UN environment programme

CMS

CONVENTION ON MIGRATORY SPECIES

UNEP/CMS/COP15/Doc.25.6.2/Annex 2
28 October 2025
Original: English

15th MEETING OF THE CONFERENCE OF THE PARTIES
Campo Grande, Brazil, 23 to 29 March 2026
Agenda Item 25.6.2

CMS SINGLE SPECIES ACTION PLAN FOR THE EUROPEAN EEL (*Anguilla anguilla*)

CMS SINGLE SPECIES ACTION PLAN FOR THE EUROPEAN EEL (*Anguilla anguilla*)

Photo Credit: David Curnick, ZSL

ACKNOWLEDGEMENTS

The development of the Single Species Action Plan was led by Matt Gollock, Chair of the IUCN Anguillid Eel Specialist Group, supported by the CMS Secretariat.

The Sargasso Sea Commission, the Principality of Monaco, and the Government of Sweden financed and otherwise supported the development of the Single Species Action Plan.

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ACRONYMS AND ABBREVIATIONS

ABNJ	Areas Beyond National Jurisdiction
AMOC	Atlantic Meridonal Overturning Circulation
BBNJ	Biodiversity Beyond National Jurisdiction
CMS	Convention on the Conservation of Migratory Species of Wild Animals
CITES	Convention on the International Trade in Endangered Species of Wild Fauna and Flora
CBD	Convention on Biological Diversity
EIFAAC	European Inland Fisheries and Aquaculture Advisory Commission
GFCM	General Fisheries Commission for the Mediterranean
HELCOM	Baltic Marine Environment Protection Commission
ICES	International Council for the Exploration of the Sea
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
RFBs	Regional Fishery Bodies

GLOSSARY

Anthropogenic	Caused by humans.
Catadromous	Feeding and growing in freshwater and breeding in the marine environment.
Elver	Young eel, in its first year following recruitment from the ocean. The elver stage is sometimes considered to exclude the glass eel stage, but not by everyone. To avoid confusion, pigmented 0+cohort age eel are included in the glass eel term.
Escapement	The amount of eel that leaves (escapes) a water body, after taking account of all natural and anthropogenic losses. Most commonly used with reference to silver eel – silver eel escapement.
Glass eel	Young, unpigmented eel, recruiting from the sea into continental waters. The Working Group on Eels consider the glass eel term to include all recruits of the 0+ cohort age group, including some pigmented eel.
Leptocephalus	Flat and transparent marine larval stage of eel, on migration from spawning ground to continental waters, between pre-leptocephalus and metamorphosis to glass eel.
Life stage	Defined stage in the lifecycle of eel, whether leptocephalus, glass eel, yellow eel, or silver eel.

Non-detriment finding (NDF)	In the context of CITES, the competent Scientific Authority has concluded, based on a scientific assessment, that the export of specimens of a particular species will not impact negatively on the survival of that species in the wild.
Production	The amount of fish produced from a waterbody.
River Basin District (RBD)	The area of land and sea, made up of one or more neighbouring river basins together with their associated surface and groundwaters, and transitional and coastal waters, which is identified under Article 3(1) of the Water Framework Directive as the main unit for management of river basins. The term is used in relation to the EU Water Framework Directive.
Restocking	The practice of adding fish [eels] to a waterbody from another source, to supplement existing populations or to create a population where none exists.
Silver eel	Migratory phase following the yellow eel phase. Eel in this phase are characterized by darkened back, silvery belly with a clearly contrasting black lateral line, and enlarged eyes. Silver eel undertake downstream migration towards the sea, and subsequently westwards. This phase mainly occurs in the second half of the calendar year, although some are observed throughout winter and following spring.
Trap and transport	Capturing downstream migrating silver eel for transportation around hydropower turbines.
Yellow eel	Life-stage resident in continental waters. Often defined as a sedentary phase, but migration within and between rivers, and to and from coastal waters occurs and therefore includes young pigmented eels (‘elvers’ and bootlace).

1. INTRODUCTION

1. The European eel (*Anguilla anguilla*) was included on Appendix II of CMS at the 11th Conference of the Parties to the Convention (CMS COP11, 2014), following a proposal by the Government of Monaco, recognizing that the species would significantly benefit from international cooperation. The 1st meeting of Range States of the European eel took place in 2016, where options for how CMS may benefit the species were discussed. Parties approved a Concerted Action for the species at CMS COP12 in 2017 (UNEP/CMS/Concerted Action 12.1). A 2nd and 3rd meeting of Range States took place in Malmö, Sweden in May 2018 and June 2019 respectively, which underlined the need for international cooperation to address the many gaps and challenges in European eel conservation and management. The possibility of a dedicated CMS instrument was discussed, but it was agreed that a Single Species Action Plan would provide the most useful and immediate framework to advance coordinated measures for the conservation of the species. This was noted at COP13 (2020). The 4th meeting of Range States was held in Malmö, Sweden on 14 and 15 October 2025, where the draft Action Plan was finalized for submission to CMS COP15 in 2026. With the cooperation of the Sargasso Sea Commission, and on the basis of the outcomes of the Range State meetings, CMS has developed this Single Species Action Plan (SSAP) for the European Eel.

2. BIOLOGICAL ASSESSMENT

2.1 Taxon

2. The family Anguillidae consists of 16 species[1] – the European eel (*A. anguilla*) and American eel (*A. rostrata*) are the only two species to be found in the Atlantic region. Hybrids have been found as larvae in the Sargasso Sea (Pujolar et al., 2014) and as yellow eels in Iceland where pure *A. rostrata* and *A. anguilla* also exist (Albert et al., 2006). The European eel is the only anguillid eel listed on the Appendices of the Convention on the Conservation of Migratory Species (CMS) and is the subject of this Single Species Action Plan.

3. Table 1 outlines the scientific taxonomy of the European eel, listing its class, order, family, genus and species, along with common names in English, French and Spanish.

1.1 Class:	Actinopterygii
1.2 Order:	Anguilliformes
1.3 Family:	Anguillidae
1.4 Genus:	Anguilla (Schrank, 1798)
1.5 Species:	*Anguilla anguilla* (Linnaeus, 1758)
1.6 Common name(s):	**English**: European eel; Common eel; River eel; Weed eel **French:** Angèle; Anguille d'Europe; Anguille européenne **Spanish:** Anguila; Anguila europea; Anguilla

Table 1: Taxonomic classification of the European eel (*A. anguilla*) and common names in multiple languages.

[1] Fricke, R., Eschmeyer, W. N. & R. van der Laan (eds) 2025. ESCHMEYER'S CATALOG OF FISHES: GENERA, SPECIES, REFERENCES.
(http://researcharchive.calacademy.org/research/ichthyology/catalog/fishcatmain.asp).
Electronic version accessed 14 October 2025 mentions 17 species. However, due to recent taxonomic changes a reduction to 16 species is expected.

4. The European eel has a life history best described as 'facultatively catadromous'. Unlike true catadromy, where fish must feed and grow in freshwater before migrating to the sea to breed, the European eel's growth stage is often described as 'continental' as they are found in fresh, brackish and coastal waters. The species spends the majority of its life in continental waters. Breeding and spawning of the European eel takes place in the marine environment and is believed to be essential for the completion of the life cycle. While there is some understanding of the eel's continental life history, relatively little is known about its marine phase. The eel has a number of life stages (Figure 1) that have their own terminology and regional vernacular – leptocephalus, glass eel, elver, yellow eel and silver eel.

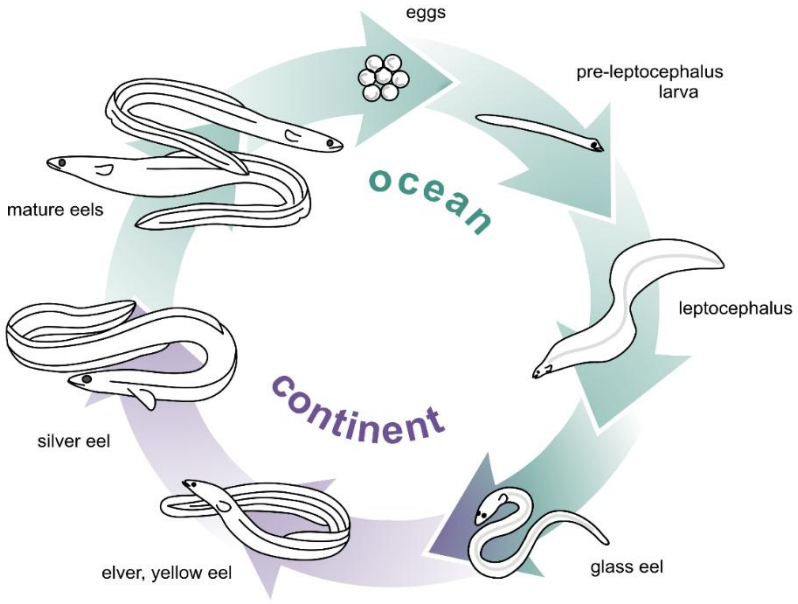

Figure 1: A schematic diagram of the life cycle of anguillid eels (Henkel et al., 2012).

5. After hatching, the marine larval leptocephalus stage is leaf-shaped and very different from the elongate shape most associated with the anguillids. During migration the leptocephali grow and elongate to become transparent glass eels upon arrival at the continental shelf. As the glass eels grow and pigment – be it in freshwater or saline waters – they become elvers and then yellow eels; these are morphologically similar, distinguished primarily by size. The final stage is the marine-migratory silver eel, which is characterized by a darkened dorsum, silvery counter-shading and large eyes. A more detailed description of the life cycle can be found in the scientific case for listing the species on CMS Appendix II.[2]

2.2 Distribution

6. Due to the nature of this species' life history, the distribution primarily refers to the continental growth stage – the yellow eel – which is known to occur in freshwater bodies, estuaries and coastal waters of the Range States (Moriarty and Dekker, 1997; ICES, 2009). In reality, both the adult spawning migration and the subsequent larval migration occurs in the open ocean, both in areas within and beyond national jurisdiction. The European eel is understood to spawn in the Sargasso Sea in the West Central Atlantic, before eggs hatch and leptocephalus larvae migrate, on oceanic currents, back across

[2] Please refer to UNEP/CMS/COP11/ Doc.24.1.18.Rev.1 Proposal for the Inclusion of the European Eel (*Anguilla anguilla*) on CMS Appendix II

the Atlantic to begin the continental phase of their life history (Schmidt, 1922; Aarestrup et al., 2009; Wright et al., 2022). Research has indicated that the spawning migration may not be as synchronized as previously thought and that escapement cohorts could mix depending on the distance from the Sargasso (Righton et al., 2016).

7. The common name of *A. anguilla* – the European eel – indicates the majority distribution of the species. However, its full range is described as from Iceland to the North Cape in Norway, southward along the coast of Europe, the Mediterranean and on the North African Coast (Figure 2) (Schmidt, 1922; Dekker, 2003). It is occasionally found in the White and Barents Seas, the Pechora River in northwest Russia and the Black Sea. Historically, its range may have been wider (Bevacqua et al., 2015; Kettle et al., 2011).

8. The European eel has been 'introduced' in East Asia, either through escape or release from farms, However, due to the specific breeding location and associated migration of silver eels of this species, these are not thought to have successfully populated the region over subsequent generations.

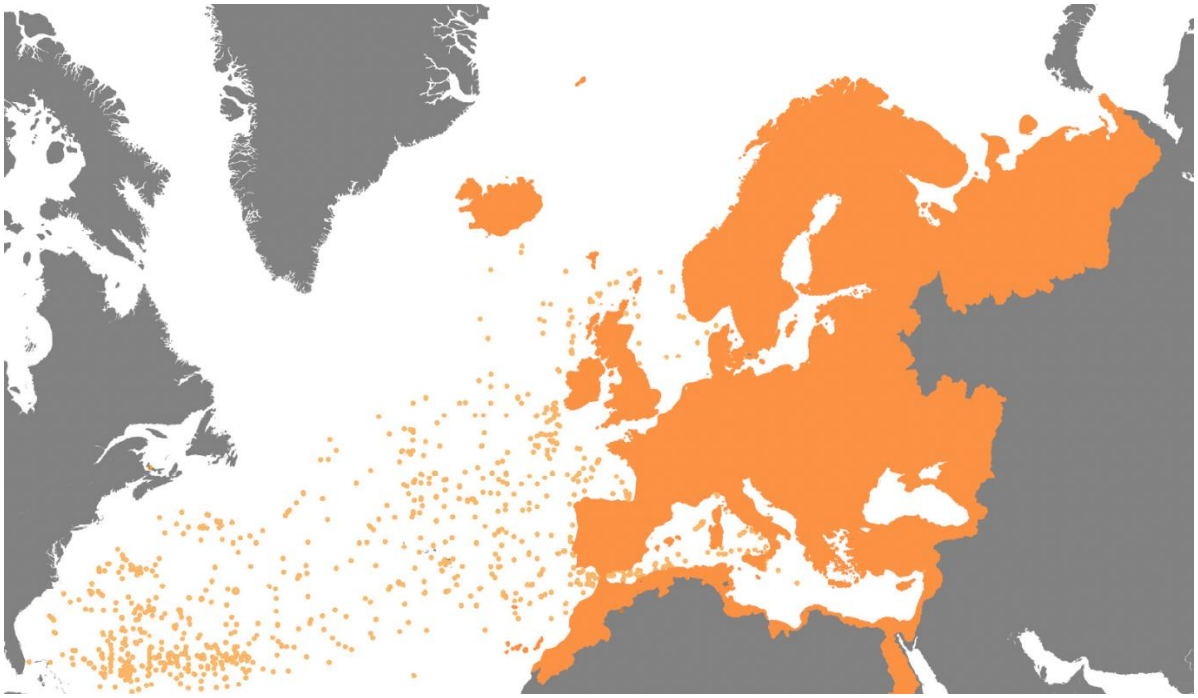

Figure 2: Distribution of *A. anguilla* (also covering restocking areas) – points represent the occurrence of leptocephalus larvae caught during scientific surveys (Modified from ICES, 2023; using data from Briand et al., 2025).[3]

2.3 Population productivity and trend

9. Longitude and latitude, sex and habitat quality can have an effect on generation length in the European eel. Furthermore, there is an estimated two-year larval migration and one-year spawning migration of silver eels (Righton et al., 2016). At present, the average generation length is estimated to be 12 years (Pike, Crook and Gollock, 2020).

10. Assessing the population status of the European eel is challenging. The stock-recruitment relationship is not well understood; there can be tens of years between the recruitment and the subsequent escapement of silver eels, and as they are panmictic, escapement from one area does not translate directly into returning larval recruitment at

[3] See Annex 2.2 for list of Range States.

the same locality (ICES, 2024a). As such, the assessment of the population requires examination of the juvenile recruitment, continental yellow eel and escaping silver eel life stages together (Jacoby et al., 2015). Data quantity and quality is highly variable – there is generally more relating to juvenile life stages, and the northern part of the species range (ICES, 2024b). It should be noted that productivity/fecundity of spawning adults is very poorly understood due to the pelagic breeding site.

11. At present, the available data indicates the status of the European eel is of significant concern (ICES, 2024a). Recruitment declined dramatically in the 1980s and reached a historic low compared to the baseline in 2011 – it remains very low at the time of writing (ICES, 2024a). The most recent assessment of these combined data sets using the IUCN Red List Categories and Criteria resulted in a Critically Endangered listing (Pike, Crook and Gollock, 2020). Key metrics to inform this listing are the Joint European Inland Fisheries and Aquaculture Advisory Commission (EIFAAC), International Council for the Exploration of the Sea (ICES) and General Fisheries Commission for the Mediterranean (GFCM) Working Group on Eel (WGEEL) stock indices (ICES, 2024b). The most recent ICES Advice in relation to the European eel (ICES, 2024a) is as follows:

    ICES advises that when the precautionary approach is applied, there should be zero catches in all habitats in 2025. This applies to both recreational and commercial catches and includes catches of glass eels for restocking and aquaculture.

    Based on ecosystem-based management, ICES considers that:

    - *all non-fisheries related anthropogenic mortalities should be reduced to zero.*
    - *the quantity and quality of eel habitats should be restored; this includes restoring connectivity and the physical, chemical, and biological properties of the habitats.*

12. Predation also represents a threat to *A. anguilla*. While in some cases this will be a natural phenomenon, understanding how predation impacts overall population status – particularly in the marine habitat – is useful for informing management measures. Cormorants and other species have been a focus of recent research – eel consumption by these birds is believed to be of a similar quantity to that of fishery landings in both the Baltic Sea (Hansson et al., 2017) and some lakes in Sweden (Ovegård, 2017). Results in the scientific literature are however not congruent, and another study of cormorant's diet found no eel (Engström, 2001). Oceanic tagging studies found that as many as 50 per cent of eels are consumed by apex predators (Righton et al., 2016). As silver eel escapement is the closest metric we have to a spawning stock, knowing marine mortality is extremely useful when considering the success of continental management measures.

3. THREATS

13. There is a broad suite of proposed causal factors for these declines, which can affect every life stage (ICES, 2024b). However, the significance of any single threat, and cumulative effects it may have with others, is not well understood (Jacoby et al., 2015). Therefore, the precautionary approach needs to be considered when developing and implementing conservation measures.

14. Below are very brief summaries of the major threats that have been proposed as drivers of the decline in European eel abundance, as there is extensive literature that more comprehensively examines these (e.g. Righton et al., 2021). The ICES Stock Annex for the European eel also provides a very useful background document for the species (ICES, 2023).

3.1 Barriers to migration

15. Barriers to both upstream and downstream migration in continental waters present issues for the European eel. For example, with regards to juveniles populating continental waters during upstream migration, accessible habitat has been reduced by 80 per cent compared to the 19th century, as a result of damming in the Iberian Peninsula (Clavero and Hermoso, 2015). It is estimated that there may be over 1 million barriers in Europe's rivers that could impact both upstream migration of juveniles, and downstream migration of silver eels. A comprehensive overview of available information on barriers in Europe can be consulted in the Amber Barrier Atlas. Reduced habitat availability may increase inter- and intra-specific competition and also reduce the fitness of maturing eels due to a reduction of food availability and lipid deposition. In addition to reducing available habitat, hydropower facilities and pumping stations may cause lethal or sub-lethal injuries to silver eels migrating downstream to begin their spawning migration, and in some countries, this is believed to be the major cause of anthropogenic mortality (ICES, 2019).

3.2 Climate change

16. Climate change has been hypothesized to play a role in fluctuations of abundance in *A. anguilla*, particularly larval transport and glass eel recruitment. This is due to its impact on the breeding area (Sargasso Sea) and on changing oceanic conditions that can influence the recruitment of glass eels to near shore and freshwater environments (e.g. Miller et al., 2009; Durif et al., 2011; Henderson et al., 2012; Baltazar-Soares et al., 2014; Pacariz et al., 2014; Miller and Tsukamoto, 2016). However, these studies can be contradictory and our understanding of oceanic processes and their effects on juvenile eels is poor.

17. In recent years, unusually warm and dry periods occurring throughout European eel Range States resulted in higher water temperatures, reduced levels of dissolved oxygen, and/or habitat loss through drought in transitional and freshwater systems (Kettle et al., 2011; ICES, 2018). Extreme weather events are a significant component of climate change. The influence of extreme cold days on eel catches highlights the potential impact of climate change on the European eel's dispersal patterns (Mestav et al., 2024).

3.3 Habitat loss

18. Habitat loss, particularly in freshwater systems, is intrinsically linked with both barriers to migration and climate change. However, degradation and loss of available habitat is also exacerbated by urban and rural development, flood control, water-level management and the abstraction of surface and groundwater for both domestic and commercial use (Drouineau et al., 2018; ICES, 2020b). For example, it was highlighted that siltation in marshlands reduced infiltration of larger eels to this important growth habitat (Lafaille et al., 2004). It was also shown that smaller eels preferred more in-channel cover/aquatic vegetation, and this is generally less abundant in modified rivers (Domingos et al., 2006).

19. Furthermore, it has been hypothesized, that the decline in good quality habitat and associated resources may be causing a decline in body condition of escaping silver eels in parts of the range. This may have effects on the success of migration and/or spawning due this species' reliance on fat stores for reproductive success (van Ginneken and van den Thillart, 2000).

3.4 Unsustainable exploitation and trade

20. European eels are in demand in domestic and international markets for direct consumption and stocking in aquaculture. As such, all continental life stages of eels are exploited within the range of the European eel (Musing et al., 2018; CITES, 2022). In 2007, the European eel was listed on Appendix II of the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) to regulate international trade as a driver of unsustainable exploitation. The listing came into effect in 2009, and in 2010, the EU's Scientific Review Group (SRG) stated it was not possible to perform a non-detriment finding (NDF) for the import of *A. anguilla* and formed a negative opinion for all Range States, which was formalized in the Suspension Regulation in 2024. Thus, since December 2023, imports into the EU and Northern Ireland have been prohibited by law. In addition, the SRG set a zero-export policy in 2010, which has been annually renewed and is still in place at present. This does not account for domestic/intra-EU fisheries, for both consumption and restocking, as indicated by reported glass eel and yellow and silver eel landing data of EU Member States.

21. Since 2010, legal trade in the European eel as reported by CITES predominantly included exports by Egypt, Morocco, Tunisia and Türkiye and, to date, export quotas exist for Algeria, Morocco, Tunisia and Türkiye (Pike et al., 2020; CITES trade database). The United Kingdom of Great Britain and Northern Ireland published an overarching non-detriment finding (NDF) for the export of European eel (*Anguilla anguilla*) (Fleming et al., 2023). This is the only published NDF of European eel fisheries.

22. Despite these measures, illegal fishing and trade are believed to occur throughout the species range (Musing et al., 2018). Enforcement and traceability challenges persist, particularly due to difficulties in identifying different anguillid eel species across life stages and specimen types, including parts and derivatives. These challenges are compounded where trade, traceability and management measures are insufficient to support effective monitoring and compliance. Since 2022, the International Council for the Exploration of the Sea (ICES) has advised that, when the precautionary approach is applied, there should be zero catches in all habitats of the European eel. This applies to recreational and commercial catches and includes catches of glass eels for restocking and aquaculture.

3.5 Pollution

23. Chemical pollutants can damage tissues and disrupt physiological processes in the European eel (Geeraerts and Belpaire, 2010; Belpaire et al., 2016, 2019; De Meyer et al., 2018). It is also believed that they may impact the ability of eels to migrate and/or reproduce through disruption of normal lipid metabolism (Belpaire et al., 2019). In addition to chemical pollutants, both light and sound have been shown to affect eel behaviour (Walker et al., 2014; Simpson et al., 2015).

3.6 Invasive species

24. A negative relationship between invasive catfish abundance and European eel settlement in freshwater is attributed to predation and/or interspecific competition (Bevacqua et al., 2011).

3.7 Parasites and disease

25. The introduced nematode (*Anguillicola crassus*) is thought to impact the fitness of the European eel. This includes a negative effect on silver stage physiology (Fazio et al., 2012); swim bladder damage which impairs swimming performance (Palstra et al., 2007); increased susceptibility to hypoxia (Gollock et al., 2005), and a reduced ability to cope with high pressure during their reproductive migration (Vettier et al., 2003; Sjöberg et al. 2009). A recent study, where low infection intensities of *A. crassus* occurred, indicated that there were no major negative impacts on the investigated health indicators (Myrenås et al., 2023).

26. Several viral pathogens have been identified as being potentially threatening to the European eel: Eel virus European (EVE), Eel virus European X (EVEX) and Anguillid herpesvirus-1 (HVA). Generally, these exhibit as non-specific haemorrhagic disease with increased mortality rates (Van Beurden et al., 2012; McConville et al., 2018).

3.8 Threat prioritization

27. As stated above, the significance of any single threat, and the cumulative effects it may have with others, is not well understood. As such, carrying out a threat prioritization exercise at the population level would present significant challenges. However, threats have been shown to vary across the species range and will impact continental populations to different degrees based on the water-system and associated management implemented by each State.

28. As such, the threats outlined above should be assessed by each Range State using a pre-defined matrix[4] (see Annex 1) to determine their relative impact on the European eel – in one or several life stages – to inform implementation of the SSAP in the context of other management measures. The matrix considers the likelihood of occurrence of a threat relevant to the European eel, and the consequences of that threat or impact considering existing mitigation measures. Where mitigation/management measures do exist and have been implemented, the threat should be assessed assuming that these continue to be applied appropriately. Based on these factors, the priority for action can be determined by relevant Range State representatives, drawing on peer reviewed literature and expert opinion.

29. While Range States should carry these assessments out individually, there should be coordination with other relevant Parties where transboundary watercourses are concerned.

4. FRAMEWORK FOR ACTION

4.1 Goal

30. To strengthen the conservation and management of the European eel across its full range by reviewing, coordinating, harmonizing and implementing actions in order to ensure the species is within safe biological limits.

4.2 Objectives, actions and results

31. The previously described threats to the species have been well characterized, but cumulative impacts are poorly understood. Coordinated efforts to address these are still limited (ICES, 2025). There is need for increased coordination and harmonization across

[4] This matrix is applied across Single Species Action Plans under CMS.

the species range with regard to implementation of measures and improved monitoring of the effectiveness of interventions. Furthermore, monitoring of effectiveness needs to include metrics that can assess change over appropriate temporal scales (ICES, 2021).

32. At present, there are a number of international frameworks and associated national mechanisms that aim to work towards the recovery of the eel, but these objectives and actions may not be harmonized and the results may be difficult to assess collectively. As such, the SSAP has the potential to act as an umbrella framework with a view to capturing the full geographical range of the species, acknowledging the different stages that Range States are in their development of management actions. The SSAP can be a mechanism to address any gaps that have been identified in conservation and management of the European eel and to enhance the implementation of existing objectives and measures.

33. As such, the objectives, actions and results have been developed in response to the previous Range State meetings, input to several versions of the SSAP and consideration of other relevant frameworks that address European eel management and conservation.

34. The objectives address the following broad themes:
    - Mitigation of identified anthropogenic threats to the European eel
    - Monitoring of effectiveness of interventions
    - Strengthening collaboration and coordination of Range States

The objectives and corresponding actions and results are set out in section 4.8.

4.3 Scientific studies and data collection

35. In support of the Concerted Action, there is a strong rationale for national programmes, where they exist, to improve scientific data collection as well as strengthened liaison between stakeholders. Where such national programmes do not exist, these should be established. Such initiatives should facilitate improved knowledge of the European eel's population status and how this is impacted by the threats described above.

36. There is also a strong rationale for the results of scientific studies to be shared and developed collaboratively with other Parties and Range States. In particular, population genomics, tagging, and monitoring studies can provide critical insights into connectivity across the species' panmictic stock and into the dynamics of its spawning migration. Such efforts would be in alignment with the Convention (Article II, Section 3(a)).

4.4 Securing sufficient resources for ongoing conservation

37. To successfully achieve the results of this Action Plan, sufficient resources need to be secured to implement actions at a national and regional scale. Parties might consider establishing national working groups that consist of local experts and stakeholders to support implementation on a national and regional level.

4.5 Objectives framework

38. For each objective, there is an intended result that will be achieved through actions, each of which lists the level of priority, timescale and those responsible for delivering, acknowledging cumulative impacts.

Actions should be prioritized at the Range State scale, as:

- Essential[5]
- High
- Medium
- Low

Timescales should be attached to each action using the following scale:

- Immediate: completed within the next year
- Short: completed within the next 3 years
- Medium: completed within the next 5 years
- Long: completed within the next 10 years
- Ongoing: currently being implemented and should continue
- Completed: completed during preparation of Action Plan

39. In situations where equivalent effective actions are already in place through existing frameworks, there would be no expectation for new mechanisms to be developed. Where possible, the strengthening of existing frameworks and associated implementation would be encouraged.

40. All Range States are expected to undertake Actions 1.1–1.9.

4.6 National implementation

41. The Action Plan is a guide for all Range States and other stakeholders, and relates to the species across its entire life cycle. Not all aspects will be relevant for all countries, for example, where existing legislation and/or plans are already in place. There are varying capacities and regulatory frameworks across the species' Range States, and these should be accounted for in the implementation of the SSAP. In addition, some national governments may need additional capacity-building to undertake some aspects of this Plan. Governments endorsing this SSAP commit to reviewing their national implementation and developing their own workplans to organize national implementation, guided by the SSAP and agreed priorities as necessary with respect to existing national management measures.

4.7 Available resources, guidelines and tools

42. To streamline efforts across the range, Parties and implementing partners shall strive to make use of and share available resources, guidance and tools already developed by bodies such as CITES, ICES and the GFCM.

[5] Essential activities are generally considered crucial and should not be downgraded by any Party.

4.8 Activities

43. This subchapter presents a detailed breakdown of the proposed activities for the recovery and management of the European eel. It links each major action to responsible stakeholders, anticipated outcomes and timing, thereby offering a clear road map for implementation.

Objective 1: Coordination and implementation of European eel conservation and management across the species range is strengthened.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
All Range States of the European eel are collaboratively working to conserve the species through the CMS SSAP and other relevant mechanisms.	1.1 Identify and include Range States that are not presently engaged in the CMS SSAP and other relevant regional frameworks to ensure these are effective.	Essential	Immediate	Secretariat
	1.2 Provide support to Range States where capacity to deliver the SSAP is limited.	Essential	Ongoing	Range States
	1.2 Develop and use the threat matrix (Annex 1) at national levels to prioritize implementation of actions relevant to the eel population.	Essential	Ongoing	Range States
	1.3 Harmonize data collection and analysis across the species' range to allow comparison and use of appropriate metrics within existing mechanisms and/or in cooperation with expert groups, to the extent possible.	Essential	Ongoing (reporting every three years)	Range States
	1.4 Strengthen international relations where transboundary collaboration is required for eel management and conservation – e.g. river basin scale data collection.	Essential	Ongoing	Range States
	1.5 Ensure management measures are in line with relevant scientific advice.	Essential	Ongoing	Range States
	1.6 Establish regular cycle of meetings in order to monitor progress of SSAP.	Essential	Immediate	Range States.
	1.7 Exchange international, national and subnational information, and coordinate efforts to address knowledge gaps.	Essential	Ongoing	Range States
	1.8 Strengthen awareness and communication targeting all stakeholders.	Essential	Ongoing	Range States, Secretariat
	1.9 Range States should assess whether to propose inclusion of the species on CMS Appendix I on a regular basis.	Essential	Ongoing	Range States

Objective 2: Barriers to upstream and downstream migration are assessed and mitigated.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States organizations and stakeholders***
Significantly reduce the impact of barriers on European eel migration and mortality.	2.1 Create an inventory containing an enumeration, location (mapping), and the type and extent of passability of upstream migration barriers. Assess the importance of the watercourse in function of potential upstream habitat.		Short – Medium	Range States
	2.2 Create an inventory containing an enumeration, location (mapping), type, water use, capacity of downstream migration barriers. Assess the importance and the mortality level of barriers in relation to the extent of silver eel migration.		Short – Medium	Range States
	2.3 Prioritize mitigation activities and develop associated timelines.		Short – Medium	Range States
	2.4 Implement relevant mitigation for upstream migration barrier removal, fish or eel passages, and adapt barrier management or other methods during the migration period.		Short – Medium	Range States
	2.5 Implement relevant mitigation for downstream migration, such as barrier removal, screening, eel bypass along barriers, assisted migration (trap and transport), fish-friendly turbines or pumps, temporary shutdown of turbines or other methods during the migration period.		Short – Medium	Range States
	2.6 Implement monitoring of mitigation measures, where not present already.		Short	Range States
	2.7 Reduce mortality associated with hydropower, pumping stations and other structures in line with relevant scientific advice.		Short – Medium	Range States
	2.8 Coordinate on international, national and subnational level and share knowledge.		Ongoing	Range States, including through relevant regional bodies

Objective 3: Impact of continental habitat loss on European eels is assessed and mitigation implemented at relevant spatial scales.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
Mitigation of habitat loss maximizes both access and carrying capacity of aquatic systems within the continental range of the European eel.	3.1 Develop methods to understand the scale of European eel habitat conversion and loss to date, and risk of future reductions, at the international, national and subnational scale, including through climate change.		Medium – Long	Range States, Sargasso Sea Commission
	3.2 Develop models to better understand the carrying capacity of available habitat at relevant geographical scales, such that anthropogenic impacts and associated mortality can be better managed.		Long	Range States
	3.3 Identify areas of highest risk of habitat loss due to the impacts of climate change.		Short	Range States, Sargasso Sea Commission
	3.4 Reduce mortality associated with habitat loss in line with relevant scientific advice.		Short – Medium	Range States
	3.5 Identify key locations for rewilding.		Short	Range States
	3.6 Implement relevant measures in identified key locations and monitor their effectiveness.		Ongoing (from adoption)	Range States
	3.7 Exchange international, national and subnational information and coordinate activities relating to mitigating habitat loss specific to eels.		Ongoing	Range States, including through relevant regional bodies
	3.8 Assess and reduce negative impacts of invasive alien species (IAS) on the eel.		Medium	Range States, academia

Objective 4: Unsustainable exploitation and trade of European eel is eliminated and range-wide management strengthened.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
Fisheries, and associated trade, are legal, traceable and demonstrably sustainable, and management is strengthened through improved data collection.	4.1 Ensure fisheries mortality is in line with scientific advice, for all life stages.		Immediate / Ongoing	Range States
	4.2 Ensure restocking programmes, including those from ongoing activities involving aquaculture, are in line with scientific advice, can evidence a clear benefit to the species and have appropriate monitoring.		Immediate / Ongoing	Range States
	4.3 Improve and harmonize data collection for commercial and recreational fisheries, aquaculture, trade and markets in line with the needs of scientific advice, and share data across the range.		Immediate / Ongoing	Range States, CITES, CMS Secretariat
	4.4 Coordinate data collection with relevant RFBs in relation to informing regional management, mortality indices and/or stock assessments – ICES/GFCM/HELCOM.		Immediate / Ongoing	Range States
	4.5 Strengthen traceability and control of fisheries and associated domestic and international trade, including for those used in restocking and aquaculture facilities.		Immediate / Ongoing	Range States, CITES
	4.6 Improve collaboration among law enforcement agencies to enhance investigative and prosecutorial best practice to identify illegal trade routes, and share intelligence.		Immediate / Ongoing	Range States, transit and importing countries, INTERPOL, EUROPOL, CITES
	4.7 Coordinate with relevant domestic and international CITES authorities to ensure management of trade is informed by an understanding of demand and exploitation patterns.		Immediate / Ongoing	Range States, CITES, CMS Secretariat

Objective 5: Understanding and mitigation of the impact of pollutants on the European eel is strengthened.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
Improved evidence base of the impact of pollutants on the European eel, with a view to informing management and improving the quality of migrating silver eels.	5.1 Identify and investigate the impacts of key pollutants and establish relevant biological thresholds in eel tissues at a relevant geographical scale, as feasible and appropriate, noting the persistence of many compounds.		Medium	Range States
	5.2 Strengthen water and sediment quality management and/or enforcement at a relevant geographical scale such that the presence of key pollutants, and their associated impact on European eel life stages, are reduced to levels significantly below the biological thresholds.		Medium	Range States
	5.3 Coordinate efforts to improve water and sediment quality across the species range, especially in the context of transboundary waterbodies.		Medium	Range States
	5.4 Reduce mortality associated with pollution in line with relevant scientific advice.		Medium	Range States

Objective 6: Understanding and reduction of the impact of the parasite *Anguillicola crassus* and other diseases on the European eel is improved.				
Result	**Action**	**Priority**	**Timescale**	**Responsible Range States, *organizations and stakeholders***
Improved understanding of the scale of impact of *Anguillicola crassus* and other diseases/parasites informs management actions to reduce impacts.	6.1 Quantify, in the context of other threats, the sub-lethal impact of *A. crassus* on key metrics – e.g. silvering, silver eel condition, swimming performance, pressure tolerance, swim bladder function, fecundity.		Medium	Range States
	6.2 Improve understanding of the scale of impact of viral and bacterial diseases on the European eel across its range.		Medium	Range States
	6.3 Improve the understanding of the role aquaculture and/or restocking activities plays in the spread of parasites and diseases, with a view to developing appropriate mitigation.		Medium	Range States
	6.4 Develop or apply existing biosecurity guidelines to inhibit the spread of parasites and diseases through the transport and release of eels.		Short	Range States
	6.5 Undertake other activities to reduce spread of parasites and other diseases and the impacts on the eel population.		Short	Range States
	6.6 Reduce mortality associated with parasites and diseases in line with relevant scientific advice.		Medium	Range States

Objective 7: Knowledge of the oceanic phase of the European eel life history, including the Sargasso Sea, is increased.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
The impact of the threats to European eels in saline waters is better understood, such that they can inform management in Range States and ABNJ.	7.1 Use remote sensing and monitoring, modelling and other relevant methodologies to improve understanding of oceanic changes (e.g. AMOC) on larval survival, transport and resultant recruitment.		Medium – Long	Range States, Sargasso Sea Commission, academia
	7.2 Improve understanding of the migrations and biology of the eel and the importance of the Sargasso Sea.		Medium – Long	Range States, Sargasso Sea Commission, academia
	7.3 Strengthen knowledge-sharing and coordination of responses relating to marine threats across the species range.		Immediate / Ongoing	Range States

Objective 8: Conservation of the Sargasso Sea is strengthened through collaboration with relevant marine management policy mechanisms and bodies.				
Result	***Action***	***Priority***	***Timescale***	***Responsible Range States, organizations and stakeholders***
Actions are coordinated across relevant conventions, government departments and organizations.	8.1 Engage with relevant national representatives working on the activities under the auspices of the 'Hamilton Declaration on collaboration for the conservation of the Sargasso Sea'.		Immediate	Range States, Sargasso Sea Commission
	8.2 Engage with national representatives at the UN BBNJ Agreement on relevant matters – particularly in relation to the Atlantic High Seas and the Sargasso Sea.		Immediate / Ongoing	Range States

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ANNEX 1 – THREAT MATRIX

Levels of risk and the associated priority for action are defined as follows:

Very High	Immediate additional action required
High	Additional action and the precautionary approach should be applied
Moderate	Obtain additional information and develop additional action, if required
Low	Monitor the occurrence of threats and reassess level of threat if likelihood or consequences change

Likelihood of occurrence are categorized as:

i. Almost certain

ii. Likely

iii. Possible

iv. Unlikely

v. Rare/Unknown

Consequence classifications are defined as follows:

i. Unknown/Not yet evaluated – No known impact on species status if not addressed.

ii. Minor – Possible, but not known, contribution to species decline. Should not be prioritized over other threats.

iii. Moderate – Could contribute to species decline, but not an immediate threat.

iv. Major – Could result in significant declines of species in an area if not addressed.

v. Catastrophic – Could lead to the loss of the species in an area if not addressed and could contribute to extinction risk.

THREAT MATRIX

Likelihood	**Consequences**				
	Not significant	Minor	Moderate	Major	Catastrophic
Almost certain	Low	Moderate	Very high	Very high	Very high
Likely	Low	Moderate	High	Very high	Very high
Possible	Low	Moderate	High	Very high	Very high
Unlikely	Low	Low	Moderate	High	Very high
Rare / unknown	Low	Low	Moderate	High	Very high

It is very important to recognize that addressing individual threats in isolation – both geographically and in the context of other impacts – is likely to have limited effects and that interventions should be coordinated where possible.

Below is an example taken from the Angelshark SSAP for the Mediterranean Sea.

Likelihood \ Consequences	Unknown / Not yet valuated	Minor	Moderate	Major	Catastrophic
Almost Certain			Degradation of habitat.	Bycatch in small-scale & large-scale fisheries (including bycatch mortality[6]).	
Likely	Pollution from micro/macroplastics[7] Renewable energy (e.g., wind farms, underwater turbines, lagoons) Extractive industries (e.g., aggregate, mining, dredging) Pipelines and electrical cables Anchor damage of habitats Shipping disturbance	Water pollution/runoff leading to accumulation of contaminants Water pollution/runoff and sewage leading to eutrophication Increasing number of tourists and recreational activity in coastal waters. Recreational watersports (including diver disturbance and boating)	Low genetic diversity (genetic bottlenecks/population fragmentation) Coastal building and infrastructure development that alter seafloor morphology Changing water temperature	Mortality from targeted and accidental catch due to recreational and sports fishing (e.g., rod & line, surfcasting, spearfishing). Bycatch in small-scale and large-scale fisheries and illegal retention. Degradation of Critical Habitats	
Possible	Pathogens Disturbance or competition from non-indigenous species	Alteration of the food web (overfishing of preferential prey species)[8].	Ghost fishing Hypoxia		Targeted / IUU fisheries or retained bycatch in small-scale inshore fisheries.
Unlikely					
Rare / Unknown			Oil spills		

[6] Bycatch mortality included the proportion that is dead when the gear is retrieved (at-vessel mortality) and the proportion of specimens released alive that subsequently die due to the capture process (post-release mortality).
[7] Impact of plastic pollution is currently not well understood. Further research is required, and the risk category may be revised with further information.
[8] Any localised overfishing may result in a greater threat on a local scale.

ANNEX 2 – POLICIES AND LEGISLATION RELEVANT FOR MANAGEMENT

Annex 2.1 Conservation and legal status

This table summarizes key international agreements and regulations that govern the conservation and management of the European eel. It includes listings under frameworks such as the IUCN Red List, CITES, EU Eel Regulation, GFCM decisions, HELCOM actions, and the OSPAR and Barcelona Conventions, describing each instrument's protective measures.

International legal and non-legal instruments	**Protection measure / assessment**
European Union	**Council Regulation (EC) no. 1100/2007 – Establishing measures for the recovery of the stock of European eel.** *The Regulation was developed to establish measures for the recovery of the stock of European eel. Eel management plans (EMPs) are established by Member States to implement measures to recover the European eel within nationally determined Eel Management Units (EMUs).* **Measures on European eel fisheries** *Annual fishing measures in EU waters through the fishing opportunities regulations in ICES waters and Mediterranean..At present there is a period of closure of six months for commercial fisheries and recreational fisheries are banned. The closure has to cover the main migration period(s) including its peak(s).*
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)	*The European eel was listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 2007, although this did not come into force until March 2009.* *International trade in specimens of Appendix-II species may be authorised by the granting of an export permit or re-export certificate. This is as a result of evidence that such export will not be detrimental to the survival of that species – this is presented in the form of a Non-Detriment Finding (NDF).*
Convention on the Conservation of Migratory Species of Wild Animals (CMS)	European Eel listed in Appendix II - *migratory species which have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement.*
International Union for Conservation of Nature (IUCN) Red List of Threatened Species	Critically Endangered: A2bd+A4bd (2018): Population reduced an observed, estimated, inferred or suspected reduction of at least 80% over three generations, based on the following: *(b) an index of abundance appropriate to the taxon,* *(d) actual or potential levels of exploitation.*
The Convention for the Protection of the Mediterranean Sea Against Pollution (Barcelona Convention)	*European eel is listed in Annex III - Species whose exploitation is regulated.*

International legal and non-legal instruments	Protection measure / assessment
General Fisheries Commission for the Mediterranean (GFCM)	GFCM/46/2023/16 *In Nov 2021, the GFCM extended the closure periods from 3 to 6 months and banned recreational fisheries of all stages of European eel life cycle in all waters (including inland).* *In 2024, the GFCM adopted further conservation measures targeting glass eel fishing, extending the closure period to 10 months and freezing the level of effort and capacity, allowing for only 2 months fishing period for glass eel.* *These decisions are implemented in EU law through the above mentioned fishing opportunities regulation.* *Some measures to fight IUU fishing: catch registration, control and traceability.*
The Baltic Marine Environment Protection Commission (HELCOM).	In 2021, HELCOM published an update of the action plan adopting the schedule: *By 2023 identify rivers where management measures for migratory fish species, including eel, would have the greatest positive impact.* *With the aim to protect and restore eel populations, determine which measures set out in the Convention on the Conservation Migratory Species of Wild Animals (CMS), EU Eel Regulation and other relevant instruments would benefit from regional cooperation on a Baltic-wide level.*
The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR)	*The European eel was included on the OSPAR List of threatened and/or declining species and habitats in 2008 (OSPAR Agreement 2008–6).* *In 2014, OSPAR issued a recommendation (OSPAR Recommendation 2014/15) to strengthen the protection of the European eel at all life stages in order to recover its population.* *In 2022, OSPAR updated their status assessment for the European eel as 'poor'.*

Annex 2.2 International conventions ratified by Range States and their affiliations to relevant organizations

This table provides a comprehensive overview of all Range States[6] of the European eel, showing their membership status in major global conventions,[7] as well as their participation in key regional fisheries and environmental organizations.

Range State	CMS	CITES	CBD	EIFAAC	GFCM	HELCOM	ICES	OSPAR
Albania	Y	Y	Y	Y	Y			
Algeria	Y	Y	Y		Y			
Austria	Y	Y	Y	Y				
Belarus	Y	Y	Y					
Belgium	Y	Y	Y	Y			Y	Y
Bosnia and Herzegovina	Y	Y	Y	Y				
Bulgaria	Y	Y	Y	Y	Y			
Croatia	Y	Y	Y	Y	Y			
Cyprus	Y	Y	Y	Y	Y			
Czechia	Y	Y	Y	Y				
Denmark	Y	Y	Y	Y		Y	Y	Y
Egypt	Y	Y	Y		Y			
Estonia	Y	Y	Y	Y		Y	Y	
European Union	Y	Y	Y	Y	Y	Y		
Finland	Y	Y	Y	Y		Y	Y	Y
France	Y	Y	Y	Y	Y		Y	Y
Georgia	Y	Y	Y					
Germany	Y	Y	Y	Y		Y	Y	Y
Greece	Y	Y	Y	Y	Y			
Hungary	Y	Y	Y	Y				
Iceland	Y	Y	Y	Y			Y	Y
Ireland	Y	Y	Y	Y			Y	Y
Israel	Y	Y	Y	Y	Y			
Italy	Y	Y	Y	Y	Y			
Latvia	Y	Y	Y	Y		Y	Y	
Lebanon	Y	Y	Y		Y			
Libya	Y	Y	Y		Y			
Lithuania	Y	Y	Y	Y		Y	Y	
Luxembourg	Y	Y	Y	Y				Y
Malta	Y	Y	Y		Y			
Mauritania	Y	Y	Y					
Moldova	Y	Y	Y					
Monaco	Y	Y	Y		Y			
Montenegro	Y	Y	Y		Y			
Morocco	Y	Y	Y		Y			
Netherlands	Y	Y	Y	Y			Y	Y
North Macedonia	Y	Y	Y					
Norway	Y	Y	Y	Y			Y	Y
Poland	Y	Y	Y	Y		Y	Y	
Portugal	Y	Y	Y	Y			Y	Y
Romania	Y	Y	Y	Y	Y			
Russian Federation		Y	Y			Y	Y	
Serbia	Y	Y	Y					
Slovakia	Y	Y	Y	Y				

[6] List of Range States identified in ICES, 2023.

[7] As the Agreement on Marine Biological Diversity of Areas beyond National Jurisdiction is not yet in force, this will be added at a later time.

Range State	CMS	CITES	CBD	EIFAAC	GFCM	HELCOM	ICES	OSPAR
Slovenia	Y	Y	Y		Y			
Spain	Y	Y	Y	Y	Y		Y	Y
Sweden	Y	Y	Y	Y		Y	Y	Y
Switzerland	Y	Y	Y	Y				Y
Syrian Arab Republic	Y	Y	Y		Y			
Tunisia	Y	Y	Y		Y			
Türkiye		Y	Y	Y	Y			
Ukraine	Y	Y	Y					
United Kingdom	Y	Y	Y	Y			Y	Y