposition of EU Nature Restoration Regulation.

Regional and Local Regulations:

- Besides the general legislation applicable at sea and the one applied in inland waters, each river basin and coastal system has specific legislation regulating fishing areas, closures, licensing, gear regulation and other aspects of fishing activities.
- International river basins such as the Guadiana and Minho basins have specific regulations tailored to the status of local fish populations.

8.1.2 Management Practices

1. **Habitat Restoration**:
   - **Dam removal and fish passages**: Efforts to remove barriers or install fish passes in rivers (Mondego, Vouga and Lima) to facilitate migration.
   - **Spawning ground restoration**: Projects to rehabilitate gravel beds and improve water quality in critical habitats.
   - **Water quality improvement measures**: Including water treatment plants construction and riverbed rehabilitation of highly polluted areas.

2. **Fishing Regulations**:

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1. Shads (*Alosa alosa* and *Alosa fallax*)

- **Legislation**:
  Allis and twaite shad are listed in Habitats Directive and Bern Convention (Decree-Law nº 140/99, of April 24th, as amended by Decree-Law nº 49/05, of February 24th, annexes B-II and B-V, transposition of the Habitats Directive 92/43/EEC, of May 21st 1992; Decree-Law nº 316/89 of 22 September, transposition into national legislation of the Convention of Bern, Annex III). Both species are targeted by professional fishers in several river basins in Portugal under the Directorate-General for Natural Resources, Safety and Maritime Services -*Direção-Geral de Recursos Naturais, Segurança e Serviços Marítimos*- (DGRM) and Institute for ICNF jurisdiction. Besides the general fisheries policy, each system has its specific regulation which determines seasonal closures, minimum size limits, gear, license and spatial restrictions.

- **Catch Limit**:
  - **Seasonal closures**: Fishing is typically restricted to a short period during spawning migrations, which occur in late winter and spring. The duration and start of the fishing season are established annually and according to the river basin and is previously defined in a co-management committee with fishers, fisheries administration (ICNF and DGRM), authorities (maritime police, national republican guard- nature and environment protection, and coastal and border control services (*Guarda Nacional Republicana-Serviço de Protecção da Natureza e do Ambiente* (GNR-SEPNA) and *Guarda Nacional Republicana-Unidade de Controlo Costeiro e de Fronteiras* (GNR-UCC)), Public security police (Polícia de Segurança Pública (PSP))) and scientific advisors prior to the start of the fishing season.
  - **Minimum size limits**: These vary but are often set at around 30–35 cm, depending on regional regulations.
  - **Gear restrictions**: Only specific, regulated gear types, with determined minimum mesh size, are allowed to minimize bycatch and juvenile mortality. Gear type legislation may vary according to the river system.
  - **License restrictions:** A specific license is needed to harvest these species in inland waters. License attribution is limited according to the fishing area.
  - **Spatial restrictions:** Professional inland fisheries targeting these species operate in determined river/estuary sections, with restrictions (for example regarding proximity to weirs and dams). Shads are not a target fishery in Portuguese maritime waters and are therefore subject to bycatch limits (30% of catch).

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2. European Eel (*Anguilla anguilla*):

Figure 2. European eel, Anguila anguila.

- **Legislation**:
  Portugal has an Eel Management Plan – *Plano de Gestão da Enguia* - that includes all national territory, and a transboundary Eel Management Plan in River Minho (*Plano de Gestão da Enguia no Troço Internacional do Rio Minho*). In inland waters, a special eel fishing license is mandatory (Portaria No 385-A/2017). The National Eel Management Plan byelaws implement the EU Eel Regulation with the following measures:

  Glass eels (juveniles):
  Forbidden in all national territory, under Regulatory Decree No 7/2000 (excluding the international part of the River Minho, where eel fishery was banned separately in 2011 by Edital No 32/2011).

  - In River Minho, under Eel Management Plan in River Minho, 100 fishing permits are given under certain conditions:
  - **Quotas**: Each fisher can catch 2 kilograms per night, during the new moon.
  - **Fishing season**: Limited to the new moon periods (the period between the third and the first lunar quarter) during the migration period (e.g., November to March).
  - **Gear restrictions**: Specific gear such as “tela" when fishing by boat, or "peneira” when fishing from the riverbank.

  Yellow/silver eels (adults):

  - A **three-month fishing closure** is mandated annually in all national territory, covering the peak of downstream spawning migration period between October and December. There are additional specific legislations in the professional fisheries zone of Santo André Lagoon, where traditional fishing communities are involved in co-management practices.

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- **Size limits**: Minimum size for capture is 22 cm (excluding River Minho where yellow or silver eel fishing is forbidden).
- Ban on recreational eel fishery in maritime jurisdiction (Portaria No 14/2014) and in freshwater jurisdiction (Portaria No 108/2018).
- Eel fishing has been banned in the international section of the River Minho since 2011 (Edital no. 32/2011).

3. Sea Lamprey (*Petromyzon marinus*)

- **Legislation**:

  Petromyzon marinus is listed in Annex II of the European Union Habitats Directive (92/43/EEC), which lists animal and plant species of interest to the European Community whose conservation requires the designation of SACs by member states. Sea lamprey is also listed in the OSPAR convention list (Convention for the Protection of the Marine Environment of the North- East Atlantic) of threatened and/or declining species, and their European populations are protected by Annex B-II of the European Habitats Directive and Annex III of the Bern Convention.

- **Catch limits:**
  - **Seasonal restrictions:** Fishing is restricted to a short period during the main migration periods (late winter to spring). The duration and start of the fishing season are established annually and according to the river basin. Restrictions are determined in a co-management committee with fishers, fisheries administration, authorities and scientific advisors prior to the start of the fishing season.
  - **Spatial restrictions**: Demarcation of areas in the river where fishing is prohibited.
  - **Gear restrictions**: Traditional methods such as nets and traps are regulated to ensure sustainability (e.g., a maximum height and length of the nets; harpoon-like gear ('galheiro' and 'bicheiro') only permitted to be used as a fishing aid; fishing weir ('pesqueira' or "botirão" according to regions) properly licensed and identified; specific width of the net meshes; maximum number of nets).
  - **Quotas**: Some local regulations impose annual or seasonal quotas for commercial fishers (e.g., limited number of catches per day; fixed minimum size of individuals).
  - **License restriction:** A specific license is needed to harvest this species in inland waters. Number of licenses is limited.

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Figure 3. Traditional sea lamprey fishing traps ("botirão") in River Mondego.

4. Atlantic Salmon (*Salmo salar*)

- **Legislation**:
  For in-river waters, salmon fisheries are regulated Law No 112/2017 of 6th of December which prohibits fishing in River Lima, obligating catch and release. Regulation No 8 2008 of 9th of April regulates recreational and commercial fishing for the Minho River International Section, setting bans, size limits, gear authorizations and licensing. For coastal and estuarine waters, professional and recreational salmon fisheries are regulated by Regulation No 43/87 of 17th of July (altered by Regulation No 7/2000 of 30th of May), and Ordinance No 561/90 of 19thof July (altered by Ordinance No 1220/2010 of 3rd of December) for rivers Minho and Lima respectively. These regulate the fisheries through gear permissions, fishing bans and areas of permission and licenses.

- **Catch limits:**
  - **Prohibition of commercial fishing**: In Portugal, salmon fishing is primarily for recreational purposes and is heavily regulated. Commercial fisheries are only allowed in the international section of Minho River basin. In Minho, commercial fisheries are only allowed in April-May, and recreational fisheries between March and June.
  - **Seasonal restrictions**: Seasonal closures during spawning migrations (usually October to February) and minimum size limits of 55 cm (in Minho River).
  - **Bag limits**: Commercial fisheries have no catch limit, but recreational fishers are only allowed to catch 1 fish per day/boat.

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- **Protected areas**: In Portugal, River Minho is the only place where salmon fisheries are allowed, although, even in Minho River basin, the Minho tributaries have complete bans to protect spawning stocks.

3. **Stocking and Restocking Programs:**
   - Artificial propagation of Atlantic salmon and restocking efforts in rivers with declining populations, such as the Minho River, but without any following monitoring program.
   - Translocation of lampreys caught by fishers to spawning grounds has been experimentally conducted in Lima River in 2023 (fisher initiative). Similar pilot actions have been carried out in March and April 2025 in Mondego and Douro River. In the Mondego basin, the initiative was led by local municipalities.
   - Experimental eel restocking was carried out in the Mondego basin. Impact monitoring of the restocking was conducted.

4. **Monitoring and Stock Assessment**:
   - Annual population assessments are conducted by the Portuguese Institute for the Sea and Atmosphere (IPMA), regional authorities and research institutes/universities (e.g. MARE/University of Évora, MARE/FCUL and CIEMAR in the case of the eel).
   - **Scientific surveys and monitoring** include studies using tagging and telemetry to track migration routes and assess the impact of management measures (e.g., fish pass construction or retrofitting), fishers' surveys, electrofishing campaigns, net and trap deployment, visual counts at fish passes, genetic studies, among other methods. For eels, there are also parasitological and population structure analyses, and analyses of impact of fisheries management measures.

   - **Scientific projects** aiming at habitat restoration, monitoring and fishers' engagement have been increasing the available knowledge on these species and improving their conservation and management. Examples: Habitat restoration for diadromous fish in River Mondego (2013-15); An@dromos (2018-2021); DiaDES (2019-2022); DiadSea (2023-2026); LifeAgueda (2017-2022); Migramiño-minho (2014-2020); Pelsa (2016); Sudoang (2018-2021).

   - **Eel Management Plan:** A monitoring programme under the DCF has been in place since 2017, collecting data on the eel population for each EMU to estimate production and silver eel escapement.

5. **Community Engagement**:
   - Traditional fishing communities are involved in co-management practices, particularly for species like shad, lamprey and eel, where local knowledge is used to inform sustainable practices.
   - Awareness campaigns to promote the conservation of diadromous fishes with different stakeholders and at schools.

8.1.3 Key Agencies and Organizations

- **Portuguese Institute for the Sea and Atmosphere (IPMA)**: Leads research and monitoring efforts for diadromous species.
- **Institute for Nature Conservation and Forests (ICNF)**: Oversees the management of protected areas and enforcement of biodiversity laws.
- **Directorate-General for Natural Resources, Safety and Maritime Services (DGRM):** Develops

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maritime safety and services, including the maritime-port sector, implements policies on fisheries, aquaculture, the processing industry and related activities, the preservation and knowledge of marine resources, ensuring the regulation and control of activities in these areas.

- **Local Enforcement Authorities**: Implement and enforce regional regulations, often in collaboration with traditional fishers (e.g., GNR-SEPNA, Maritime Police, GNR-UCC, PSP).
- **DOCAPESCA**: Registers landings as the port authority.
- **Local fishers' associations:** Represent fishers' interests to the competent authorities and policy makers.
- **Research institutions and NGOs**: Conduct monitoring, advocacy, divulgation and restoration projects.

Figure 4. Scientific monitoring of diadromous fish species. On the picture to the left, acoustic telemetry is used to track trout. On the right, shad is weighed and measured.

8.1.4 Other Considerations

- **Recreational fishing:** Requires a license, is restricted to specific areas, and is subject to stricter limits, including daily bag limits and seasonal closures. Each recreational fisher must register their catches through a notebook system.
- **Protected areas**: Diadromous fish in rivers designated as protected or part of Natura 2000 sites may have stricter regulations or complete bans on fishing. But no protected areas devoted to diadromous fish protection are in place.
- **Reporting requirements**: Fishers are often required to report catches, particularly for European eel, to improve stock assessments. Failure to comply makes fisher ineligible to reapply for a fishing license the following year.

8.1.5 Monitoring and Enforcement

- Managed by **DGRM** on maritime waters and the Portuguese **ICNF** in inland waters.
- Compliance is monitored through patrols and inspections by local authorities such as **Maritime Police** and **National Republican Guard** (GNR-SEPNA and GNR-UCC), and other

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control forces such as PSP and Portuguese Food and Economic Safety Authority (*Autoridade de Segurança Alimentar e Económica*), especially for illegal trade of glass eels.

- Penalties for exceeding limits or fishing during prohibited periods include fines and confiscation of equipment and catch.

8.1.6 Challenges

- **Hydropower infrastructure**:
  - Dams and water diversions on major rivers like Minho, Lima, Douro, Vouga, Mondego, Tagus and Guadiana disrupt migratory routes, requiring continued investment in fish passage solutions and the definition of ecological flows taking into consideration diadromous species requirements.
- **Illegal fishing**:
  - High-value species like glass eels, but also sea-lamprey and allis shad, are subject to poaching, impacting management and stock recovery efforts.
- **Pollution and habitat degradation**:
  - Agricultural runoff, industrial discharges, and urbanization negatively affect water quality and habitats. For example, the Tagus River is being particularly impacted by pollution magnified by the reduction in flow associated with the Tejo-Segura water diversions and the reduction in rainfall due to climate change.
- **Climate change:**
  - Reduced river flows and increasing water temperatures threaten migration patterns and spawning success. In addition, in the case of eel, prolonged droughts contribute to habitat reduction by increasing competition for space and food, which can lead to poor physical condition of individuals and ultimately increased mortality. Increasing natural mortality may also occur at sea.
- **Invasive species:**
  - Introduction of piscivorous non-native fish such as the European catfish (*Silurus glanis*) in some river basins such as the Tagus, combined with rapid population growth, can lead to additional pressure on the species they feed on such as the sea lamprey, allis shad and European eel. In addition, other species such as the red swamp crayfish (*Procambarus clarkii*), may also contribute to the disturbance of the European eel during the settlement period by occupying similar habitats and competing for space, and the introduction of the parasitic nematode *A. crassus* -that acts synergistically with pollution- has a major influence in reducing the quality of the migratory specimens.

Portugal's management of diadromous fishes integrates scientific research, regulatory measures, and habitat restoration to address ecological and socio-economic challenges. Collaboration between governmental agencies, universities, politicians, local communities, and international frameworks is essential for the sustainable management and conservation of these vital species. Catch limits and regulations are reviewed each year and adjusted based on stock assessments and conservation needs, ensuring the sustainability of these ecologically and economically valuable species.

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8.2 Spain

Diadromous fishes in Spain, such as shads (*Alosa alosa* and *Alosa fallax*), European eel (*Anguilla anguilla*), sea lamprey (*Petromyzon marinus*), and Atlantic salmon (*Salmo salar*) are managed through national legislation, regional regulations, and European Union directives. The goal is to balance conservation with sustainable use, especially given the ecological and economic significance of these species.

8.2.1 Legislation

National Legislation:

- **Spanish Fishing Law (Ley 42/2007):** Establishes the framework for managing fishing activities and protecting biodiversity.
- **National Eel Management Plan:** Implements the EU Eel Regulation, setting specific measures such as fishing quotas, closed seasons, and habitat restoration efforts.

Regional Regulations

- Autonomous communities, such as Galicia, Asturias, Cantabria, Navarra and the Basque Country, have additional regulations tailored to local river basins and species populations.

Protected Areas:

- Many rivers with critical habitats for diadromous species are included in Spain's Natura 2000 network, providing additional legal protections.

8.2.2 Management Practices

1. **Habitat Restoration:**
   - Removal or modification of barriers (e.g., dams) to facilitate migration. For example, the Miño and Ulla Rivers have seen efforts to improve migratory pathways.
   - Construction of fish ladders and bypass channels to assist species like salmon and eels.
   - Restoration of degraded spawning and nursery habitats in rivers and estuaries.

2. **Fishing Regulations**:

1. Shads (*Alosa alosa* and *Alosa fallax*)

- **Commercial and recreational fishing**:
  - There is no commercial fishery for these species in Spain.
  - Recreational fishing is only allowed for *A. fallax* and only in the River Ulla (Galicia).
  - **Bag limits**: Typically, 5 fish per angler per day.
  - **Minimum size**: Set at 30 cm.
  - **Seasonal closures**: Fishing is prohibited during spawning migrations (it is only allowed in May and June).
  - **Regional quotas**: Some autonomous communities enforce annual or seasonal quotas for shad fishing.

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2. European Eel (*Anguilla anguilla*)

- **Commercial fishing:**
  - Only professional fishing is allowed in some regions, both for glass eels and adults.
  - Where allowed, only in estuaries, following a strict catch plan and regulating catches based on minimum size limits.
  - Catches recorded through mandatory sale at fish markets.

  Glass eels (juveniles):
  - **Quotas**: Annual quotas are set for each autonomous community under Spain's National Eel Management Plan, developed in accordance with EU Regulation 1100/2007.
  - **Fishing season**: Generally limited to a few days within a few months (depending on the moon phase) during the migration period (e.g., November to March).
  - **Gear restrictions**: Only specific traditional gear types (e.g., small or medium nets with regulated mesh sizes) are allowed.

  Yellow and silver eels (adults):
  - Fishing is heavily restricted or banned in many regions. Only allowed a few days in certain areas where its ethnographic interest has been justified (e.g. four villages in the upper part of the Miño River).
  - Recreational fishing is not allowed.

- **Recreational fishing**:
  - No registered practice of recreational fishing of eel in Spain.

3. Sea Lamprey (*Petromyzon marinus*)

Figure 5. Sea lamprey, Petromyzon marinus.

- **Commercial fishing**:
  - Traditional fisheries for sea lamprey exist in specific rivers, such as the Miño and Ulla, with quotas and seasonal restrictions.
  - Fishing is permitted only during specific periods (from January to April).
  - Catch monitoring and recording through mandatory sales at fish markets.

- **Recreational fishing:**
  - Not allowed.

4. Atlantic Salmon (*Salmo salar*)

- **Commercial fishing**:
  - **Prohibited in Spain**: All salmon fisheries are recreational and subject to strict regulations (and banned on the Bidasoa River).

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- **Recreational fishing**:
    - **Bag limits**:
        - Typically, 1 or 2 salmon (depending on region) per angler per season, with annual quotas for each river set by regional authorities.
        - Some rivers enforce a total seasonal quota for recreational catches (e.g., typically, 5-15 salmon are allowed per river per year, but in some rivers in Asturias, over 100 fish per river per year may be caught).
    - **Minimum size**: Varies by region but are often set at 40-45 cm.
    - **Catch-and-release**:
        - In some rivers where salmon populations are critically low, only this type of fishing is allowed and only in specific river stretches.
        - Some regions dedicate specific non-fishing river stretches, or fishing days or seasons exclusively to catch-and-release.
    - **Seasonal closures**: Fishing is prohibited during spawning migrations. The fishing season usually closes in August-September. However, in some places it can be extended from August to October, but only on a catch-and-release basis.

5. Sea Trout (*Salmo trutta*)

- **Recreational fishing**:
    - **Bag limits**: Typically, 2–6 trout per day per angler, varying by region and river status. In the Bidasoa River only catch and release is allowed.
    - **Minimum size**: Set at 19-30 cm in most areas.
    - **Catch-and-release**: The fishing regulations are the same as those for resident trout.
    - **Seasonal closures**: In rivers where sea trout are present, the fishing season is delayed until May 1st to protect the smolt migration. Fishing is prohibited during spawning periods (usually autumn and winter).

Figure 6. Sea trout on measuring table during biological sampling of national rivers.

5. **Monitoring and Stock Assessments**:
    - Regular scientific and regional government surveys and tagging programs to track population trends and assess the effectiveness of management measures.
    - Data collection on fishing activities through mandatory reporting by commercial fishers, but only for salmon and sea trout for recreational fishers.

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6. **Restocking Programs**:
    - Artificial propagation and release of species like salmon and eels in depleted river systems.
    - Restocking efforts are particularly focused on rivers like the Miño, Ulla, Sella, Narcea and Bidasoa.

7. **Community Involvement and Education**:
    - Collaborations with local fishers and communities to promote sustainable practices and compliance with regulations.
    - Public awareness campaigns highlight the importance of diadromous fishes and their conservation.

8. **Marine Protected Areas (MPAs)**:
    - Critical estuarine and coastal zones are part of Spain's MPA network, providing additional protections of diadromous species, particularly juvenile stages but also adult, for e.g. for shads in NW MPAs.

8.2.3 Key Agencies and Organizations

- **Ministry for Ecological Transition and Demographic Challenge (MITECO)**: Oversees the implementation of national and EU conservation policies.
- **Regional fisheries authorities**: Manage local fisheries and enforce regulations in their respective autonomous communities.
- **International Permanent Commission of the Minho River**: The fishing rules in the International Section of the River Minho are set annually by a Joint Commission made up of delegations from Portugal and Spain led by the navies of the two countries (the Naval Command of Minho for Spain and the Captaincy of the Port of Caminha for Portugal), in which representatives of the administrations of the two states also participate.
- **Research institutions and NGOs**: Conduct monitoring, advocacy, and restoration projects.

8.2.4 Recreational Fishing Regulations

- **Licenses**: Required for all diadromous species. Separate permits may be needed for specific species (salmon, sea trout), rivers or regions. Recreational fishing for eels does not occur in Spain.
- **Gear restrictions**:
    - Use of barbless hooks is encouraged or required in catch-and-release waters.
    - Nets and traps are prohibited for recreational use.
- **Reporting obligations**: Recreational anglers may need to report their catches, particularly for salmon, to assist with stock monitoring.

8.2.5 Enforcement

- Managed by regional governments, often through the autonomous communities, with support from national bodies like the **Ministry for Ecological Transition and Demographic Challenge**.
- Monitoring and enforcement are conducted through patrols, electronic reporting systems, and collaboration with local stakeholders.

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8.2.6 Challenges

- **Illegal fishing**: Particularly of high-value species like glass eels or salmon, remains a significant issue.
- **Hydropower and dams**: Barriers on migratory routes continue to impact populations despite mitigation efforts.
- **Climate change**: Altered River flows and temperatures pose long-term threats to diadromous species.

Spain's diadromous fish management integrates science-based policies, local community engagement, and adaptive measures to address conservation challenges, ensuring the long-term viability of these iconic species. Catch limits for diadromous fishes in Spain are guided by national regulations, regional fisheries management plans, and European Union directives. These limits are designed to ensure sustainable fishing practices and support the recovery of vulnerable species, many of which are vital for local ecosystems and traditional fisheries.

8.3 France

Diadromous fishes, including, allis shad (*Alosa alosa*), twaite shad (*Alosa fallax*), European eel (*Anguilla anguilla*), sea lamprey (*Petromyzon marinus*) and the Atlantic salmon (*Salmo salar*) are highly significant in France for ecological, cultural, and economic reasons. Their management is guided by European Union directives, national legislation, and region-specific conservation plans aimed at ensuring their sustainability.

8.3.1 Legislation

National Legislation:

- **Environment Code (Code de l'Environnement)**: Governs fishing activities, including gear types, seasons, and licensing requirements. Establishes regional diadromous fish management committee (COGEPOMI). Defines rivers for which ecological continuity should be re-established or maintained.

- **National Eel Management Plan**: Enacted under the EU Eel Regulation, it includes measures such as fishing quotas, seasonal closures, and habitat improvement.

- **National Salmon Management Plan:** Taken to comply to North Atlantic Salmon Conservation Organization management plan.

- **Diadromous Management Plan (***Plan National en faveur des Migrateurs Amphihalins* **- PNMA):** List a series of action to be taken during the next decade.

Regional and Local Regulations:

- Management plans are tailored for specific river basins under COGEPOMI and the Basin Management Plans (Schéma Directeur d'Aménagement et de Gestion des Eaux - SDAGE), incorporating local ecological and socio- economic condition.

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Figure 7. Map of French river basins and the associated diadromous fish management committee (COGEPOMI) and associated migratory associations. Corsica is now a separate COGEPOMI.

8.3.2 Management Practices

1. **Habitat Restoration**:
    - **Dam removal**: Significant efforts to dismantle or modify dams, such as on the Loire and Allier rivers, to reopen migration routes.
    - **Fish passes and ladders**: Installed on barriers to facilitate migration.
    - **Spawning ground rehabilitation**: Restoration of gravel beds and riparian zones to improve spawning success.

2. **Marine Protected Areas (MPAs)**:
    - Coastal areas critical for juvenile development and estuarine zones are part of MPAs, offering additional protection.

3. **Stocking and Restocking Programs**:
    - Artificial propagation and release of salmon and eels in some rivers

4. **Fishing Restrictions**:

- Mainly taken under the COGEPOMI, exhibiting disparity depending on the management unit. Watershed captures are regulated or prohibited in accordance with production capacity. Zones with historically few fish have bans.

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1. Shads (*Alosa alosa* and *Alosa fallax*)

- **Commercial and recreational fishing**:

Figure 8. Allis shad, Alosa alosa.

  - Allis shad fishery banned in Garonne-Dordogne River.
  - Allis shad fishery banned in Adour River (recent justice decision).
  - **Minimum size**: Generally, around 30–35 cm, depending on the species.
  - **Fishing season**: Open during anadromous migration, typically March to June.

2. European Eel (*Anguilla anguilla*)

Glass eels (juveniles):

  - **Quotas**: Annual quotas are set for commercial fisheries.
  - **Recreational fishery**: banned.
  - **Fishing Season**: Limited to specific months -covering the full migration season (e.g., November to March)-, depending on the river basin and migration patterns.

Yellow eel:

  - **Fishing season:** restricted to 5 months**. Silver eels (adults)**:
  - Banned for recreational fishers.
  - Restricted to Loire, Rhône-Méditerranée and Corsica basin for commercial fishers.

3. Sea Lamprey (*Petromyzon marinus*)

- **Commercial and recreational fishing**:
  - Fishing season: allowed during anadromous migration: typically, December to May.
  - Banned in Garonne-Dordogne and Adour River (recent justice decision).

4. Atlantic Salmon (*Salmo salar*)

- **Commercial fishing**:
  - Highly restricted, with commercial exploitation allowed in only a few areas, such as certain estuaries in Adour (despite restrictions, exploitation is due to lawsuits and is

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considered unsustainable), Brittany and Normandy.

- **Recreational Fishing**:
  - **Quotas**: in Artois-Picardie, Normandy and Britanny.
  - **Bag limits**: Typically, a maximum of 1–2 salmon per day per angler, with a seasonal limit of 10–12 fish, depending on the river.
  - **Minimum size**: Often set at 50 cm, varying slightly by region.
  - **Closed seasons**: Fishing is prohibited during spawning migrations, typically from late autumn to early spring.
  - **Catch-and-release**: Mandatory in some rivers where stocks are critically low.

5. **Monitoring and Research**:
   - Long-term monitoring by migratory associations, in terms of counting and monitoring of spawning and migrations (radio tracking, tagging) and population modeling. The results of the studies are then mobilised by state services or other research teams such as Institut National de Recherche pour l'Agriculture, l'Alimentation et l'Environnement (INRAE) or Office français de la biodiversité (OFB).
   - Specific regional structure (mainly associations) to monitor diadromous fish.
   - Dedicated research unit gathering 4 research institutes ("Pôle Migrateurs Amphihalins dans leur Environnement (MIAME)").

6. **Stakeholder Collaboration:**
   - Engagement with local communities, fishers, and NGOs to promote sustainable fishing practices and compliance with regulations mainly through regional COGEPOMIs or under the umbrella of the national diadromous fish management plan (PNMA).

8.3.3 Key Agencies and Organizations

- **Regional migratory associations:** Manage dashboards and observatory of migratory fish. Responsible for diadromous fish population monitoring. Collected data is then shared with:
- **National Agency for Biodiversity (OFB)**: Leads conservation, enforcement, and research efforts for aquatic species.
- **Water basin committees**: Develop and implement regional management plans.

8.3.4 Enforcement

- Managed by the **OFB** and local river authorities.
- Compliance is monitored through patrols, inspections, and the use of electronic reporting systems for commercial fishers.
- Violations, such as exceeding quotas or fishing in prohibited areas, result in fines, license suspensions, or equipment confiscation.

8.3.5 Challenges

- **Hydropower Infrastructure**: Dams and water abstraction disrupt migratory pathways, requiring ongoing investments in mitigation.
- **Illegal Fishing**: Poaching of high-value species like glass eels remains a persistent issue.
- **Overfishing**
- **Climate Change**: Shifts in river flow and temperature impact migratory behaviors and spawning success.

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- **Pollution**: Agricultural runoff and industrial discharges degrade critical freshwater habitats.
- **Habitat removal**
- **Invasive species**

France employs a multi-tiered approach to manage diadromous fishes, combining habitat restoration, regulation of fisheries, and active stakeholder engagement to ensure these iconic species thrive amidst environmental challenges. Catch limits for some diadromous fishes in France are established through national legislation and regional management plans, guided by EU directives and scientific assessments. Catch limits and regulations in France are continually adjusted based on annual stock assessments, ensuring they align with conservation goals and the EU's sustainability directives.

8.4 Ireland

Diadromous fishes in Ireland, including the shads (*Alosa spp.*), European eel (*Anguilla anguilla*), Atlantic salmon (*Salmo salar*), and sea trout (*Salmo trutta*) are ecologically, culturally, and economically significant. Their management is shaped by EU directives, national legislation, and localised conservation measures, all aimed at balancing sustainable use with species recovery.

8.4.1 Legislation

National Legislation:

- **1959 Fisheries Acts**: Various statutes and byelaws, including the Inland Fisheries Acts, governing fishing activities, gear restrictions, and licensing requirements.
- **Wild Salmon and Sea Trout Tagging Scheme**: Regulates recreational and commercial catches of salmon and sea trout through quotas and mandatory tagging.
- **Conservation of Eel byelaws:** Enforce measures such as fishing bans and catch and release for recreational fishers (Conservation of Eel Fishing Bye-Law No. C.S 335, 2024).
- **Electricity Supply Board (ESB) fishing requirements**: ESB controls the fishing rights of the entire River Shannon under the Shannon Fisheries Act (1935). The River Shannon fisheries are managed in co-operation with: Inland Fisheries Ireland (IFI), the relevant government department and the Marine Institute. The River Liffey is protected under the Liffey Reservoir act 1936.

Specific River Management Plans:

- ESB fisheries management: Since the 1920s ESB has had a statutory responsibility to manage and preserve fisheries throughout certain river catchments, like the Shannon, Liffey, Lee and Erne. These river systems have tailored management plans that address the unique challenges faced by local diadromous populations because of hydroelectric dam construction. The role of maintenance and preservation of these fisheries is undertaken by ESB Fisheries Conservation. List of management legislation: Shannon Fisheries Act (1935), The Liffey Reservoir act (1936), S.I. No. 86/1945 - River Erne Hydro-Electric Scheme Approval Order, 1945, S.I. No. 321/1949
  - River Lee Hydro-Electric Scheme Approval Order, 1949.

8.4.2 Management Practices

1. **Habitat Restoration**:

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- Removal or mitigation of barriers to migration (e.g., fish passes on dams and weirs).
- Restoration of spawning and nursery habitats in rivers and estuaries.

2. **Monitoring and Stock Assessments**:
   - Scientific monitoring programs track fish populations, migration patterns, and spawning success.
   - Tagging schemes for salmon and trout provide valuable data on stock status.
   - Eel Management Plan – monitoring objectives outlined and requirement to carry out stock assessment of production and escapement.

3. **Fishing Restrictions**:

1. Shads (*Alosa alosa* and *Alosa fallax*)

- **Conservation status:** Twaite shad: 'Bad' in Ireland under article 17 of the Habitats Directive (2019), Red list status of 'Vulnerable' for Ireland (2011), Global IUCN status of 'Least Concern' (2022). Allis Shad: considered a 'vagrant' in Ireland under the Habitats Directive, Red list status of 'data deficient' for Ireland (2011), Global IUCN status of 'Critically Endangered' (2022).
- **Catch prohibitions**: There is no commercial fishery for shad. Recreational fishing is carried out for shad during their freshwater spawning run in spring. Catch and Release angling is encouraged along with the use of barbless hooks. IFI promotes the safe handling of shad annually with the distribution of educational brochures and on-site communication with anglers.
- **Bycatch regulations**: Any incidental catch must be immediately released unharmed.

2. European Eel (*Anguilla anguilla*)

- **Current status**:
  - A **nationwide ban on eel fishing** (both commercial and recreational) has been in place since 2009 under the EU Eel Regulation (1100/2007) and Ireland's Eel Management Plans.
  - Exceptions are made for scientific research and conservation efforts, such as trap- and-transport programs around barriers.
- **Conservation status:** Red list status of 'Critically Endangered' for Ireland (2011), Global IUCN status of 'Critically Endangered' (2018).
- **Conservation measures**: Focus on habitat restoration, migration assistance around barriers (both upstream and downstream).

3. Sea Lamprey (*Petromyzon marinus*)

- **Conservation status: '**Unfavorable' in Ireland under article 17 of the Habitats Directive (2019), Red list status of 'Near threatened' (2011), Global IUCN status of 'Least Concern' (2022).
- **No targeted fisheries:** There never was a commercial fishery for sea lamprey in Ireland. Sea lampreys are primarily protected under the Habitats Directive.
- **Incidental Catch**: Relating to Ireland, no specific prohibitions or guidelines relating to the by-catch of lamprey at sea exist.

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4. Atlantic Salmon (*Salmo salar*) and Sea Trout (*Salmo trutta*)

Figure 9. Salmon, Salmo salar.

- **Conservation status:** Salmon: 'Inadequate' in Ireland under article 17 of the Habitats Directive (2019), Red list status of 'Vulnerable' for Ireland (2011), Global IUCN status of 'Near Threatened' (2022). Sea Trout: Red list status of 'Least Concern' (2011), Global IUCN status of 'Least Concern' (2022).
- Introduced in 2001 to manage stocks sustainably.
- Applies to both recreational and commercial fisheries.

- **Key provisions**:
    - **Quota system**: Annual catch quotas are set for specific rivers or river groups based on stock status.
        - Rivers are classified as "open," "catch-and-release," or "closed" depending on their conservation status.
    - **Bag limits in open rivers**:
        - Where stocks are above the conservation limit (CL) and deemed 'sustainable for harvest', a maximum of 10 salmon or sea trout over 40 cm per angler per season. These are tagged with a 'Blue' carcass tag.
        - Where stocks are just at the CL or slightly above, brown' carcass tags are issued in limited numbers to anglers. This ensures that harvest will not exceed the sustainable quota.
        - Daily bag limits vary throughout the season:
        - 3 fish per day from January to May.
        - 1 fish per day from June to September.
        - Catch-and-release only in certain periods.
    - **Catch-and-release rivers**: Anglers must release all salmon and sea trout, often requiring the use of barbless hooks to minimize harm.
    - **Tagging**: Within the scope of "Wild Salmon and Sea Trout Tagging Scheme", each

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legally retained fish must be tagged as detailed above, the fish and capture details are recorded into a logbook.

- **Commercial fisheries**: Subject to stricter quotas and gear restrictions, with many rivers entirely close to commercial exploitation. 'Green' tags are used for draft net caught fish, white' tags for snap net caught fish and 'orange' tags for other commercially caught or scientifically ranched fish.

4. **Licensing and Quotas**:
    - All salmon and sea trout fishing requires a license, with quotas enforced through tagging and reporting systems.
5. **Marine Protected Areas (MPAs)**:
    - Coastal and estuarine areas critical for diadromous species are part of the MPA network, providing additional protection. Currently, 1 designation (Lough Hyne) but more proposed under the Marine Strategy Framework Directive (MSFD). Ireland currently has 8.1% of its marine waters as MPAs in the form of SACs and SPAs, the aim of the government is to achieve 30% Marine Protected Area coverage of Irelands Maritime Area by 2030.
6. **Public Engagement**:
    - Education campaigns and collaboration with local communities and fishers are integral to ensuring compliance with regulations.
    - Stakeholders: Forums exist to give stakeholders a voice in discussing fishing issues across Ireland (e.g. National Inland Fisheries Forum).

8.4.3 Key Agencies and Organizations

- **Inland Fisheries Ireland (IFI)**: Leads the management, conservation, and protection of diadromous fish populations.
- **Marine Institute**: Conducts research on migratory fish and marine ecosystems.
- **Sea Fisheries Protection Authority:** The Sea Fisheries Protection Authority is the independent statutory body responsible for the regulation of the sea fisheries and the seafood production sectors. They promote compliance with the EU CFP, sea-fisheries law and food safety law relating to fish and fish products, verify compliance and, where necessary, enforce it.
- **National Parks and Wildlife Service**: Oversees habitat conservation efforts under the Habitats Directive.
- **ESB**: Have the statutory responsibility of managing, conducting and preserving the fisheries throughout the Shannon, Erne, Lee and Liffey catchments
- **Environmental Protection Agency (EPA)**: Runs a 'National rivers monitoring programme', this programme includes SACs for diadromous fish. The EPA undertakes sampling for biological, physical and chemical parameters

8.4.4 Recreational Fishing Regulations

- **Licenses**: Required for all salmon and sea trout fishing, with strict adherence to quotas and catch-and-release rules where applicable.
- **Gear restrictions**:
    - Use of single, barbless hooks in catch-and-release waters.
    - No use of nets or traps for recreational purposes.

8.4.5 Enforcement and Monitoring

- Managed by **IFI**, which conducts patrols, monitors catches, and ensures compliance with

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quotas and tagging requirements.
- Penalties for violations include fines, equipment confiscation, and potential legal action.

8.4.6 Challenges

- **Hydropower infrastructure**: Dams on rivers like the Shannon, Erne Lee, Liffey and others disrupt migration routes for salmon and eels, requiring costly mitigation measures.
- **Illegal, unreported fishing**: Poaching remains a significant threat, particularly for salmon and sea trout.
- **Climate change**: Alters River flows and water temperatures, affecting migration and spawning.
- **Pollution and water quality**: Agricultural runoff and urban development degrade water quality in key habitats.
- **Water abstraction:** New legislation introduced in 2024 to help regulate and manage abstraction nationally (S.I. No. 419/2024 - Water Environment (Abstractions and Associated Impoundments) Regulations 2024). However, Illegal water abstraction a big problem in Ireland.
- **Invasive species:** Multiple invasive species pose a threat to Irish diadromous fish stocks: dace, roach, chub, Asian clam, zebra mussels
- **Barriers to migration:** Barriers are a big problem for diadromous fish populations In Ireland: impassable structures, river fragmentation and alterations to natural hydrological processes are an ongoing challenge
- **Arterial drainage works:** Drainage works and the maintenance of such works on many rivers across Ireland have affected the natural hydrological and hydro morphological processes of these systems. These works can reduce the natural processes which occur in these river systems therefore reducing suitable habitat for many fish species.

Ireland's approach to diadromous fish management emphasizes conservation-driven policies, adaptive management, and community involvement to safeguard these species for future generations. Catch limits for diadromous fishes in Ireland are governed by national regulations, informed by EU directives, scientific assessments, and conservation priorities. These limits aim to balance sustainable use with the recovery of vulnerable populations. Catch limits in Ireland are highly adaptive, with annual reviews based on scientific assessments to ensure the long-term sustainability of diadromous fish populations.

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9 Conclusion

The management of diadromous fish across the Atlantic Area reveals both shared challenges and important regional differences, shaped by ecological conditions, socio-economic contexts, and administrative structures. Despite operating under a common European legislative framework—including the Water Framework Directive, Habitats Directive, Marine Strategy Framework Directive, Common Fisheries Policy and the Eel Regulation—Portugal, Spain, France and Ireland apply these requirements through diverse national and local approaches.

Across all four countries, diadromous fish populations face mounting pressures from habitat fragmentation, hydropower development, pollution, invasive species, climate change and illegal or unsustainable fishing. These pressures collectively threaten the ecological, cultural and economic values these species provide, reinforcing the urgent need for effective, coordinated and adaptive management.

Although the degree of extractive use varies—being more restrictive in France and Ireland and more permissive for traditional fisheries in Spain and Portugal—common trends are emerging. All countries are increasingly adopting habitat-centered, science-based strategies, including barrier removal, fish passage improvement, stock monitoring, enforcement of fishing regulations, and community engagement. Strengthened cooperation between government agencies, scientific institutions, local stakeholders and international bodies continues to be fundamental.

Given the transboundary nature of diadromous species, their long-term conservation cannot be achieved through isolated national measures alone. Instead, sustained collaboration at local, regional, national and international levels is essential to ensure coherent management across river basins and marine areas. The convergence toward more integrated and precautionary approaches observed across the Atlantic Area represents a promising pathway for reversing population declines, improving ecological connectivity and securing the future of diadromous fish populations and the ecosystem services they underpin.

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