

Annual three-month eel fishing closures

– do they protect migrating eels in the EU?



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Our goal is well managed seas with rich biodiversity and thriving fish stocks to secure healthy and local seafood to consumers and a sustainable fishing sector.



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Summary

European eel has been in decline for decades and is on the IUCN and EU Red lists as Critically Endangered. A regulation establishing measures for its recovery was agreed in 2007 but has not yet led to any improvements. Despite this, European eel remains the target of both commercial and recreational fishing in most EU Member States.

In 2017, the Commission proposed to close all fishing for eel longer than 12 cm in EU waters, in line with scientific advice. The EU Member States rejected this proposal. Instead, a political compromise was agreed – a Joint Declaration on strengthening the recovery for European eel. The annual three-month eel fishing closures were a part of this agreement, attempting to protect the spawning migration but avoid a full prohibition of all eel fisheries in coastal and marine waters.

The initial agreement set out to protect the spawning migration of silver eels, taking their migration period into consideration when deciding on which three consecutive months the closure should apply. This agreement was later extended to cover all eel life stages, and therefore also the arrival of glass eels. In December 2018, a similar provision for the Mediterranean region was agreed, covering all waters.

In this report, we assess the compliance across the EU Member States with both the legal requirements of the three-month eel fishery closures, and the intent to protect eel migration.

What we found is that many Member States are not in compliance with the intent of the law. The closures are mostly in compliance with the legal provisions but they are not protecting the spawning migration. Only a few countries fulfil the intent to protect the mature silver eels that are on their way to the Sargasso Sea to reproduce.

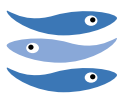
There are a few examples of full prohibition of all fisheries, or full alignment with the peak migration periods. In general, however, the closures either overlap with the migration to some extent and are likely to have some effects, or there is little or no overlap. Many fisheries still specifically target the silver eel migration and/or the arrival of glass eels.

The effectiveness of this measure not only depends on the closures matching the eel migration periods, but also on the fishing patterns in each Member State. In the Baltic and Atlantic regions, the closures only apply to marine and coastal waters. In countries where most of the fishing takes place in inland waters, such a closure is not very effective.

Regional coordination of the closures is also important, particularly in the Mediterranean and the Baltic regions, as all the eels in each region have to pass through the relatively narrow straits between Gibraltar and Morocco, and between Sweden and Denmark, where they are particularly vulnerable to fishing. While there is some coordination in both regions, it does not take the migration patterns sufficiently into account.

The EU is still not protecting the migration of this sensitive species, and millions of eels are landed every year. In the EU, over 55 tonnes of glass eel and almost 2 500

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tonnes of yellow and silver eels were legally landed in 2019. There are also widespread illegal and unreported catches. The Baltic region takes the largest proportion of yellow and silver eel – over 1 100 tonnes, followed by the Atlantic region – an estimated 856 tonnes, and around 520 tonnes in the Mediterranean EU Member States. In the Baltic region, a very substantial part of the estimated landings are recreational: at least 342 tonnes, or over 30 %, whereas it is likely to be less than 10 % in the Atlantic region and over 5 % in the Mediterranean.

Recommendations

The EU needs to improve the implementation of the three-month fishing closures to facilitate the recovery of European eel. We recommend the following steps:

- The intent behind the three-month closures – to protect the spawners – must be made clear in the legal text.
- To ensure that Member States protect the peak spawning migration, the fixed time period for the Baltic and Atlantic regions (currently 1 August to 28 February) should be adjusted to better match the migration period across the regions, ending on 31 December, or prolonged from three to four months.
- To maximise the effects of the fishing closure, it should apply to all waters, as has been agreed in the Mediterranean region.
- More timely detailed data on eel migration together with a better break-down of catches and landings of all life stages, both in time and geographically, is needed in order to properly evaluate the effects of the closures.
- Additional temporal closures should be used to protect European eel spawners, specifically targeting “bottlenecks” on the migration route, where the eels are forced to aggregate.
- It would be preferable that the three-month closure also applies to landings and sales, as illegal, unreported and unregulated fishing of eels is a massive problem.
- In 2018, European eel was added to the Specific Control and Inspection Programmes (SCIPs) by Commission Implementing Decision (EU) 2018/1986 for all EU regions – the Mediterranean, the Baltic Sea, Western Waters and the North Sea. These monitoring programmes should cover inspections at sea and in port at the point of landing (before first sale), and are implemented through a Joint Deployment Programme (JDP) for each region. It would be good to add control of the eel fishing closures as a Specific Action to each of the JDPs.

The current closures have not stopped several countries from increasing their catches over the same time period. Even with perfectly aligned and fully implemented three-month closures, this conservation measure is less effective and more difficult to control than a full prohibition of eel fishing. A full closure would also be in line with the ambitions of the EU Biodiversity Strategy under the Green Deal to protect biodiversity and sensitive species.

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Background

The European eel (*Anguilla anguilla*) population has been declining for a long time and is classified as Critically Endangered by the International Union for Conservation of Nature (IUCN, 2020). The International Council for the Exploration of the Sea (ICES) has advised that all anthropogenic mortality should be kept as close to zero as possible since 2003 (ICES, 2020). For these reasons, a Council Regulation (1100/2007) establishing measures for the recovery of the stock of European eel was agreed in 2007. Since then, 13 years after its adoption, no notable recovery has been observed in the European eel population; though the long-term decline in recruitment seems to have petered off at a very low level.

Despite its conservation status, the European eel is still the target of commercial and recreational fishing in most EU Member States. In 2017, the [Commission proposed to close all fishing for eel longer than 12 cm in EU waters](#):

“A proposal to prohibit fishing of eels is introduced for all Union waters, following scientific advice emphasising the importance of ceasing all fisheries that target spawners, until there is clear evidence of improvement of the state of the stock.”

The motivation given for this proposal was¹:

The European eel life cycle is complex, as it is a long-lived fish which is widely dispersed: recent evidence suggests that eels spawn in the Sargasso Sea and their larvae arrive with the ocean currents to the continental shelf of Europe and North Africa, where they transform into glass eels and enter continental waters.

The recurrent scientific advice states that: “... when the precautionary approach is applied for European eel, all anthropogenic impacts (e.g. recreational and commercial fishing on all stages, hydropower, pumping stations, and pollution) decreasing production and escapement of silver eel should be reduced to – or kept as close to – zero as possible.”

Given the ICES advice, it is important that all fisheries that target spawners should cease until there is a clear evidence of improvement of the state of the stock. In the light of this severe ICES advice, it is therefore appropriate, pending longer term solutions, to prohibit any fishery of European eel in 2018 in the Union waters of the ICES area and in the Baltic Sea.

The text of the initial proposal (COM(2017)645) read as follows:

(7) As regards European eel stock, the ICES advised that all anthropogenic mortalities including recreational and commercial fisheries should be reduced to zero, or kept as close to zero as possible. It is therefore necessary to implement this advice by establishing a prohibition on fishing for this species in the Baltic Sea, Kattegat, Skagerrak, the North Sea, and in the Atlantic Ocean (Union waters).

Article 43 Prohibitions

1. It shall be prohibited for third-country vessels to fish for, to retain on board, to tranship or to land the following species whenever they are found in Union waters:

(a) European eel (*Anguilla anguilla*) of an overall length of 12 cm or longer in Union waters of the ICES area and in the Baltic Sea;”

¹Excerpts from the Commission's proposal (COM(2017)645).

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This proposal was rebutted by the Member States, instead resulting in a **Joint Declaration on strengthening the recovery for European eel (Commission and Member States)** (Interinstitutional File: 2017/0287) and the inclusion of a temporary closure of fisheries for eel of an overall length of 12 cm or longer in Union Waters of ICES areas, including the Baltic Sea. The provision for the three-month-closures was set out in the regulation for fishing opportunities for 2018 (Council Regulation (EU) 2018/120).

The aim of the three-month closure was to specifically protect the spawning migration of silver eel, as this is when the eels are at their most vulnerable, announced Commissioner Karmenu Vella at the press conference following the Fisheries Council meeting on 13 December 2017². He also explained that in the Joint Declaration, the Commission and the Council had agreed to do more to protect the European eel, in particular to review national restocking practices and to fight the illegal fisheries for eel.

The same message was repeated in the Commission Press Release³:

“For the first time at EU level, it was agreed to close eel fisheries for three months during their migration period. Moreover, Member States committed to additional actions to protect the eels throughout its lifecycle and in all sea basins. These measures are crucial, both for the recovery of the stock and to safeguard the communities who depend on this fishery.”

And it was echoed by the Fisheries Council Press Release as well⁴:

“In view of the critical state of eel fisheries, it will be prohibited to fish for European eel of an overall length of 12 cm or more in Union waters of ICES areas, including the Baltic Sea, for a consecutive three-month period, to be determined by each member state, between 1 September 2018 and 31 January 2019. That is the time when eels are migrating and therefore are most vulnerable.”

*“The decision is complemented by a **joint declaration** by the European Commission and member states which aims to further protect the stock of European eel, for instance in inland waters, by strengthening eel management plans during all stages of the eel lifecycle.”*

These documents clearly show that the intent behind the three-month closures was to protect the spawning migration of the Critically Endangered European eel. It is important to set this out here, as that intent becomes much vaguer in the legal text in later years, after the inclusion of all eel life stages. In the regulation for 2018, however, it does state that the three-month ban was for eels longer than 12 cm in Community waters “to protect spawners during their migration” (Preamble (9)). But already the next year, it reads instead:

“the fishing closure period should be consistent... with the temporal migration patterns of European eel”.

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²Commissioner Vella's speech at press conference: <https://www.facebook.com/watch/?v=2234641566561276>

³https://ec.europa.eu/fisheries/press/eu-ministers-agree-fishing-catch-limits-atlantic-and-north-sea-2018_en

⁴<https://www.consilium.europa.eu/en/press/press-releases/2017/12/13/council-agreement-on-2018-fishing-quotas-in-the-atlantic-and-north-sea/#>

Since the initial three-month closure was agreed, the General Fisheries Commission for the Mediterranean (GFCM) has adopted a [recommendation establishing management measures for European eel in the Mediterranean \(GFCM/42/2018/1\)](#). This recommendation includes an annual closure period of three consecutive months, which needs to be transposed into European Union law. This was initially done through the TAC and quota regulation mainly covering the North Sea and Atlantic Ocean (Article 42, Council Regulation (EU) 2019/124), but for 2020 the closure was included in the Council Regulation (EU) 2019/2236 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas.

It is worth noting that the GFCM provision for the three-month closures is part of the Transitional management measures (Part III in the Recommendation. In 2023, the GFCM plans to adopt long-term management measures for European eel, and the closures will not necessarily be included.

Since the 2017 agreement, the three-month closures have been extended to all life-stages and all fisheries in EU and coastal waters, including recreational fisheries. In the provision for 2019, the time period during which the three-month closure in Union waters in the ICES area can be set was extended by one month to the end of February. No such time frame is provided for the Mediterranean Member States but, in 2020, wording on commitments to effort and catch reductions were added into the regulation (Council Regulation 2021/90).

The decision on the Commission proposals for the 2021/2022 eel fishing closures (COM(2020)377 and COM(2020)668) at the Council meeting on 15–16 December 2020 was essentially a roll-over of the provisions for the past year, but with some changes to the text and structure in the regulation for the Mediterranean – see Annex I for exact details.

Why the focus on eel migration?

Fish migration is the seasonal movement of fish from one region to another. Most fish species migrate to some extent, but the European eel is quite extraordinary. It reproduces in the Sargasso Sea, follows the currents to shores as far apart as Iceland, Finland, Morocco and Turkey; small numbers even migrate into the Black Sea. Eels then spend roughly between 10 and 20 years in inland or coastal waters, growing until they reach maturation and transform into silver eels – the last stage of a complex life cycle. The silver eels set out on the long migration back to the Sargasso Sea to spawn.

There are still many unknowns around the migration of European eel. It is clearly more complex than one might expect, with individual eels showing large variation in terms of speed and migratory patterns. Some are slow; others fast. There may also be great differences within a country due to the distances the eels need to cover, and certainly between eels in inland versus coastal waters.

The European eel's reliance on multiple habitat types makes it particularly vulnerable to anthropogenic impacts, such as fragmentation, land use changes and climate

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change. But it is during the migration that eels are the most vulnerable to migration barriers, predators and fishing. When species move, especially the synchronized movement of a collective of individuals, this facilitates exploitation of otherwise patchy and seasonally variable resources (Baker, 1978; [Jørgensen et al., 2008](#)). Suddenly, you can catch many together with less effort. With European eel this is evident at local scale, where geographical configurations may lead to a concentration of migrating eels in narrow passages. Typically, dams or the exit/entrance of lagoons are zones in which migrating eels are concentrated, making them more vulnerable to fisheries and other impacts.

Capture fisheries affect both the abundance and the distribution of migratory fish. So aside from the need to create free passage, complementary management measures such as temporal protected areas, species prohibitions and gear restrictions are needed.

In 2017, the Council and the Commission agreed on the need to protect migrating silver eels as a matter of priority, as it is during the spawning migration that eels are the most vulnerable. It is also quite naturally the peak fishing season in many countries, as migrating fish are easier to catch, particularly when they have to pass natural choke points.

The annual ICES advice on eel (ICES, 2020) also focuses on reducing the mortality of silver eels:

ICES advises that when the precautionary approach is applied for European eel, all anthropogenic impacts (e.g. caused by recreational and commercial fishing on all life stages, hydropower, pumping stations, and pollution) that decrease production and escapement of silver eels should be reduced to, or kept as close as possible to, zero in 2021.

In order to protect the migrating eels effectively, however, we need to know when they are migrating. Scientific studies have focused on many different aspects of European eel migration. For this report, we looked at the ICES Special Request Advice on temporal migration patterns of European eel (*Anguilla anguilla*), and the underlying report from the ICES Workshop on the temporal migration patterns of European eel (WKEELMIGRATION, 2020), as well as numerous scientific papers. In some cases, we have had personal contact with national scientists working with European eel assessments in the field. As the current legal framework for the three-month closures covers all eel life stages, this report attempts to map both glass eel and silver eel migrations.

Many different factors affect eel migration, including lunar phases and flood events. Silver eel migration is nocturnal and often highly coordinated. They tend to descend rivers when temperature and photoperiod decrease (Brujjs and Durif, 2009). This occurs earlier at northern latitudes ([Vøllestad et al., 1986](#)). In northern countries, silver eels usually start their downstream migration in late summer and early autumn ([Sandlund et al., 2017](#)). There is also evidence that the geographical location has an effect on the onset of migration – i.e. the distance that migrating eels have to travel to get to the Sargasso Sea ([Amilhat et al., 2016](#)). This makes it difficult to define clear migration periods from different regions. In general, the downstream migration starts in September and the migration period may extend until January, with a peak in October–November.



In southern latitudes, in areas where silver eels must escape through the Gibraltar Strait, the migration occurs slightly later, starting in October and extending until January (Figure 4). Silver eels tagged with pop-up satellite tags (PSAT) were tracked during their migration towards the Sargasso Sea and passed through the Gibraltar Strait in March 2016, after being tagged in early December 2015 (Amilhat *et al.*, 2016).

For glass eels, the trend is reversed, with an earlier arrival of glass eels in the southern parts of the distribution than in the northern parts. Landings of glass eels in the Mediterranean estuaries and lagoons occur later than in the Atlantic estuaries, where the migratory season usually starts in October–November and may extend to February–March. In some areas, glass eels are found all year around, such as in the rivers Guadalquivir (Spain) and Mondego (Portugal). Most glass eels that pass through the English Channel move into suitable habitats along the way and there are no glass eel fisheries further north, in countries bordering the North Sea (Creutzberg, 1961).

Looking at the entire geographical range of European eel, the information on migration periods is somewhat patchy, and fisheries data is often used as a substitute for migration studies. We have sometimes extrapolated in our analysis, assuming migration patterns are similar in areas close to each other, or drawn conclusions from several papers showing slightly different patterns. The information we have gathered on migration periods has been brought together with the timing of the national closures in three regional figures (see pages 19, 32–33, 44).

There are several ongoing studies of eel migration patterns in the EU, and knowledge in this area will no doubt improve over the coming years.

Baltic eel migration

The natural recruitment of eels to the Baltic Sea is dependent on a different migration route. The leptocephali (eel larvae) and later glass eels likely follow the inflow of water from the Atlantic north of the British Isles, through the North Sea to Kattegat, rather than from the English Channel (Westerberg, 1998). Glass eels arrive in the Kattegat in February and either follow a front north into Skagerrak towards the Swedish west coast and later west along the Norwegian coast, or a flow into the eastern Kattegat over the coming months.

Surveys indicate that the Sound is more important for recruitment than the Danish Straits (Westerberg & Wickström, 2016). By the time the young eels enter the Baltic Sea through the Sound (between Sweden and Denmark) and the Danish Straits around May and onwards, they are no longer glass eel but have transformed into elvers. The young eels migrate slowly northward along the Swedish coast and from Lithuania (Svårdson, 1976).

Most of the eels in the Baltic basin are females, and may grow to considerable size. Silver eel migration in the Baltic starts in early autumn, or even early summer, with a peak between September and December. Generally, it peaks earlier further north and east and gradually later to the south and west. It stalls during the coldest winter months, and may resume in spring, with a peak in April/May (WKEELMIGRATION, 2020).

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Passage through the Danish Straits occurs from September to December with a peak in November (Prigge *et al.*, 2013). Silver eels are sometimes caught by shrimp trawlers in the Skagerrak during late November, early December. Silver eels from the Baltic join eels from the Kattegat-Skagerrak area and follow the northern so-called “Nordic route” through the Norwegian Trench into the Norwegian Sea and southward to the Faroe-Shetland channel towards the Sargasso Sea (Righton *et al.*, 2016; [EELIAD project conclusions](#)).

Baltic region closures

Sweden

Commercial fishing for eel was at its peak in the 1950–60s, with catches of around 2 500 tonnes. Since then, Swedish catches have gradually declined. The natural recruitment of eel is very limited in recent years, estimated to less than 10 % of the total production of silver eel (Dekker *et al.*, 2018); but restocking is extensive.

Today, fishing for eel is forbidden unless you have a special eel fishing permit. Since 2015, no new permits are being issued, resulting in a gradual decline in effort. Of the 218 special permits issued in 2020, 76 %, or 166 permits, were for eel fishing in coastal and marine waters. In 2012, the fishery on the west coast, north of Torekov, was permanently closed. Recreational fishing for eel was banned in 2007, with the exception of some waters above migration barriers.

In 2019, the reported total catch in Swedish commercial fisheries for eel was 173 tonnes, of which the coastal/marine catch was 85 tonnes, or approximately 49 %. Swedish data shows an overall peak in landings in July, August and September, with around 28 % of all catches landed in August. In 2015–2017, around 8 % of the annual landings were made in the months now covered by the closure.

Life stages exploited: Mainly silver eel; around 15 % yellow eel.

Habitat targeted: Coastal waters and inland lakes.

Commercial fishery: Yes, about 50/50 in inland and coastal waters in recent years.

Recreational fishery: No, with some exceptions above migration barriers.

Closure: 1 November to 31 January – applies to all life stages and all fisheries in coastal and marine waters.

Migration: July to December, with a peak in August to October; migration starts earlier further north and east.

Sweden is in compliance with the regulation but not with the intent of protecting migrating eels. By setting the closure during the later months, it affects fewer commercial fishers and has the least financial impact. Fishers in Skåne in the south are disproportionately affected by the closure. It is not yet clear whether the closure has had a significant effect, but catches have been lower in the past two years. Also, there has been some displacement of effort to fish for yellow eel in the Sound – the area most affected by the closure.

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Finland

Finland is at the north-eastern limit of the natural distribution of European eel; nevertheless, it was historically widespread. In 1940–1960, eel had some importance to local fisheries and numbers were still high in Kokemäenjoki and its tributaries, some parts of the Gulf of Finland, mainly in the estuary of the river Kymijoki and east of the city of Kotka, and it was a common species in the Finnish Archipelago.

Today, hydroelectric power plants cause limited access to almost all rivers running into the Baltic. Natural eel migration is only possible in a few freshwater systems near the coast and in the coastal areas of the Baltic. Eel stocks and fisheries in Finnish inland waters depend almost completely on restocking. There is a very limited commercial fishery, landings were < 1 tonne in 2019, however, inland landings from recreational fishing can be up to 20 tonnes (2014) but are likely to be lower.

Life stages exploited: Yellow and silver eel.

Habitat targeted: Mainly inland waters.

Commercial fishery: Yes, but very limited.

Recreational fishery: Yes.

Closure: 1 October to 31 January – applies to all fisheries and all life stages in coastal and inland waters.

Migration: Inland migration starts early. In Vääksynjoki River, peak migration is in May–June, with some migration again in August–October. In Pämpinkoski close to Nokia River, peak migration is in August.

Finland is in compliance with the regulation, and goes beyond its legal requirements with a longer closure, which also applies in inland waters. However, to protect eel spawning migration, a better match between the closure and the migration pattern is needed.

Estonia

Eel fishing in Estonia is dominated by inland catches, particularly from Lake Võrtsjärv (94 % of inland catches). In 2019, the total catch was 21.6 tonnes, of which 0.9 tonnes were coastal and 91 % (19.7 tonnes) came from Lake Võrtsjärv – this is more than tenfold the historical catches in the lake. In 2019, an estimated 96 % of the Estonian catch consisted of restocked eels. The fishing season is over by November. Less than 1 tonne was reported as recreational landings in the same year.

Life stages exploited: Yellow and silver eel.

Habitat targeted: Inland waters, particularly Lake Võrtsjärv in central Estonia.

Commercial fishery: Yes, inland catches dominate; limited catches along the coast.

Recreational fishery: Yes.

Closure: 1 November–31 January – applies to all fisheries and all life stages in coastal waters only.

Migration: : Silver eel in the Narva River basin migrate from late April to October, with peaks in May/June and September (Priit Bernotas, pers. comm., 2020).

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Estonia is in compliance with the regulation but not with the intent, as the closure period starts after the main migration and the fishing season are over. In addition, a coastal fishing ban will have a very limited effect, as there is no targeted commercial fishery in coastal waters and coastal catches are likely to be less than 5 % of the total landings.

Latvia

Historically, most of the eel fishing took place in coastal waters. In 1920–1930s, landings amounted to 100–130 tonnes of eels per year. Today, eel landings (bycatch only) in the coastal waters have fallen to less than 300 kg per year – only 4.4 % of the total commercial landings of just over 6 tonnes⁵. Recreational catches may be up to 4 tonnes, but licensed recreational catches in 2019 were 258.4 kg, mainly taken in the restocked inland lakes.

Only some Latvian inland waters are accessible to eel today, and commercial fishing in the rivers is prohibited. At present, commercial eel fishing takes place in 12 inland lakes, and in rivers between these lakes that are inaccessible for eel migration. Total commercial catches in inland lakes were 5.82 tonnes in 2019, and consisted mainly of restocked eel.

Life stages exploited: Mixed fishery of yellow and silver eel > 50 cm.

Habitat targeted: Inland lakes.

Commercial fishery: Yes, inland catches mainly in restocked lakes; all eel caught in coastal waters are bycatch in other fisheries.

Recreational fishery: Yes, mainly in restocked lakes inland.

Closure: 1 November to 31 January – applies to all fisheries and all life stages in coastal waters only.

Migration: Eel landings – bycatch – in coastal fisheries peak in July and August, indicating that this is the peak migration period. Inland monitoring shows that most of the silver eels reach river outlets to the sea in spring time (April and May, sometimes June), with a second peak in August–October when the main water level fluctuations occur (Jānis Bajinskis, pers. comm., 2020). It is harder to tell when migration really starts in rivers accessible to eel or lakes more inland, but assuming from catch data it is mainly in April to June.

Latvia is in compliance with the regulation but not with the intent, as the silver eel migration has tailed off when the closed period begins. Either way, a coastal fishing ban will have a very limited effect, as there is no targeted commercial fishery in coastal waters and most of the recreational fishing also takes place inland.

Lithuania

Historically, there was a large eel fishery in the Curonian Lagoon, but most likely no targeted eel fishery in inland waters. In Lithuania, eel occurs naturally primarily in coastal habitats and the Curonian Lagoon, but the population is in steep decline (ICES CRs, 2020). In inland waters, its abundance is dependent on restocking.

Today, commercial fishing is not allowed along the coast or in the lakes. The commercial catches come from a limited trapnet fishery targeting migrating silver eels

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⁵From CR to ICES 2020.

in some rivers and in the Curonian Lagoon, which according to national legislation is classified as inland waters. This licensed fishery is only allowed from 15 March to 1 June. According to ICES (2020d), reported catches for 2018 were 20 tonnes and for 2019, 9 tonnes; but there is a discrepancy with national data provided to us: 9.8 and 4.6 tonnes respectively (Linas Ložys, pers. comm., 2020). Bycatch landings in coastal waters during the same period were 12 kg in 2018 and 6 kg in 2019. Reported recreational catches in 2019 were 6 tonnes (ICES, 2020d).

Life stages exploited: Yellow and silver eel; the division is around 25/75 %.

Habitat targeted: Freshwater lakes and rivers, particularly in the Nemunas River basin, but also the Curonian Lagoon.

Commercial fishery: Yes, but targeted fishing in coastal waters is banned, only bycatch landings are allowed; inland catches dominate.

Recreational fishery: Yes, angling and spearfishing.

Closure: Commercial eel fishing in coastal waters is completely prohibited, but allowed in some inland waters, including the Curonian Lagoon. Recreational angling is allowed.

Migration: Silver eel migration inland starts in May/June and continues into the autumn, with a peak through Klaipeda Strait in October, tailing off in November (Lithuanian CR to ICES, 2020). In Eastern Lithuania, outward migration from lakes takes place in spring at high water level periods, usually in March–May (Linas Ložys, pers. comm., 2020).

Lithuania has closed all targeted commercial fishing for all eel life stages, aside from a limited licensed inland fishery for migrating silver eels, going beyond the legal requirements. However, allowing recreational angling in all waters and the legal status of the Curonian Lagoon as inland waters indicate that Lithuania is not in full compliance despite its ambitious closures. The current Regulation (2021/92), specifies that “Any targeted, incidental and recreational fishery of European eel shall be prohibited in Union waters of the ICES area and brackish waters such as estuaries, coastal lagoons and transitional waters...”.

Poland

Eel fishing has a long tradition in Poland, and takes place in lakes, rivers, coastal open waters, and two brackish water basins: the Szczecin and Vistula lagoons. Until the late 1950s, Polish eel fisheries were based almost exclusively on natural recruitment. Later, extensive restocking programmes were set up, releasing mainly glass eels in many lakes and in both lagoons.

Inland and coastal fisheries target both silver and yellow eel. Total commercial landings for 2019 were 167.5 tonnes. Of these, around 2/3 were taken in marine waters (including lagoons) and 1/3 in inland waters. Reported recreational landings in 2018 and 2019 were 30 tonnes, bringing total reported landings up to 197.5 tonnes.

Life stages exploited: Yellow and silver eel > 50 cm.

Habitat targeted: Mainly the coastal lagoons, but also inland rivers and lakes.

Commercial fishery: Yes.

Recreational fishery: Yes, at least 15 % of total landings.

»Annual three-month eel fishing closures«



Closures: 1 November 2020–31 January 2021 for coastal waters, including the lagoons. There is also a 4-month closure for inland waters from 1 December to 31 March.

Migration: The ICES Special Request Advice suggests a Baltic Sea migration period of August to November, with a peak in September/October and some spring migration after winter dormancy.

Poland is in compliance with the regulation and goes beyond the required 3 months by adding a 4-month closure for inland waters. However, neither of the closures takes place during peak migration of silver eel and therefore falls short of the intention to protect eel migration. In fact, since the closures were implemented, Polish catches have been increasing instead of decreasing.

Germany

Germany has a long history of organised eel fishing and restocking activities, going back more than 100 years. It remains an important fishery in some inland regions.

German eel management is divided into nine Eel Management Units (EMUs), and there is great regional autonomy on fisheries, so rules and regulations may vary substantially. There are two federal states (Länder) with a Baltic coastline: Mecklenburg-Western Pomerania and Schleswig-Holstein.

Most of the main rivers flow into the North Sea. In the Baltic, the main river is the Oder on the Polish border, which flows into the Oder Lagoon (the German name for the Szczecin Lagoon) – one of the largest coastal lagoons in Europe.

Inland and coastal fisheries target both silver and yellow eel. The landings reported to ICES have been incomplete for the past three years, due to regional data collection and reporting structures for eel and inland fisheries. In 2016, the last year with full reporting, commercial landings were over 200 tonnes and recreational landings were 258 tonnes – greater than commercial landings.

Life stages exploited: Yellow and silver eel.

Habitat targeted: Mainly freshwater lakes and rivers, but also some coastal waters.

Commercial fishery: Yes.

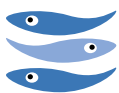
Recreational fishery: Yes, about the same as or greater than commercial landings.

Closure: 1 November 2020–31 January 2021, including both commercial and recreational fisheries in coastal waters.

Migration: Peak migration for silver eel in the Baltic coastal states is September to November, but it starts in August and tapers off in December, with another peak in the spring, in March to June.

Germany is in compliance with the regulation but only somewhat with the intent, as the main migration is just ending when the closure begins. The regional catch reporting system for eel is not helpful on the EU level. Without complete landings data after 2016, it is essentially impossible to assess the effects of the closures and other management measures.

»Annual three-month eel fishing closures«



Denmark

Denmark's Jutland peninsula borders both the Baltic and North seas, and the Danish Archipelago consists of several islands in the Danish Straits connecting the Baltic Sea proper and the Kattegat to the west, including Zealand, Funen, Als and Langeland. All of the silver eels from the Baltic Sea pass through Öresund or the Danish Straits on their spawning migration to the Sargasso Sea. Historically, thousands of tonnes of eel were caught in Danish waters.

Today, coastal fisheries target both silver and yellow eel. The Danish fishery takes place in the Danish Straits and the Sound between Sweden and Denmark, where migrating eels pass mainly in October and November. In 2019, commercial landings were 183 tonnes and recreational landings 105 tonnes, resulting in total reported landings of 288 tonnes (ICES, 2020d). Danish fisheries statistics show that total commercial landings in 2020 were 181 tonnes, of which 85 % were caught in the Baltic Sea. The proportion of yellow eel in the landings has increased since 2017, from 25 to above 40 %, but it is mainly caused by reduced silver eel landings.

Life stages exploited: Both yellow and silver eel; roughly a 40/60 % split.

Habitat targeted: Mainly Baltic coastal waters (≈ 80 % of the landings).

Commercial fishery: Yes, about 2/3 of total landings.

Recreational fishery: Yes, about 1/3 of total landings.

Closure: 1 December 2020–28 February 2021 – applies to all life stages and all fisheries in coastal and marine waters.

Migration: Passage through the Danish Straits occurs from September to December with a peak in October/November, and a less pronounced spring migration in March to April.

Denmark is not in compliance with the intent of the regulation, since the closure is set largely after the migration period. A closure in Danish coastal waters could be really effective in terms of protecting migrating silver eels from the entire Baltic region, as the vast majority of the Danish fishery is in Baltic marine waters.

Baltic regional conclusions

Landings data reported for the Baltic region in 2019 are incomplete. Considering the reported German landings in 2016 (ICES, 2020d), we estimate 760 tonnes of commercial landings and 342 tonnes of recreational landings, resulting in total Baltic landings of more than 1 100 tonnes. Most of these catches consist of silver eels which are taken during their spawning migration. In the north-east Baltic region, eel catches overall are limited and depend almost solely on restocking efforts, but in the south there are substantial catches in Poland, Germany, Sweden and Denmark.

All the Baltic Member States have set closures for at least three consecutive months. Only Finland and Lithuania have gone further, with closed periods of 4 months and all year respectively. Aside from Finland, the three-month closures cover coastal waters only, in line with the Regulation for EU and ICES area waters.

»Annual
three-
month
eel
fishing
closures«



Even though they have not reported a full closure, no targeted fishing in marine waters is allowed in Estonia or Latvia either. Some countries, like Latvia and Lithuania have also greatly limited their inland fisheries, with many areas closed to eel fishing all year. Poland has a 4-month closure for inland waters from 1 December to 31 March. There are other restrictions, such as the ban of recreational fishing in Sweden, but otherwise all of the countries allow both commercial and recreational fishing during parts of the year in some waters.

In most of the countries, the closures apply to all fisheries, including recreational, but Lithuania still allows angling in coastal waters and also allows eel fishing in the Curonian Lagoon.

When we compare the months chosen for the closures with the migration periods in the Baltic region (see Figure 1, page 19), it is clear that the majority of the Baltic Member States have closed their fisheries after the main migration, and the main fishing season, is already over.

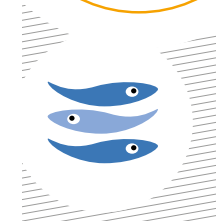
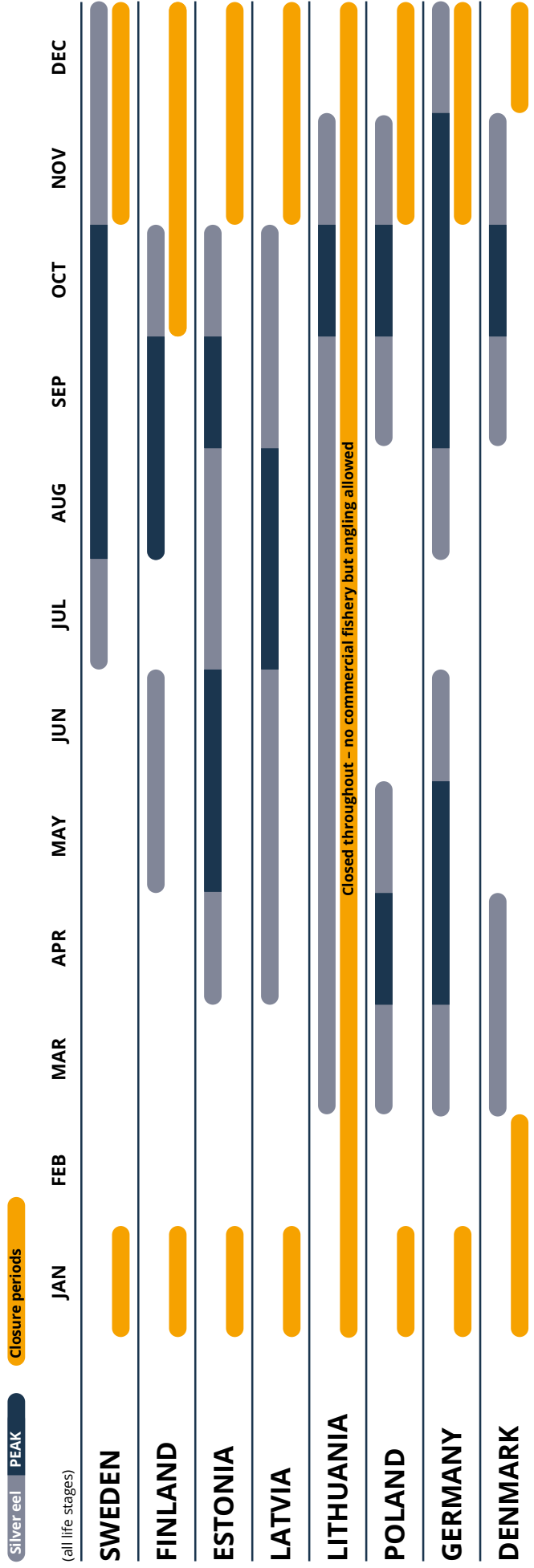
Where inland fisheries dominate, a three-month closure in marine and coastal waters has little effect. However, in the countries with the greatest landings – Germany, Denmark, Poland and Sweden – catches in marine waters are more substantial or dominate

For countries like Denmark, Poland and Sweden, a full closure in marine waters would protect migrating eels effectively, allowing silver eels from the eastern Baltic Member States to continue their migration through the Danish straits and the Sound towards the Sargasso Sea. A closure better matched with the migration period would also make a real difference. Finally, only Sweden has banned recreational fishing for eel. Considering that European eel is a Critically Endangered species, a complete closure of recreational fishing in the region until the stock shows a strong recovery is called for.

»Annual
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Figure 1. This schematic compares the main migration periods with the national three-month closures in the Baltic Sea Member States.



»Annual three-month eel fishing closures«



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»Annual
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Atlantic eel migration

Glass eel arrival in the Atlantic area follows a south to north gradient. It starts in October and November along the coasts of Portugal and Spain, reaches France, the UK and Ireland in November, and progresses later into the English Channel and the North Sea (ICES WKEELMIGRATION, 2020). In Germany, glass eel recruitment starts in February and lasts until June, with a peak in May. The main glass eel migration lasts four to five months.

Glass eels and elvers appear in estuaries of the south-west European Atlantic coast throughout the year, but the recruitment is typically seasonal, with peaks between November and March (Weber, 1986; Elie and Rochard, 1994; Gascuel *et al.*, 1995; Desaunay and Guerault, 1997; de Casamajor *et al.*, 1999).

The peak of silver eel migration starts in the autumn months (September to December) across Europe (Righton *et al.*, 2016), stalls during the coldest winter months, and may resume in early spring. Monitoring and other literature indicate that silver eel migration in coastal, transitional and marine waters along the west-coast of the EU takes place in August to November, with a peak in October (ICES WKEELMIGRATION, 2020).

Atlantic region closures

Ireland

European eel is widespread in Ireland. The large lake-wetted areas, in particular, are preferred habitat for growing eels (Moriarty, 2003). Glass eel and elver fishing is prohibited by law in Ireland (1959 Fisheries Act). The commercial eel fishery, which involved around 200 fisheries, was closed in 2009, as part of the implementation of Ireland's Eel Management Plan. Consequently, the only fishing for European eel now is for monitoring purposes (Weldon *et al.*, 2020). Any catches in recreational rod angling have to be released alive.

Life stages exploited: None

Habitat targeted: None

Commercial fishery: No

Recreational fishery: No

Closure: All year, for all fisheries and in all waters.

Migration period glass eel: May to August, with a peak in July.

Migration period silver eel: August to December, with a peak in September and October (Righton *et al.*, 2016; Poole *et al.*, 1990).

In Ireland, all eel fishing has been prohibited since 2009. It clearly goes beyond the legal requirements for the three-month closure, and protects eels of all life stages including the spawning migration.

»Annual
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Denmark

On the North Sea coast of Denmark, glass eels coming up through the English Channel arrive. Glass eel fishing, however, is forbidden. The commercial and recreational fisheries for eel target both yellow and silver eels, and more than 90 % of all landings are taken in marine waters. The same is true for recreational catches, which accounts for one third of total landings.

Commercial eel fisheries on the North Sea side of Denmark, including Skagerrak and the Kattegat, are much more limited. In 2019 and 2020, the total commercial landings were 34 tonnes and 21 tonnes, respectively. This is equivalent to 18 and 11 % of the total Danish commercial eel landings. More than 60 % of the landings were made in the Kattegat, which is the only area where yellow eel fishing dominates (> 65 % of landings).

Life stages exploited: : Yellow and silver eel; < 40 % silver eel.

Habitat targeted: Almost solely marine and coastal waters, but some inland.

Commercial fishery: Yes, licensed.

Recreational fishery: Yes, about 1/3 of total landings.

Closure: 1 December 2020–28 February 2021 – applies to all life stages and all fisheries in coastal and marine waters. There is a longer closure for recreational fisheries from 1 October to 31 July.

Migration period glass eel: March to May (Skagerrak).

Migration period silver eel: September to December in the North Sea region, with a spring migration in March to May, peaking in April.

In the Kattegat, Skagerrak and the North Sea waters, there is more overlap between the migration period and the closure, but not enough. Overall, Danish landings have fallen sharply since 2016, but this is part of a more long-term trend; recreational landings are stable or even increasing despite the longer closure.

Germany

The Wadden Sea, one of Europe's most productive and diverse coastal areas, stretches along the entire German North Sea coastline, bordered by the federal states of Schleswig-Holstein and Lower Saxony, and includes several larger river estuaries. Eel used to be caught regularly in the Wadden Sea but has declined steadily and is now practically absent. It is still regularly caught in the German rivers Ems, Weser, Elbe and Eider. For more information on German eel fisheries, see the section under Baltic region closures.

Life stages exploited: Yellow and silver eel.

Habitat targeted: Mainly freshwater lakes and rivers, but also coastal waters.

Commercial fishery: Yes

Recreational fishery: Yes, about the same or greater than commercial landings.

Closure: 1 November 2020–31 January 2021, including all life stages and all fisheries in coastal and marine waters.

Migration period glass eel: Glass eels arrive in March to June, with a peak in April and May.

Migration period silver eel: September to December in the North Sea region, with a spring migration in March to May, peaking in April.

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Germany is in compliance with the regulation but only partially with the intent, as there is only some overlap with silver eel migration. It is unclear whether the closure covers all fisheries. It is also impossible to assess whether the closures have had any effect on landings, as German landings data to ICES after 2016 are incomplete.

The Netherlands

Eel fishing and eel aquaculture are both important in the Netherlands, and there is also a strong culinary tradition. Eel landings have been increasing over recent years, compared with the reference period for the Eel Regulation 2004–2006. In 2019, landings of yellow and silver eel were 484 tonnes, of which 4 tonnes were caught in marine waters. Recreational landings in 2016 were estimated to 24 tonnes. As a voluntary measure, anglers should practice catch and release, but there is no control and enforcement.

The Netherlands applied a nation-wide three-month closure in its national Eel Management Plan (EMP) long before the EU decision in 2017. However, as a test case, the Frisian inland fishers implemented a quota system in 2011. In this area, they are allowed to catch 36.6 ton annually regardless of the season. Other regions are currently exploring possibilities to implement this system. Since 2011, several large rivers and waterbodies in inland waters are closed for fisheries due to pollution (dioxins).

Life stages exploited: Mainly yellow eel.

Habitat targeted: Mainly inland waters; a small targeted eel fishery in coastal waters.

Commercial fishery: Yes, inland catches of yellow eel dominate.

Recreational fishery: Yes, rod fishing; catch and release only.

Closure: 1 September–1 December, all waters and all fisheries.

Migration period glass eel: February to June, with a peak in April to mid-May.

Migration period silver eel: Mainly in August to November, with a peak in October, but a study in the Schelder River Basin observed migration from July to January (Verhelst *et al.*, 2018).

The Netherlands are following the law and the intent with its three-month closure; it even goes beyond by closing all freshwater fisheries. Despite this, catches are increasing – probably because they mainly target yellow eel.

Belgium

In Belgium, both commercial and recreational glass eel fisheries are forbidden by law. The only glass eel fishery is carried out by the Flemish government, previously for restocking in inland waters in Flanders, and now only for monitoring purposes.

In marine and coastal waters, eel catches are negligible, as there is no targeted fishing, only bycatch. Since 2006, commercial eel fishing is no longer permitted in inland waters. The only recreational fishing allowed is with rod and line, and in Wallonia, it is forbidden to catch eels since 2017. The 30 tonnes in recreational landings reported to ICES in 2019 is from recreational fishing in Flemish waters.

Life stages exploited: Recreational catches of yellow and silver eel.

Habitat targeted: Inland waters in Flanders and Brussels regions.

Commercial fishery: No, only bycatch in coastal waters.

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Recreational fishery: Only with rod and line.

Closure in Belgium: 1 November–31 January.

Migration period glass eel: February to April, or extended to mid-May/early June.

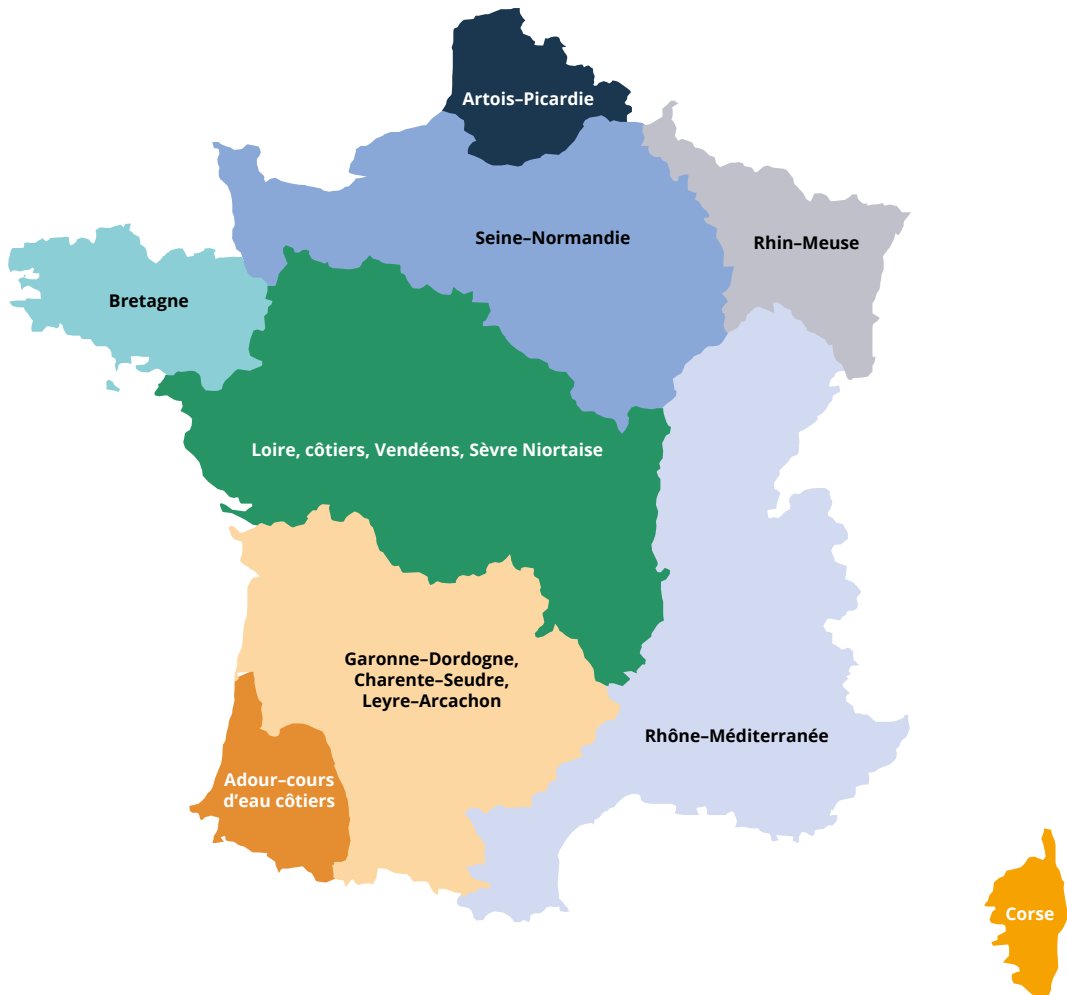
Migration period silver eel: September until December/January (Yser in Flanders; CR 2020), with a peak in October; or mid-October until early February (Huisman *et al.*, 2016).

The three-month closure from 1 November–31 January is reasonably aligned with the silver eel migration, and Belgium does not have any targeted commercial fisheries for eel. All fishing for glass eel is banned, as is inland commercial fishing for other life stages. Recreational fishing is substantial in Flanders but completely prohibited in Wallonia.

France

Historically, France had one of the largest eel fisheries in Europe, catching > 1 000 tonnes of glass eel and up to 2 000 tonnes of yellow and silver eel. It remains one of the largest producers in the EU and has the biggest catch of glass eels by far. In 2019, 48 tonnes were landed, followed by the UK with 6 tonnes and Spain with 4 tonnes. All French glass eel landings come from fisheries on the Atlantic side, as glass eel fishing is prohibited on the Mediterranean side. France also has one of the largest reported landings of yellow and silver eel at 292 tonnes in 2019. Overall, most of the eels are caught in marine and coastal waters, with over 90 % of yellow and silver eel landings and 87 % of glass eel landings.

Figure 2. The different eel management units in France.



»Annual three-month eel fishing closures«



French eel management is divided into 9 regional Eel Management Units (EMUs), all with their own closures and regulations (see Figure 2). This enables France to tailor management measures to the different river basins, but also makes up one of the most complex systems in the EU. It is also the only country with a quota system for glass eel. The quotas are set annually for the coming fishing season, e.g. 2020/2021, and divided into [marine waters](#) (23 tonnes for consumption and 34.5 tonnes for restocking in 2020/2021) and [freshwater](#) (7.475 tonnes in 2020/2021).

Table 1. Commercial fisheries closures in the French Atlantic regions (marine and freshwater).

Region	Eel life stage	Marine/Freshwater	Closures
Artois-Picardie + Seine-Normandie	Glass eel	Marine	25 May–10 January
		Freshwater	Closed
Artois-Picardie + Seine-Normandie	Yellow eel	Marine	1 November–15 February
		Freshwater	15 July–15 February
Bretagne	Glass eel	Both	Closed throughout
Bretagne	Yellow eel	Marine	15 September–1 April
		Freshwater	1 September–31 March
Loire, côtiers, vendéens, Sèvre niortaise	Glass eel	Both	1 June–30 November
Loire, Bretagne to Nantes	Yellow eel	Marine	1 July–31 August; 1 November–31 March
Loire: Other sectors	Yellow eel	Marine	1 September–31 March
Loire, Bretagne to Nantes	Yellow eel	Freshwater	1 July–31 August; 1 December–30 April
Loire: Other sectors	Yellow eel	Freshwater	1 September–31 March
Garonne, Dordogne, Charente, Seudre, Leyre, Arcachon	Glass eel	Both	15 April–15 November
Garonne, Dordogne, Charente, Seudre, Leyre, Arcachon	Yellow eel	Marine	1 November–1 April
		Freshwater	N/A
Garonne, Dordogne, Charente, Seudre, Leyre, other sectors	Yellow eel	Freshwater	1 October–30 April
Adour-cours d'eau côtiers	Glass eel	Both	1 April–30 October
Adour-cours d'eau côtiers	Yellow eel	Both	1 September–1 April
Rhine – Meuse	Yellow eel	Marine	N/A
		Freshwater	15 September–15 April
France all Atlantic regions	Silver eel	Marine	Closed
		Freshwater	15 February–30 September

»Annual three-month eel fishing closures«



Glass eel fishing is prohibited in Bretagne. In the rest of the regions, different closures apply, but always more than three consecutive months. The timing of the closures in relation to known glass eel migration periods, is as follows:

- The EMUs “Artois-Picardie” and “Seine-Normandie” close 25 May–10 January next year, opening when the peak occurs.
- The EMU “Loire, côtiers, vendéens, Sèvre niortaise” closes 1 June–30 November. In November there is overlap with when the first glass eels arrive, but otherwise the fishery is open when glass eel arrival peaks.
- The EMU “Garonne, Dordogne, Charente, Seudre, Leyre, Arcachon” closes 15 April–15 November, but remains open during the months that glass eels arrive.
- The EMU “Adour-cours d’eau côtiers” closes 1 April–30 October. There may be some overlap in April, but for most of the migration period, the fishery is open.

For yellow eel fisheries in marine waters, there is at least a three-month seasonal closure but the time period varies in different regions (Table 1). All commercial fishing for silver eel in marine waters in the French Atlantic regions is prohibited, which protects the migration period that occurs in September to November. Recreational fishing for glass eel and silver eel is prohibited, but yellow eel is permitted.

Life stages exploited: All life stages.

Habitat targeted: Coastal waters, estuaries, rivers and lakes.

Commercial fishery: Yes, glass eel and yellow eel; silver eel only in freshwater.

Recreational fishery: Yes, only yellow eel.

Closure: Set regionally (see Table 1); the silver eel fishery is closed in all coastal and marine waters.

Migration period glass eel: November–April, with a peak in November to January – later further north into the English Channel.

Migration period silver eel: Starts in October and may extend to February, peak in October/November (in River Loire).

The French closures are in line with the legal requirements for the three-month ban. However, they are not always well aligned with the eel migration periods. The French Atlantic glass eel fisheries closures are not effectively placed to protect the species; the exception is Bretagne, where it is prohibited all year. The total ban of silver eel fisheries in Atlantic coastal waters benefits migration, but the timing of the inland closures allows fishing during the spawning migration, before they reach the coast.

Spain

Historically, European eel was widespread throughout the Iberian Peninsula, with a traditional commercial fishery in Spain. However, with the construction of dams in the region since the 1960s, most of the inland river basins are now inaccessible and European eel has lost over 80 % of its original geographic range (Clavero & Hermoso, 2015).

»Annual three-month eel fishing closures«



Spain has a fairly limited eel fishery today. Reported landings (ICES, 2020d) are for the whole country. For commercial fisheries for glass eel, the total landings in 2019 were 4 tonnes, less than the up to 11 tonnes reported in recent years. For yellow and silver eel, total landings of 47 tonnes, again less than the 71 tonnes reported in 2018 and the preliminary 60 tonnes for 2020. Recreational landings of glass eel were at least 865 kg in 2019 (normally around 2 tonnes) and 265 kg of yellow and silver eel.

Spain's eel management is divided into 12 regional Eel Management Units (EMUs; see Figure 3) and a transboundary management plan for the Minho River agreed with Portugal. The Atlantic coast has four EMUs: Basque Country, Cantabria, Asturias and Galicia. All have an extensive management framework for their eel fisheries.

Figure 3. The different eel management units in Spain.



The only fishery permitted in the **Basque Country** is recreational fishing for glass eel, which is allowed from 16 November to 31 January. The rest of the year, from 1 February to 15 November, all eel fisheries are closed.

In **Cantabria**, only commercial glass eel fishing is allowed and it is open for four months; from 1 November to 28 February. Recreational fishing for glass eel was prohibited in 2014.

Asturias has also prohibited everything but commercial glass eel fishing. There are specific management plans for Nalón and Tinamayor estuaries, and a set of measures for the rest of the coast (9 river basins). In both estuaries, glass eel fishing on foot is allowed from November to February, and in the Nalón Estuary a limited fishery by boat is allowed from 1 November to 3 December. The official three-month closure is 1 August to 31 October.

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In **Galicia**, only commercial fishing for eel > 20 cm is allowed. There are three exploitation plans for marine and transitional waters (Ferrol Estuary, Arousa Estuary and Vigo Estuary) and two exploitation plans for inland waters (Tambre River mouth and Ulla River mouth), which include fishing closure periods (see Table 2).

In **Andalusia**, the adoption of the Eel Management Plan in October 2010 established a 10-year ban of all eel fisheries (Decree 396/2010, of 2 November, adopting recovery measures for European eel), which is being extended for another 10 years. Andalusia straddles the Atlantic and Mediterranean seas, but the ban applies throughout.

Table 2. Fishing closures for the Spanish Autonomous Communities on the coast.

Autonomous Community	Fishery	Eel life stage	Closures
Basque Country	Recreational	Glass eel	1 February–14 November 2021
Cantabria	Commercial	Glass eel	1 March–31 October 2021
Asturias (Nalón & Tinamayor estuaries)	Commercial (on foot)	Glass eel	1 March–31 October 2021
Asturias (Nalón Estuary)	Commercial (by boat)	Glass eel	4 December–31 October 2021
Asturias (the rest of coast)	Commercial	Glass eel	1 August 2020–31 October 2020 (official 3-month ban)
Galicia (Ferrol Estuary) (marine & transitional waters)	Commercial	Yellow and silver eel	1 November 2020–31 March 2021
Galicia (Tambre River mouth) (freshwater)	Commercial	Yellow and silver eel	1 October 2020–30 April 2021
Galicia (Ulla River mouth) (freshwater)	Commercial	Yellow and silver eel	1 November 2020–31 January 2021
Galicia (Arousa Estuary) (marine & transitional waters)	Commercial	Yellow and silver eel	1 November 2020–2 February 2021
Galicia (Vigo Estuary) (marine & transitional waters)	Commercial	Yellow and silver eel	1 November 2020–2 February 2021
Minho River (Portugal-Spain)	Commercial	Glass eel	19 February–7 November 2021
Andalusia	None	All stages	Closed

In the Minho River, the transboundary eel management plan only permits commercial fishing for glass eel. The fishing season for 2020–2021 is from 8 November 2020–18 February 2021, split in four periods of 15 days according to moon phases; the rest of the year the fishery is prohibited, creating a closure from 19 February to 7 November 2021. However, the official dates given for the three-month closure are 1 August to 31 October 2021.



Life stages exploited: Glass eel in Basque Country, Cantabria, Asturias and Minho River; yellow and silver eels in Galicia; none in Andalusia.

Habitat targeted: Mainly coastal waters and estuaries, some inland rivers.

Commercial fishery: Yes, in Cantabria, Asturias, Galicia and Minho River; none in Andalusia.

Recreational fishery: Yes, but only in Basque Country where glass eel fishing is allowed.

Migration period glass eel: October to April, with a peak in November–December a peak in January in Galicia; October–March, with a peak in December/January in the Minho River; all year around in Andalusia.

Migration period silver eel: October–December, with a peak in October (Ulla river mouth); in Andalusia silver eel migrate December–March.

All of the closures for marine and transitional waters are in line with the EU regulation. Many closures are longer and all regions prohibit fisheries for certain life stages. When it comes to glass eel fisheries, however, all the northern regions allow fishing during peak arrival, though in the Basque Country this is limited to recreational catches. In Galicia, there is a greater overlap between silver eel migration and the closures, and glass eel fishing is prohibited.

Portugal

Portugal has never had a fishery targeting silver eels. If fishers catch silver eels in So André Lagoon (freshwater jurisdiction), they are obliged to return them to the water, even outside the national closure period. The Portuguese Eel Management Plan considers the entire continental territory as one EMU, with the exception of the Minho River, which is covered by a transboundary management plan shared with Spain.

There is a commercial yellow eel fishery limited to 11 fishing areas in coastal waters (estuaries and coastal lagoons) and 9 inland fishing areas called ZPPs (Zonas de Pesca Profissional, or Professional Fishing Zones). In 2019, only 2 tonnes were landed. Recreational fishing for eel is prohibited throughout the country, in both marine and freshwater.

In Minho River, a licensed glass eel fishery is allowed from 8 November to 18 February, but fishing for yellow and silver eel is forbidden, as well as all recreational fishing. The reported glass eel landings in 2019 were 587 kg.

Life stages exploited: Yellow eel; glass eel in Minho River.

Habitat targeted: Estuaries, coastal lagoons and inland waters.

Commercial fishery: Yes

Recreational fishery: No

Closure: 1 October–31 December in both coastal and inland waters, except for the limited glass eel fishery in Minho River.

Migration period glass eel: October to January, with a peak around December.

Migration period silver eel: October to December.

Portugal has a clearly stated policy to protect silver eel during its migration and the national closure of marine, coastal and inland waters match the migration period. No glass eel fishery is allowed outside the Minho River basin jointly managed with Spain. Recreational fishing is also prohibited. Portugal is aligned with both the legal text and its intent.

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Atlantic regional conclusions

It is difficult to calculate total landings of yellow and silver eel for the Atlantic region, as generally the ICES landings data and the underlying Country Reports do not divide landings between different coasts and associated river basins. However, in 2019, the Member States on the west-coast of the EU – the Atlantic, English Channel and North Sea coastline – reported glass eel landings of 54.45 tonnes, of which only 1.5 % consisted of recreational catches (Basque Country, Spain).

In this region, the Netherlands, France, Germany, Denmark and Spain take the largest catches of European eel, while landings in Portugal and Belgium are more marginal. For yellow and silver eel, total reported landings in 2019 were 856.26 tonnes. Whereas Baltic catches are dominated by silver eel, in the Atlantic region yellow eel fisheries are bigger in France, the Netherlands and Portugal, and will not have a direct effect on silver eel migration.

The approach to the three-month closures is also more variable than in the Baltic region (see Figure 4). Two countries – France and Spain – have a complex combination of closures/fishing periods managed on a regional basis, making the analysis of their effectiveness more difficult. However, all the Member States have closed all their marine and coastal eel fisheries for at least three consecutive months within the set time period – 1 August to 28 February – though they may not all be closed at the same time.

Some closures in this region match the eel migration pattern. In Ireland, all eel fishing has been prohibited since 2009, which clearly protects the spawning migration. Andalusia in southern Spain has also prohibited all eel fishing. The closures in Portugal and the Netherlands closely match the silver eel migration and cover all fisheries in all waters, going beyond the EU legislation. France and northern Spain (aside from Galicia) effectively protect the coastal migration of silver eel as well, as silver eel fishing is prohibited.

As Belgium doesn't have a targeted commercial fishery for eel, the effects of the less than optimally timed closure may be limited, but some silver eels are caught in the substantial recreational fishery. Denmark and Germany have less well-matched closures, and in French inland waters (not covered by the EU legislation) silver eel fishing in rivers is allowed during the downwards spawning migration.

Recreational fisheries are also more limited in the Atlantic region. Ireland and Portugal have prohibited them altogether, and Spain only allows a limited recreational fishery for glass eel in the Basque Country. In the Netherlands, anglers practice catch-and-release, and France only allows recreational fishing for yellow eel, which limits the direct effects on silver eel migration.

The picture changes with the glass eel fisheries, with the exception of the total ban in Ireland. The glass eel closure in the Minho River doesn't start until February, enabling Portugal and Spain to fish during peak arrival in December and January. In France, most regions allow glass eel fishing during the peak arrival in January. The exception is Bretagne, where it is prohibited. In Spain, it is the same: the northern regions keep their fisheries closed until glass eel arrival peaks in December and Jan-

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uary. They open their fisheries in November in time for the first glass eels arriving. In the northern countries, there are no glass eel fisheries, but they also receive much lower densities of glass eels.

Overall, the measures taken by the countries in this region provide better protection for migrating silver eels than in the Baltic region. The coastal waters of Ireland, the Netherlands, Portugal, Belgium, France and most of Spain are all closed during peak migration.

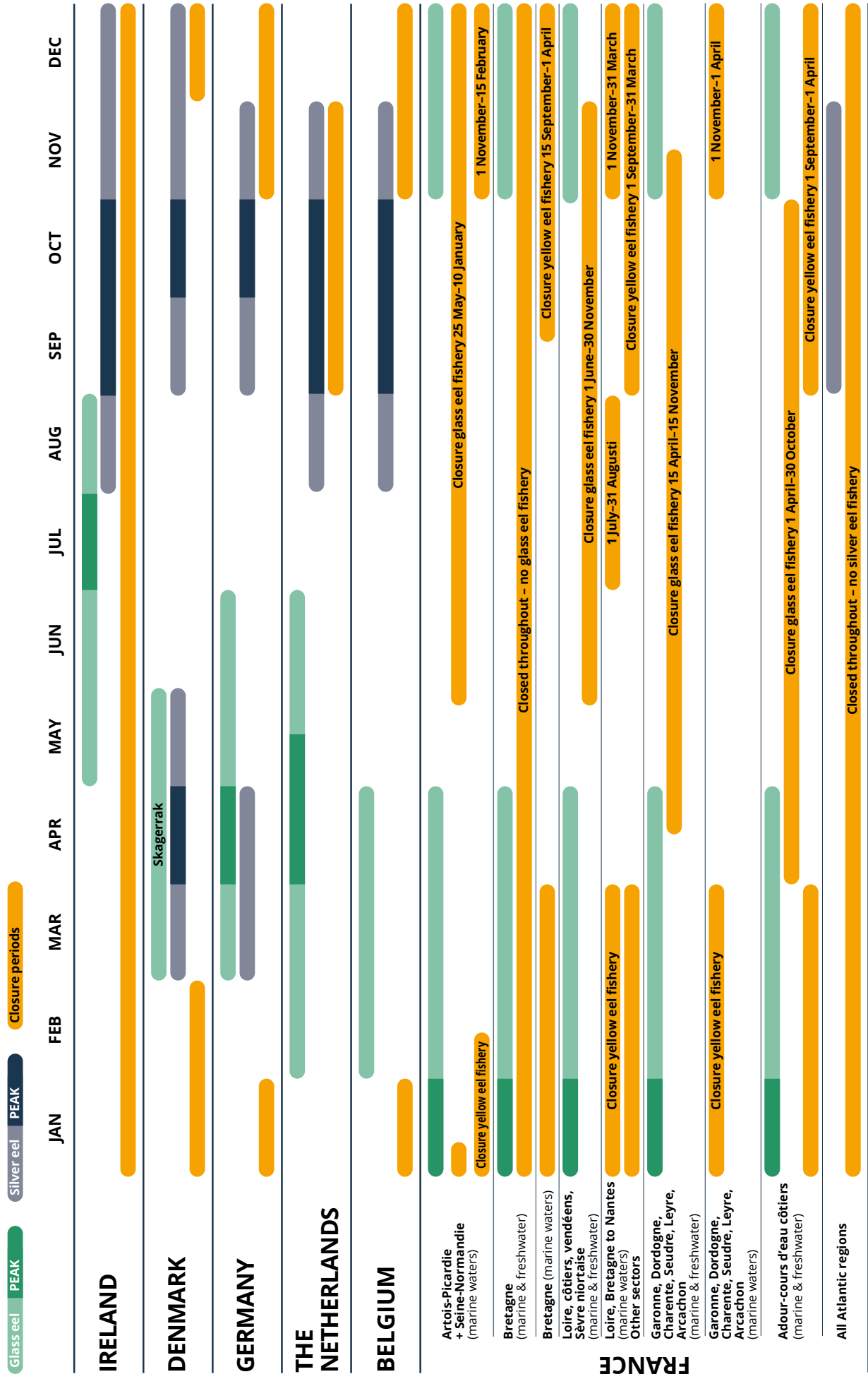
There is also a greater overlap geographically than in the Baltic Sea region, as many of the closures apply to both marine/coastal and inland waters. Without regional data on German catches since 2016, it is difficult to judge the effect of the coastal closures there. In Denmark, most of the eel is caught in coastal waters but commercial fisheries on the North Sea side of Denmark, including Skagerrak and the Kattegat, are more limited – less than 20 % of total Danish catches.

We conclude that the Atlantic region protects silver eel migration fairly well, but some countries could do better. A better timed closure in Danish coastal waters could have further positive effects. Rather surprisingly, the Netherland's well-timed closure for all waters and all fisheries has not lead to a decrease in catches. It is one of a few countries where eel landings are increasing. So one has to wonder if it is a case of displacement of effort – have the fisheries shifted to target yellow eel instead? Finally, a complete closure of all recreational fisheries would make a real difference in this region, as recreational catches are substantial in Germany, Denmark and Belgium, but is not within the scope of these provisions.

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Figure 4. This schematic compares the main migration periods and the national three-month closures in the western EU Member States along the Atlantic, English Channel and North Sea coasts.





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Mediterranean eel migration

The glass eel and silver eel migration patterns are more complex in the Mediterranean than in the Atlantic region. Overall, the seasonal passage of glass and silver eels through the narrow strait of the Mediterranean Sea – the Straits of Gibraltar – is consistent with migration patterns of nearby areas. However, the migration patterns in the Mediterranean Sea itself are less clear.

ICES Workshop on the temporal migration patterns of European eel (WKEELMIGRATION) found that recruitment in the western and central Mediterranean Sea starts in November–December, peaks in January, and lasts until January–March. There is a lack of information on when glass eels enter the Mediterranean, but the first landings in Mediterranean river basins occur in November/December (River Tiber and Fogliano Lagoon, Italy), October to December (Salgiada Lagoon and River Alfios, Greece) and January (Vacca-rès Lagoon, France). Glass eels arrive all year in the river Guadalquivir (Spain). This great range for glass eel arrival could be due to local environmental, climatic and hydromorphological factors (Elie and Rochard, 1994; Kara and Quignard, 2019). In coastal lagoons recruitment might occur all year round, with seasonal peaks dependent on local factors.

In the southern and east Mediterranean, the silver eel migration begins in October and continues until early March, with peaks mainly in November–December (Amilhat *et al.*, 2009; Aschonitis *et al.*, 2017; Correia *et al.*, 2019). In transitional waters, especially coastal lagoons, silver eels generally start migrating in the autumn with a peak in November–December. It has been documented in November in France (Bages-Sigean Lagoon) (Amilhat *et al.*, 2009), in December and January in Italy (Cormacchio and Porto Pino Lagoons), and from September to March, with a peak in December–January in Greek lagoons. The escapement season for silver eel has also been recorded in Vistonis Lake in Greece, occurring from October to early March, with peaks in December and January (MacNamara *et al.*, 2014).

There is limited information on eels leaving the Mediterranean Sea, to the point that it has been suggested that the Mediterranean eels do not contribute to spawning (Kettle *et al.*, 2011). They need to pass through the Strait of Gibraltar to the Atlantic Ocean, where strong currents might be challenging. However, tagged silver eels from the Mediterranean have now been reported to cross the strait into the Atlantic (Amilhat *et al.*, 2016), which confirms that Mediterranean countries have an important role to play in the efforts to aid the recovery of European eel.

Mediterranean region closures

In 2018, the General Fisheries Commission for the Mediterranean (GFCM) adopted a Recommendation on a multiannual management plan for European eel in the Mediterranean Sea (GFCM 42/2018/1). This recommendation includes the provision for an annual closure period of three consecutive months. Importantly, the Mediterranean provision goes beyond the rest of the EU by including inland waters in the closures, as well as all life stages and all fisheries. It also does not stipulate a particular time period for the three-month closures; instead any three consecutive months of the year may be chosen.

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The provision in the GFCM recommendation was initially transposed into EU law through the Council Regulation (EU) 2019/124 of 30 January 2019, Article 42. For 2020, it was included in the Council Regulation (EU) 2019/2236 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas, and for 2021 in the Council Regulation (EU) 2021/90, Articles 2.1 a) and 5.

It is worth noting that the GFCM provision for the three-month closures is part of the Transitional management measures (Part III in the Recommendation). In 2023, the GFCM plans to adopt long-term management measures for European eel, and the closures will not necessarily be included

Spain

The Spanish Mediterranean coast is divided into four regional Eel Management Units (EMUs): Catalonia, the Valencian Community, the Region of Murcia and Andalusia (see Figure 3). Outside of the management units and the sites designated for eel fisheries, all eel fishing is prohibited. Also, Andalusia has prohibited all eel fishing.

Table 3. Closures in Spanish Autonomous Communities on the Mediterranean coast in 2020/2021.

Region	Fishery	Eel life stage	Closures
Catalonia	Commercial	All life stages	21 March–20 June
Catalonia	Recreational	All life stages	Closed throughout (catch-and-release on eels > 35 cm)
The Valencian Community	Commercial	Glass eel	1 April–31 October
The Valencian Community (Valencia)	Commercial	Yellow and silver eel	1 May–30 September
The Valencian Community (Alicante)	Commercial	Yellow and silver eel	1 May–30 October
The Valencian Community	Recreational	Eels > 25 cm	Not clear
Region of Murcia	Commercial	Yellow and silver eel	16 January–28 February 1 April–30 November
Region of Murcia	Commercial	Glass eel and eel < 38 cm	Closed throughout
Region of Murcia	Recreational	All life stages	Closed throughout
Andalusia	N/A	None	Closed throughout

Access to landings data specific for the Mediterranean part of Spain is limited, but it is collected in the regions. The Country Report (ICES, 2020) shows that the Mediterranean region takes > 80 % of the catches of yellow and silver eel, which would equal roughly 50 tonnes, while the north Atlantic coast dominates in the glass eel landings. For more information about Spain, see the section under Atlantic regional closures.

Catalonia has a management plan for the inland basins, which allows commercial fishing for glass eel, but not for yellow and silver eel. Part of the Ebro river basin



runs through Catalonia, including freshwater and four lagoons in the Ebro Delta, where the eel population is concentrated. Commercial glass eel fishing is allowed in the Catalan part of the Ebro, but there is a ban on yellow and silver eel fishing in the bays. In the four lagoons, adult eel can be fished with specific gear. Recreational fishing is prohibited, aside from catch-and-release of eels > 35 cm.

The three-month closure, which applies to both inland waters and the Ebro basins, is set from 21 March to 20 June. When the water temperature increases, glass eels move up the rivers and the activity of adult eels increases.

There is a tradition of eel fishing in the **Valencian Community**, which has a commercial fishery for both glass eel and adult eel, as well as a recreational fishery for adult eel. The commercial fishery takes place in four wetlands, one of which is the Albufera Lagoon. The glass eel fishery is open from 1 September to 31 March. For adult eel, measures are divided into two provinces: Valencia and Alicante. The fishing season in Valencia is between 1 October and 30 April, and in Alicante it is between 1 November and 30 April. Recreational fishing is practised throughout the region, including the Júcar river basin, with a minimum size of 25 cm. It is not clear whether the closures apply to recreational fishing.

The fishery is more limited in the **Region of Murcia**, where eels are rare in inland waters. There is a licensed commercial fishery for eel over 38 cm in the Mar Menor Lagoon. This large, permanent hypersaline lagoon is home to a coastal stock of European eel, and the site of a small-scale fishery with long traditions. The closure periods for 2021 are 16 January to 28 February and 1 April to 30 November. The winter closure has been implemented in incremental steps, beginning with 16–28 February in 2019 and then 1–28 February in 2020. Recreational fishing is prohibited in Murcia.

Life stages exploited: Glass eel; yellow and silver eel (about 50/50); different for different regions.

Habitat targeted: Mainly coastal lagoons, but also wetlands and river basins.

Commercial fishery: Yes

Recreational fishery: Yes, in Catalonia and the Valencian Community.

Glass eel arrival: November to March, with a peak in January; all year in coastal lagoons (Kara and Quignard, 2019).

Migration silver eel: October–March, with peaks in November and December; in Murcia December to March (Carmen Martinez, pers. comm.)

The closures and the migration periods are poorly aligned on the Spanish Mediterranean coast. Catalonia and the Valencian Community open the commercial fisheries for silver eel just as the migration starts, going against the GFCM Recommendation and the legal intention of the closures. Murcia has closed the glass eel fishery completely and introduced a minimum catch size of 38 cm, but the fishery for silver eel is open during the migration period. Andalusia's decision to prohibit all eel fisheries is particularly positive considering its position over the Straits of Gibraltar, which all Mediterranean eels have to pass on their spawning migration.

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France

The French Eel Management Plan covers all marine and freshwater areas up to 1 000 metres elevation, including Rhone and Corsica on the Mediterranean side. In Rhone, there is a commercial fishery for yellow and silver eel in marine waters, mostly in coastal lagoons. It is only open to professional fishers and represent a significant domestic economic value that supported around 600 households ten years ago (Amilhat *et al.*, 2009).

Recreational fishing for yellow eel is allowed, but prohibited for silver eel. Glass eel fishing is prohibited for both commercial and recreational fisheries.

In the yellow and silver eel catches, marine and coastal landings account for around 95 % of total landings, and around 70 % of the catch consists of yellow eel – more in freshwater habitats.

The closure periods for the different management units are set out in special documents, the *Arrêté 2016* for yellow and silver eel and the *Arrêté 2013* for glass eel, and we have listed them in Table 4.

Table 4. Eel fishing closures in the French Mediterranean region

Region	Eel life stage	Fishery	Waters	Closures
Rhone	Glass eel	All	Both	Closed throughout
Rhone	Yellow eel	Commercial	Both	1 December–28 February
Rhone	Yellow eel	Recreational	Both	Not clear
Rhone	Silver eel	Commercial	Marine	2 March–30 September
Rhone (sector 13 and 30)	Silver eel	Commercial	Freshwater	15 October–31 August
Rhone (all other sectors)	Silver eel	Commercial	Freshwater	Closed throughout
Rhone	Silver eel	Recreational	Both	Closed throughout
Corsica	Glass eel	All	Both	Closed throughout
Corsica	Yellow eel	Commercial	Marine	1 July–30 September
Corsica	Yellow eel	Commercial	Freshwater	1 July–31 August; 15 October–15 March
Corsica	Silver eel	Commercial	Marine	15 February–15 September
Corsica	Silver eel	Commercial	Freshwater	Closed throughout
Corsica	Yellow eel	Recreational	Both	Not clear
Corsica	Silver eel	Recreational	Both	Closed throughout

Life stages exploited: Yellow and silver eel.

Habitat targeted: Mainly coastal waters.

Commercial fishery: Yes

Recreational fishery: Yes, but only yellow eel.

Glass eel arrival: January to April, with a peak in February.

Migration period silver eel: October–March, with a peak in November.

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All glass eel fishing, as well as recreational fishing for silver eel is prohibited. Landings are dominated by marine and coastal fisheries for yellow eel, making the timing of the closure periods in marine waters important. However, there is almost no overlap between the closures and the silver eel migration. Shifting the closures to match the migration period would provide a more effective protection of silver eel.

Italy

In Italy, eel fisheries for all life stages have a long-standing tradition. In the 1970s, landings of yellow and silver eel were over 2 000 tonnes. They are only about 10 % of that now, but Italy is still one of the main countries fishing for eel in the EU. The Italian eel fisheries have always focused on transitional coastal waters, such as lagoons and estuaries; eel fishing in rivers and lakes has never been significant.

Since the adoption of the EU eel regulation, 9 of Italy's 20 regions are part of the national Eel Management Plan and manage their eel fisheries under regional EMUs, whereas 11 regions delegated eel management to the central Administration. In the 11 regions, all fishing for eel is prohibited. In the 9 regions, sea fisheries are under the responsibility of central Administration, while the regions are responsible for inland waters, including transitional waters such as lagoons and estuaries.

All sea fishing for yellow and silver eel is prohibited (Decreto Ministeriale n. 403 del 25 luglio 2019, Art. 4). Sea fishing for glass eel, including estuaries, is managed by the central Administration. Only Toscana and Lazio on the Tyrrhenian coast allow glass eel fishing in inland waters. Glass eel landings in recent years have been below 250 kg, and zero catch was reported for 2020.

In the 9 EMUs, there is a seasonal commercial and recreational fishery for yellow and silver eel in inland waters, including estuaries and lagoons. Sardinia and Emilia-Romagna catch the largest proportions of yellow and silver eel, followed by Veneto, Toscana, Puglia and Lazio, so there are active fisheries on both the east and the west coast. In 2018, the commercial landings of 159 tonnes consisted of 75 % silver eel. In addition, there were an estimated 38 tonnes of recreational landings (20 % of the total), of which 75 % were yellow eels. In 2019, total commercial landings were 210 tonnes and recreational 30 tonnes.

The three-month closure was first implemented in 2020, with one fishing closure from 1 January to 31 March covering all eel fisheries in all waters (Decreto Ministeriale n. 403 del 25 luglio 2019). However, glass eel fishing intended for restocking is allowed to continue (Article 3) during the closure. Also, the sale of eels is allowed to continue until 20 January.

Life stages exploited: Glass, yellow and silver eel.

Habitat targeted: Mainly coastal transitional waters in the 9 EMUs.

Commercial fishery: Yes, all life stages; silver eel 75 % of adult landings.

Recreational fishery: Yes, yellow and silver eel (75/25 % split).

Closure: 1 January–31 March for all waters; All year for yellow and silver eel in marine waters; all completely prohibited in 11 regions.

Glass eel arrival: December to March, with a peak in January.

Migration period silver eel: October to March, with a peak in December/January.

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The Italian closure covers the latter half of the migration period for silver eel and most of the glass eel arrival. The closure is not fully enforced, as glass eel fishing for restocking is allowed to continue. In addition, with 75 % of landings consisting of silver eel, an earlier closure would be more effective for protecting the spawning migration. In recent years, commercial landings have been increasing, whereas recreational landings are going down.

Malta

Malta reports no landings of European eel. Under Commission Decision 2009/310/EC, Malta was granted exemption from the obligation to prepare an eel management plan in accordance with Council Regulation 1100/2007. No three-month eel fishing closure has been applied.

Slovenia

In Slovenia, European eel was declared a protected species in 2004 and since then no fishing has been allowed – commercial or recreational. In the years before, very limited commercial landings, between 4–19 kg, were reported to ICES; as well as recreational catches between 4–33 kg.

Life stages exploited: None

Habitat targeted: None

Commercial fishery: No

Recreational fishery: No

Closure: all year, for all fisheries and in all waters.

Migration period glass eel: December–March, with a peak in January⁶

Migration period silver eel: October–March, with a peak in November⁷

In Slovenia, European eel was protected in 2004 and all eel fishing has been prohibited since then. This clearly goes beyond the legal requirements for the three-month closure, and protects eels of all life stages including the spawning migration.

Croatia

In the past, there was a significant commercial eel fishery in Croatia (Basioli, 1957a). In the Neretva River, the annual catch ranged from 68 to 70 tonnes (Morović, 1948; Basioli, 1957b). Commercial eel fishing still takes place in the Neretva River, but the area in which it is fished is unknown and there are no catch quotas. In other Croatian rivers, only recreational fishing is allowed.

Croatia is one of only three countries in the EU that have not yet submitted a national Eel Management Plan, and is therefore required to implement a 50 % reduction in eel fisheries instead. Since there is very limited information on catches, this requirement and other management measures are hard to evaluate. Some limited landings data have been reported to ICES in recent years (ICES, 2019), showing landings of just over 500 kg. No recreational catches were reported. According to M. Piria (pers. comm., 2020), there is no management framework for European eel in Croatia and control and enforcement of eel fishing activities is poor.

⁶Extrapolated from Italy/WKEELMIGRATION, 2020.

⁷This approximate period of migration for silver eel in Slovenia and Croatia was obtained from a paper by Fabrizio Capoccioni on Mediterranean silver eel and through pers. comm. Other sources were WKEELMIGRATION (2020) and Country Reports to ICES.



There is little comprehensive research conducted on eel in Croatia, and it seems necessary to establish a management plan for continuous monitoring. Only eels inside the National Park Krka and Lake Vransko are protected. After the Recommendation GFCM/42/2018/1 on a multi-annual management plan for eels in the Mediterranean Sea was agreed and transposed into EU legislation, a three-month closure on eel fishing was applied for the first time in 2020: from 1 June to 31 August.

Life stages exploited: Yellow and silver eel.

Habitat targeted: Neretva River; only recreational fishing in other rivers.

Commercial fishery: Yes

Recreational fishery: Yes

Closure: 1 June to 31 August; Applies to all fisheries and all waters.

Glass eel arrival: December–March, with a peak in January⁸

Migration period silver eel: October–March, with a peak in November

Not much is known about eel migration times in Croatia but, based on the best available knowledge, the current closure is not aligned with the silver eel migration, or glass eel arrival.

Greece

Greece used to have a large eel fishery with landings of over 200 tonnes. Today, the fishery only targets silver eels during their spawning migration. The most important area for eel fishing is the north-west region, which includes many coastal lagoons and lakes, where about half of the total landings are taken. In 2018, 41 tonnes of silver eel landings were reported (prel. data; ICES, 2020d), 21 tonnes less than the year before.

There is no glass eel or yellow eel fishery, aside from a very limited traditional fishery for yellow eel in western Greece for local consumption. Commercial exploitation of eels smaller than 30 cm is prohibited. All recreational fishing has been prohibited since 1971. It is also forbidden to fish for eels in rivers and estuaries.

The official three-month closure is from 1 September to 30 November, but in reality it is longer. The fishery for silver eel is only open in December–February, resulting in a closure from March to November.

Life stages exploited: Silver eel; local fishery for yellow eel.

Habitat targeted: Mainly coastal lagoons but also some lakes.

Commercial fishery: Yes

Recreational fishery: No

Closure: 1 September–30 November; applies to all fisheries and all waters.

Glass eel arrival: November–March in Sagiada; December–April in Alfios River (Zompola *et al.*, 2008).

Migration period silver eel: September–January, with a peak in December.

There is some alignment between the closure and the silver eel migration period, but the fishery opens at peak migration. However, the closure period is longer than mandated and glass eel fishing and recreational fishing are both prohibited. Greece has taken some good measures to protect European eel but could do more.

⁸Extrapolated from Italy/WKEELMIGRATION, 2020.

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Cyprus

European eel is not exploited by Cypriot fishing vessels and Cyprus reports no landings of this species. Under Commission Decision 2009/310/EC, Cyprus was granted exemption from the obligation to prepare an eel management plan in accordance with Council Regulation 1100/2007.

For the above reasons, no three-month eel fishing closure has been set by Cyprus.

Mediterranean regional conclusions

In this report, we are only looking at the EU Member States. However, the agreement under the General Fisheries Commission for the Mediterranean (GFCM) on European eel (Recommendation GFCM/42/2018/1) provides a framework similar to the EU's for management of European eel across the whole region. In terms of the three-month closure, it goes beyond the EU legislation for the other regions, as it includes freshwater fisheries as well. It would be worthwhile to look at implementation of the closures in all Mediterranean states but this is outside the scope of this report, which takes the 2017 Joint Declaration on eel and the first legal provision as its starting point.

There are some uncertainties to consider when calculating total landings of eel in EU Member States in the Mediterranean. ICES landings data does not separate Atlantic and Mediterranean landings for Spain and France, so you have to look at national reports, which are less accessible. There is also a greater uncertainty related to recreational catches in the region.

Glass eel fishing in EU Member States in the Mediterranean region is limited, and most countries do not target them. Only Spain and Italy report glass eel catches, and the total landings for 2019 were around 1 tonne. As each glass eel is estimated to weigh around 0.266 grams (Appelbaum *et al.*, 1998), it translates into almost 4 million individuals, but compared with Atlantic catches it is fairly marginal – only 1.8 % of the EU glass eel catch is taken in the Mediterranean region. None of the catches are recreational.

There is a substantial commercial fishery for yellow and silver eel in the region. In 2019, the EU Member States reported landings of around 450 tonnes, and if we extrapolate figures from Greece from 2018, of 41 tonnes, total catch would be around 490 tonnes. Italy, France, Spain and Greece (in descending order) take most of the catch. Slovenia has closed all its eel fisheries and the reported Croatian landings are very low. There is also a recreational fishery for eel in the region, estimated to more than 30 tonnes, almost all of which is reported from Italy. Several countries and regions have prohibited recreational eel fishing.

In the Mediterranean region, Member States can choose to close any three consecutive months to fishing, but the intent to protect eel migration remains and the closures apply to all waters, including transitional waters and freshwater.



All of the Member States have closed their eel fisheries for at least three consecutive months, though closures may be applied differently for different life stages and/or regions, and closure periods in France differ between freshwater and marine waters. Some have completely prohibited some fisheries, but only Slovenia, Andalusia in Spain and 11 Italian regions have prohibited all fisheries for eel. Murcia in Spain, as well as France (including Corsica) have prohibited all glass eel fisheries. The complete closure in Andalusia is particularly important, as all eels migrating to and from the Mediterranean Sea will come through the Strait of Gibraltar and are particularly vulnerable passing through this relatively narrow strait.

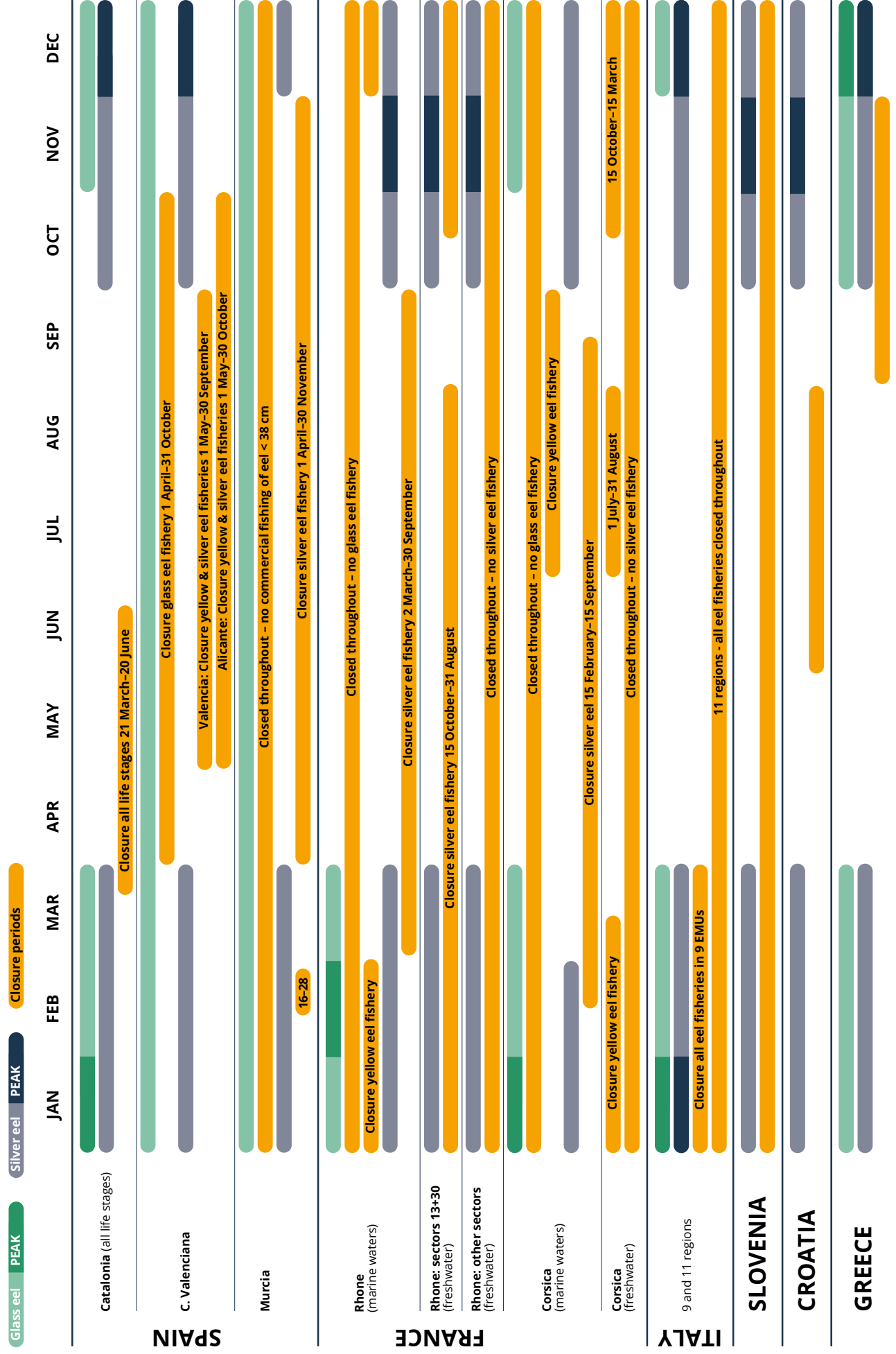
Mediterranean EU Member States have implemented the three-month closure in all waters, for all life stages and all fisheries. The exception is the Italian glass eel fishery for restocking purposes. When we look at the overlap between the closures and the eel migration periods, however, it is clear that the intent of the closures is not consistently followed. Mediterranean EU Member States generally close their fisheries outside the migration periods, with some allowing fishing at the peak of silver eel migration.

Information on eel migration periods in this region is more uncertain than in the Atlantic and the Baltic. There is a need for further research on migration periods at regional and national level. In July 2020, a GFCM eel research programme was launched, which will cover management and stock recovery, monitoring, data collection and stock assessment. We hope that improved scientific advice will be used to design better timed closures, resulting in better protection of eel migration.

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Figure 5. Closure periods for 2020-2021, and migration periods for silver and glass eel in the Mediterranean basin.



Overall conclusions and recommendations

European eels migrate at least 5 000 km from the western margin of their continental habitat in Europe to spawn in the Sargasso Sea; they have to swim even further when migrating from the Baltic and Mediterranean seas. The three-month fishery closures were a compromise agreement, attempting to protect this large-scale migration but avoid a full prohibition of all eel fisheries in coastal and marine waters.

In this report, we have assessed compliance across the EU Member States with the legal requirement to annually close the fishery for three months, and the intent to protect the migration. In our assessment, we have looked at five key aspects:

1. Does the Member State close its eel fisheries for three consecutive months?
2. Does the closure include coastal and transitional waters and, in the case of the Mediterranean, freshwater?
3. Does the closure cover all eel life stages?
4. Does the closure cover all fisheries and incidental catches?
5. Does the closure(s) align with the migration periods of glass eel and silver eel? If so, to what extent?

For each Member State, we have looked at the overall landings, the composition of that catch and where it was caught. We have found gaps in reporting and difficulty to access detailed information. We have not included information about illegal, unreported and unregulated catches. This major problem is outside the scope of this report.

In February 2020, ICES WKEELMIGRATION published a similar assessment of the situation in 2019. The conclusions were: 161 eel fishing closures were submitted in the ICES Data Call. Of these, 126 followed the EU legislation (ICES region and GFCM basin), and 35 did not. The reasons for non-compliance were: closures were outside of the required date range, closures did not apply over three consecutive months, and/or closures did only partially cover the temporal and spatial requirements.

In this report, we have looked at the closures in each Member State a year later (2020/2021 provisions).

Main conclusions

- Most Member States are not in compliance with the intent of the law, regarding the closures being consistent with temporal migration patterns of European eel. The initial agreement set out to protect the spawning migration of silver eels, taking their migration period into consideration when deciding on which three months the closure should apply. This was then extended to cover all eel life stages, and therefore also the arrival of glass eels. Two countries (Ireland and Slovenia) have prohibited all eel fisheries, and the closure in another two countries (the Netherland and Portugal) is fully aligned with the peak silver eel migration and includes all waters. There are also regional provisions that prohibit silver and/or glass eel fishing, or closely match migration. In general, however, the closures either have some overlap with the migration and are likely to have some effects, or there is little or no overlap (winter dormancy); i.e. the fishery basically opens up again once migration begins, or the closure applies only after the main migration period.

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- The majority of the coastal EU Member States were in compliance with the legal requirements set out in regulations 2020/123 and 2019/2236.
- All coastal Member States have closures that apply for three consecutive months. Many countries have longer or additional closures that apply to one or more life stages, or separate closures for different life stages.
- The majority of Member States comply with the spatial requirements for the closures, i.e. “in Union waters of the ICES area and brackish waters such as estuaries, coastal lagoons and transitional waters” or, in the case of the Mediterranean region “in all marine waters of the Mediterranean Sea, including freshwaters and transitional brackish waters, such as lagoons and estuaries”. Some go beyond, including inland waters when not required. In several countries, coastal lagoons are considered “inland waters” in national legislation, but in the regulation they should be covered by the closure, even in the Union waters of the ICES area. In some cases, we have not been able to find full information about the spatial provision.
- The closures generally include all life stages, but different stages may be covered by different closures. France and Spain have a particularly complex range of closures that varies for different regions and life stages.
- When it comes to whether the closure(s) cover all fisheries, there are two different issues that deserve attention. Not all closures clearly include recreational fisheries. We have not observed any provisions in the closure regimes regarding the inclusion of “incidental fisheries” – basically bycatch of European eel in other fisheries. In the Baltic Sea region, some countries provide landings data from bycatch and have a system where fishers are required to register catches of eel, but most of the Member States do not seem to report and register bycatch.
- Several countries, including Denmark, the Netherlands, Sweden and Italy, allow landings and sales during the closed period, after keeping live eels in submerged storage containers or land-based tanks. This creates a whole range of issues related to control and enforcement.

Other aspects to consider

In our analysis, we found that assembling an accurate time line for eel migration is complex, particularly for the silver eel. The ICES Special Request Advice on the temporal migration patterns of European eel (*Anguilla anguilla*) (ICES, 2020b) and the report from the workshop (ICES WKEELMIGRATION, 2020) have been key sources of information. We have also reviewed scientific literature, national authority publications, and included personal communications with national eel scientists.

There is an evident need for more published data on eel migration. We have found that fishermen, anglers, national scientists and management bodies have knowledge of eel migration patterns. We strongly advocate for a consistent transfer of knowledge among actors, to incorporate it in the scientific literature and advice.



We understand the political difficulty of closing the fisheries during peak migration, as fishing during the migration is common practice. Many fisheries specifically target the arrival of glass eels and/or the silver eel migration. Closing the fisheries during the migration periods would mean closing the fisheries, or at least displacing the fishing effort to other times of the year. Like any fisheries closure, it requires commitment to protect a vulnerable species and political clout. Currently, some countries even spell out that they have chosen the three months in such a way that the closure limits the effects on the fishing sector – rather than saves the eels.

However, the effectiveness of this measure does not only depend on the closures matching the eel migration periods, but also on the fishing patterns in each Member State. It is “easy” but not very effective in terms of eel recovery to close coastal and marine waters to fishing during peak migration, if most of the fishing takes place in inland waters. Therefore we have attempted to include this information in our analysis. It is particularly puzzling why several countries fail to comply with the intent of the closures – i.e. close during peak migration – even though it would hardly matter, as over 90 % of the fishery is inland and doesn't need to be included.

Another aspect worth reflecting on is that in the Netherlands, the closure is well matched with the migration period – though there is some evidence that migration is happening slightly later in recent years due to physical changes in temperatures and water flow. It covers all waters and all fisheries and has been in place since 2009 – much longer than the EU agreement on the closures. Even so, the eel landings have been increasing rather than decreasing. This is likely due to fisheries in the Netherlands targeting yellow eels, which do not migrate in the same way, and therefore fisheries are not affected by the closures to the same extent. Whether the fishing pattern is a result of displacement of effort, or an increase in fishing effort, after the closure was implemented, or if it was always like this, is unclear.

The question is: if there is displacement of effort from silver eel to yellow eel, how does that affect the results of the closures? How much more yellow eel can you land before the indirect effect on the numbers of migrating silver eels outweigh the protection offered by a “correct closure”?

Regional reflections

All European eel belongs to the same population, which is listed as Critically Endangered, and to support the recovery of the population, the whole geographical range will need to be taken into account. However, there are arguments for a regional coordination of efforts as well, as there are differences between the regions and it is thought that mature eels from different regions may have different roles to play in reproduction. For example, the Baltic region “produces” more larger and older female eels, whereas there are indications that the eel mature faster in the Mediterranean, and that more males are “produced” there, as well as among eels that spend their life in coastal waters. This variation and sexual dimorphism most likely affects reproductive success. We just don't know quite how yet.

With the adoption of the GFCM Recommendation on European eel (GFCM/42/2018/1) in 2018, the Mediterranean region has a coordinated approach to the recovery of European eel. However, the current measures are temporary and the development of

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and decision on more long-term measures will be crucial. There is less coordination in the other two regions. In the Baltic region, an ambition to create a “coordinated programme to ensure successful eel migrations from the Baltic Sea drainage basin to natural spawning grounds” has been part of the HELCOM Baltic Sea Action Plan since 2007, but little progress has been made to date.

A coordinated approach in the Mediterranean and the Baltic regions is crucial, as all the eels in each region have to pass through the relatively narrow straits between Gibraltar and Morocco, and between Sweden and Denmark, where they are particularly vulnerable to fishing. On the other hand, the Atlantic region consists of eel “heart land” – it is the core area for the population and where the vast majority of glass eels arrive, making efforts to protect them, improve migration routes and restore habitats particularly important.

Eel fisheries are very variable both across and within regions, but a brief comparison on the regional level is valid, particularly as they are under partially different management frameworks.

Eel landings – a regional look

Looking at landings from 2019 (ICES, 2020), including some extrapolations, it is apparent that the Baltic region takes the largest proportion of yellow and silver eel – over 1 100 tonnes – followed by the Atlantic region – an estimated 856 tonnes – and then around 520 tonnes in the Mediterranean EU Member States. In the Baltic, a very substantial part of the estimated landings are recreational: at least 342 tonnes, or over 30 %, whereas it is likely to be less than 10 % in the Atlantic region and over 5 % in the Mediterranean.

For natural reasons, there is no glass eel fishing in the Baltic region. Almost all the glass eel landings in the EU are taken in the Atlantic region – an estimated 54 tonnes landed in France, Spain and Portugal. France is responsible for over 80 % of the glass eel landings in both 2018 and 2019 according to the latest ICES data, including the UK. With the UK leaving the EU, the French share of the glass eel landings is likely to be around 90 %. In the Mediterranean EU Member States, only Spain and Italy reported limited glass eel landings of around 1 tonne in 2019. This is less than 2 % of the total EU landings. Only Spain allows a limited recreational fishery for glass eel: reported landings were 865 kg in 2019 and 662 kg in 2020. That may not sound like much, but with each European glass eel estimated to weigh around 0.266 grams (Appelbaum *et al.*, 1998), the recreational catch in 2020 consists of almost 2.5 million individuals, putting total EU glass eel landings at over 200 million.

Regional compliance with closures

As far as we can tell, compliance with the legal provisions for the closures has improved since the ICES Special Request Advice only last year. All EU Member States have implemented fishing closures for at least three consecutive months within the set time period, and overall they are mostly in compliance in terms of the waters they cover. In addition, the vast majority are also applying the closures to all life stages and all fisheries – **in the required waters**. Most Member States have also implemented additional fisheries limitations, such as closures applying to particular waters, to one or more life-stages, or one or more fisheries.

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Only two Member States – Ireland and Slovenia – have banned all fishing for European eel, whether commercial or recreational. An additional three countries – Portugal, Greece and Sweden – have banned all recreational fishing for European eel. There are also a number of regional total bans, such as Andalusia in Spain and the 11 Italian regions where all eel fishing was prohibited already in 2009, and most of the Spanish regions have banned recreational fishing.

A regional comparison of the compliance in implementing the closures is less interesting, as general compliance is high and both the closures and the fisheries are so variable, but the Baltic region has taken a somewhat coordinated approach from the start, with one closed period for marine and coastal waters that is more or less the same in all the countries. The other regions show no such alignment in the approach. France and Spain both have a complex combination of closures/fishing periods managed on a regional basis, making the analysis of their effectiveness more difficult, even though some may be well targeted to protect eels at the relevant time.

There is no specific time period set for the three-month closures in the Mediterranean region; Member States can choose any three consecutive months, but the intent to protect the migration remains and the closures apply to all waters, including transitional waters and freshwater. All of the EU Member States in the region have closed their eel fisheries for at least three consecutive months, though closures may be applied differently for different life stages and/or regions, and for freshwater and marine waters. This is probably the most variable region, but part of the reason for this may be that the provision also covers all life stages, all fisheries and all waters.

Regional intent to protect migration

Finally, looking at the regional levels and assessing the closures against the eel migration periods, our conclusion is that none of the regions are doing particularly well. The figures we have produced to provide some overview of migration times and the closures (pages 19, 32–33, 44) show that most of the closures only partially overlap with the migration.

In the Baltic region, it is clear that the majority of the Baltic Member States have closed their fisheries **after** the main migration and the main fishing season. In addition, much of the fishing for eel takes place in inland waters, and as a result a closure in marine and coastal waters has a more limited effect.

Overall, the measures taken by the countries in the Atlantic region provide better protection for silver eel migration. Aside from the total closure in Ireland and the region of Andalusia, Portugal and the Netherlands closely match the silver eel migration period with their closures, and the closures cover all fisheries in all waters, going beyond the EU legislation. France and northern Spain (aside from Galicia) effectively protect the coastal migration of silver eel, as any silver eel fishing is prohibited. Looking at the closures and where the eel fisheries take place, there is also a greater overlap than in the Baltic Sea region, as many of the closures apply to both marine/coastal and inland waters. The picture changes with the glass eel fisheries; the three main countries – France, Spain and Portugal – all allow fishing during the peak arrival period. The exceptions are Ireland and the French region of Bretagne, where glass eel fishing is prohibited.

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In the Mediterranean, we had less detailed data on eel migration times, but looking at the overlap between the closures and the eel migration periods, it is clear that the intent of the closures is not consistently followed. Several of the Mediterranean EU Member States are closing their fisheries outside of the migration periods, allowing fishing to continue during peak migration, particularly silver eel migration. In fact, some are blatantly opening their fisheries again just as the migration period starts.

There is no doubt that much can be done to improve the protection of the eel migrations in all the regions through better targeted closures, particularly in the Mediterranean. However, the Baltic region lands more than double the amount of yellow and silver eel, has relatively poor overlap with migration times, and much of the fishing takes place inland and is therefore not covered by the closures.

Recommendations

The three-month closures have been applied across the EU for three years now. The scope of the closures has been broadened and general compliance has improved year on year, but as this report shows, the EU is still far from protecting the migration of this sensitive species. European eel remains classed as Critically Endangered (IUCN, 2018) and the most recent ICES advice (ICES, 2020) shows that recruitment remains at a very low level and calls for all anthropogenic mortality to be as close to zero as possible. So why are the closures not working very well?

1. One of the main reasons is **a lack of political willingness to protect the European eel**. Despite its status as Critically Endangered it continues to be targeted by both commercial and recreational fishing in a majority of Member States. The closures themselves were a compromise reached after the Commission proposed adding European eel to the “prohibited species list” in 2017.
2. The intention of the closures – to protect eel migration – is not spelt out clearly enough in the legal text. In the legal preamble of the regulations, the wording is: *“As the fishing closure period should be consistent with the conservation objectives set out in Council Regulation (EC) No 1100/2007 (3) and with the temporal migration patterns of European eel, for the Union waters of the ICES area it is appropriate to set it in the period between 1 August 2020 and 28 February 2021.”* It is not referring specifically to the spawning migration, or peak migration, much less introducing it directly into the legal articles in the regulations.
3. Another problem is that we do not have all the information we need to assess and evaluate their effectiveness. We need a better understanding of regional, national and local migrations of both glass eel and silver eel. We also need better landing data. In its Special Request Advice, ICES points out that if “seasonal closures will be a significant tool for eel conservation and management, reporting landings by month should be included in routine data calls.”

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4. The regulations where the provisions are currently included, fixing annual fishing opportunities for EU stocks, do not create an effective legal framework. It requires a renewed commitment by the Fisheries Council of Ministers every year and, more importantly, does not provide for any regular evaluation of the effectiveness of the measure, nor for any involvement from the co-legislator: the European Parliament.

We recommend the following steps to improve the protection of the eel migrations to support the recovery of the European eel population:

- The intent behind the three-month closures – to protect the spawners – should be made clear in the legal text. With the current wording: “consistent... with the temporal migration patterns of European eel” it has been lost in the sea of “fairness and equality”. The only clear language was in the Council and Commission PR from the initial agreement in December 2017. The best option would be to state the intent in both the preamble and in the legal article setting out the boundaries of the closures.
- Regardless of the language, the intent was pretty clear, and most of the Member States are not following it. Without a better alignment with migration, the effects of the closures will be negligible. Better implementation can be supported by adjusting the period set for the ICES area. For example, if the closure had to take place during September to December, instead of August to February, it would create a better overlap with silver eel migration. Another option is to increase the closure from three to four months.
- Aside from the Mediterranean region, the current provision does not take into account where the eels are caught. A closure in marine and coastal waters will have limited effect if 95% of the fishery is in inland waters. This can only be addressed by including all waters, as has been agreed in the Mediterranean region.
- In order to properly evaluate the effectiveness of the closures and make further improvements to the legal provision, more timely and detailed data on eel migration is needed together with a better break-down of catches and landings of all life stages both in time and geographically. We cannot judge whether this is better done under the EU Data Collection Framework or specific ICES data calls.
- If the legal provision for the closures was included in, for example, the Technical Measures regulation instead of dealt with on an annual basis, its long-term implementation would be assured and it would be subject to regular evaluations of its effectiveness.
- Further technical measures to protect this sensitive species should be considered. The objectives of the Technical Measures regulation specifically

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mention the protection of juveniles and spawning aggregations. European eel is thought to spawn at great depth in the Sargasso Sea, but on its long journey there, it is forced to “aggregate” on parts of its spawning migration route, when passing through the Strait of Gibraltar and the strait and sounds between the Baltic and the Atlantic. Additional temporal closures could be used to protect European eel spawners, specifically targeting these “bottlenecks” on the eel migration route. As long as fishing by Sweden and Denmark is allowed to continue in the narrow waters between them, it also discourages conservation measures in countries east of these passages, as “saved eels” are likely to be caught on their way out towards the Sargasso Sea.

- Illegal, unreported and unregulated (IUU) fishing for eel is already a massive problem not covered in this report. Any loopholes enabling such practises should be closed, unless strict traceability, control and enforcement can be ensured. For that reason, it is preferable that the three-month closure also applies to landings and sales, even though eel catches are regularly kept alive in corves and sold later.
- In 2018, European eel was added to the Specific Control and Inspection Programmes (SCIPs) by Commission [Implementing Decision \(EU\) 2018/1986](#) for all EU regions – the Mediterranean, the Baltic Sea, Western Waters and the North Sea. These monitoring programmes should cover inspections at sea and in port at the point of landing (before first sale), and are implemented through a Joint Deployment Programme (JDP) for each region. It would be good to add control of the eel fishing closures as a Specific Action to each of the JDPs.

The current closures have not stopped several countries from increasing their catches over the same time period. Even with perfectly aligned and fully implemented three-month closures, this conservation measure is less effective and more difficult to control than a full prohibition of eel fishing. A prohibition also prevents a displacement of fishing effort and landings to other months, other life stages or other areas.

Considering its conservation status and the annual scientific advice on fishing opportunities, the continued widespread targeting of European eel is really unacceptable. The population is below any conceivable biological reference points, and continued fishing is therefore also a breach of the Common Fisheries Policy objectives, as well as the objectives of the technical measures regulation and the ambitions of the EU Biodiversity Strategy under the Green Deal to protect biodiversity and sensitive species. Reflecting the sense of urgency and providing the same legal protection as for similarly threatened species, European eel should be added to the Annex I of the Technical measures framework Regulation 2019/1241, prohibiting all targeted fishing.

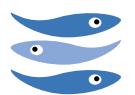
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References

- Aalto, E., Capoccioni, F., Terradez Mas, J., Schiavina, M., Leone, C., De Leo, G. & Ciccotti, E. (2016). Quantifying 60 years of declining European eel (*Anguilla anguilla* L., 1758) fishery yields in Mediterranean coastal lagoons. *ICES Journal of Marine Science*, 73(1): 101–110. <https://doi.org/10.1093/icesjms/fsvo84>
- Amilhat, E., Aarestrup, K., Faliex, E., Simon, G., Westerberg, H. & Righton, D. (2016). First evidence of European eels exiting the Mediterranean Sea during their spawning migration. *Scientific reports*, 6: 21817. <https://doi.org/10.1038/srep21817>
- Amilhat, E., Farrugio, H., Lecomte-Finiger, R., Simon, G. & Sasal, P. (2009). Silver eel population size and escapement in a Mediterranean lagoon: Bages-Sigean, France. *Knowledge & Management of Aquatic Ecosystems*, 5: 390–391. <https://doi.org/10.1051/kmae/2009005>
- Appelbaum, S., Chernitsky, A. & Birkan, V. (1998). Growth observations on European (*Anguilla Anguilla* L) and American (*Anguilla Rostrata* Le Sueur) glass eels. *Bull. Fr. Pêche Piscic.*, 349: 187–193.
- Aranburu, A., Díaz, E. & Briand, C. (2016). Glass eel recruitment and exploitation in a South European estuary (Oria, Bay of Biscay). *ICES Journal of Marine Science*, 73(1): 111–121.
- Arrêté du 28 octobre 2013 relatif aux dates de pêche de l'anguille européenne (*Anguilla anguilla*) de moins de 12 centimètres.
- Arrêté du 5 février 2016 relatif aux périodes de pêche de l'anguille européenne (*Anguilla anguilla*) aux stades d'anguille jaune et d'anguille argentée.
- Arribas, C., Fernández-Delgado, C., Oliva-Paterna, F. J. & Drake, P. (2012). Oceanic and local environmental conditions as forcing mechanisms of the glass eel recruitment to the southernmost European estuary. *Estuarine, Coastal and Shelf Science*, 107: 46–57.
- Aschonitis, V. G., Castaldelli, G., Lanzoni, M., Merighi, M., Gelli, F., Giari, L., Rossi, R. and Fano, E. A. (2017). A size-age model based on bootstrapping and Bayesian approaches to assess population dynamics of *Anguilla anguilla* L. in semi-closed lagoons. *Ecology of Freshwater Fish*, 26(2): 217–232.
- Aschonitis, V., Castaldelli, G., Lanzoni, M., Rossi, R., Kennedy, C., & Fano, E. A. (2017). Long-term records (1781–2013) of European eel (*Anguilla anguilla* L.) production in the Comacchio Lagoon (Italy): evaluation of local and global factors as causes of the population collapse. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 27(2): 502–520.
- Bajinskis, Janis (pers. comm. 2020), Fish Resources Research Department, BIOR, Latvia.
- Baker, R. R. (1978). *The Evolutionary Ecology of Animal Migration*. New York, NY: Holmes and Meier.
- Basioli, J. (1957a). Freshwater fisheries from the territory of the People's Republic of Croatia in 1956. *Ribarstvo Jugoslavije*, 12(1). 17–19. (in Croatian) <https://hrcak.srce.hr/159191>
- Basioli, J. (1957b). Fisheries of the Neretva River. *Ribarstvo Jugoslavije*, 12(3): 43–46. (in Croatian)

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month
eel
fishing
closures«



- Bernotas, Priit (pers. comm. 2020), Chief specialist & Chair of Hydrobiology and fisheries, Estonian University of Life Sciences.
- Bernotas, P., Vetemaa, M., Saks, L., Eschbaum, R., Verliin, A. & Järvalt, A. (2015). Dynamics of European eel landings and stocks in the coastal waters of Estonia. *ICES Journal of Marine Science*. <https://doi.org/10.1093/icesjms/fsv245>
- Bertin, L. (1951). Les anguilles. Variation, croissance, euryhalinité', toxicité', hermaphroditisme juvénile et sexualité, migrations, métamorphoses. Paris: Payot.
- Briand, C., Fernández-Delgado, C., Zamora, L., Jiménez, F., Evans, D. & Díaz, E. (2019). Does a bigger glass eel mean better recruitment? Eels Biology, Monitoring, Management, Culture and Exploitation: Proceedings of the First International Eel Science Symposium.
- Brujns M.C.M. & Durif, C.M.F. (2009). Silver Eel Migration and Behaviour. In: van den Thillart, G., Dufour, S. & Rankin J.C. (eds) Spawning Migration of the European Eel. *Fish & Fisheries Series*, 30: 65–95. Springer, Dordrecht. https://doi.org/10.1007/978-1-4020-9095-0_4
- Capoccioni, F., Costa, C., Canali, E., Aguzzi, J., Antonucci, F., Ragonese, S. & Bianchini, M. L. (2014). The potential reproductive contribution of Mediterranean migrating eels to the *Anguilla anguilla* stock. *Scientific reports*, 4(1): 1–7.
- Capoccioni, F., Leone, C., Belpaire, C., Malarvannan, G., Poma, G., De Matteis, G., Tancioni, L., Contò, M., Failla, S., Covaci, A. & Ciccotti, E. (2020). Quality assessment of escaping silver eel (*Anguilla anguilla* L.) to support management and conservation strategies in Mediterranean coastal lagoons. *Environmental Monitoring and Assessment*, 192(9): 1–22. <https://doi.org/10.1007/s10661-020-08533-6>
- Clavero, M. & Hermoso, V. (2015). Historical data to plan the recovery of the European eel. *Journal of Applied Ecology*, 52(4): 960–968. <https://doi.org/10.1111/1365-2664.12446>
- Cobo, F., Sánchez-Hernández, J. & Vieira, R. (2014). Seasonal downstream movements of the European eel in a Southwestern Europe river (River Ulla, NW Spain). *Nova Acta Científica Compostel*, 21: 77–84.
- Correia, M. J., Domingos, I., Santos, J., Lopes, V., de Leo, G. & Costa, J. L. (2019). Challenges to reconcile conservation and exploitation of the threatened *Anguilla anguilla* (Linnaeus, 1758) in Santo André lagoon (Portugal). *Ocean & Coastal Management*, 181, 104892. <https://doi.org/10.1016/j.ocecoaman.2019.104892>
- Council of the European Union (2018). Document 5382/18 of 16 January 2018: Joint Declaration on strengthening the recovery for European eel (Commission and Member States): <https://data.consilium.europa.eu/doc/document/ST-5382-2018-INIT/en/pdf>
- Creutzberg, F. (1961). On the orientation of migrating elvers (*Anguilla vulgaris* Turt.) in a tidal area. *Netherlands Journal of Zoology*, 1(3): 257–338.
- de Casamajor, M.N., Bru, N. & Prouzet, P. (1999). Influence de la luminosité nocturne et de la turbidité sur le comportement vertical de migration de la civelle d'anguille (*Anguilla anguilla* L.) dans l'estuaire de l'Adour. *Bull. Ft. Pêche Piscic.* 355: 327–347.
- Dekker, W., Bryhn, A., Magnusson, K., Sjöberg, N. & Wickström, H. (2018). Assessment of the eel stock in Sweden, spring 2018. Third post-evaluation of the Swedish Eel Management Plan, Swedish University of Agricultural Sciences, Drottningholm Lysekil Öregrund. 113 pp.



- Desaunay, Y. & Guerault, D. (1997). Seasonal and long-term changes in biometrics of eel larvae: a possible relationship between recruitment variation and North Atlantic ecosystems productivity. *Journal of Fish Biology*, 51: 317–339. <https://doi.org/10.1111/j.1095-8649.1997.tb06106.x>
- Domingos, I. M. (1992). The fluctuation of glass eel migration in the Mondego estuary (Portugal). *Irish Fisheries Investigations, Series A (Freshwater)*, 36: 1–4.
- Durif, C., Elie, P., Gosset, C., Rives, J. & Travade, F. (2003). Behavioral study of downstream migrating eels by radio-telemetry at a small hydroelectric power plant. *American Fisheries Society Symposium*, 33: 343–356.
- Durif, C. M. & Elie, P. (2008). Predicting downstream migration of silver eels in a large river catchment based on commercial fishery data. *Fisheries Management and Ecology*, 15(2): 127–137.
- Elie, P. & Rochard, E. (1994). Migration des civelles d'anguilles (*Anguilla anguilla* L.) dans les estuaires, modalités du phénomène et caractéristiques des individus. *Bulletin Français de la Pêche et de la Pisciculture*, 335: 81–98.
- European Commission. (2017). Proposal for a Council Regulation fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non Union waters. COM(2017)645 final, 2017/0287 (NLE).
- EU. (2007). Council Regulation (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel. *Official Journal of the European Union*, L 248: 17–23. <http://data.europa.eu/eli/reg/2007/1100/oj>
- EU. (2009). Commission Decision of 2 April 2009 approving requests by Cyprus, Malta, Austria, Romania and Slovakia for exemption from the obligation to prepare an Eel Management Plan in accordance with Council Regulation (EC) No 1100/2007. *Official Journal of the European Union*, L91: 23–24.
- EU. (2018). Council Regulation (EC) 2018/120 of 23 January 2018 fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Regulation (EU) 2017/127. *Official Journal of the European Union*, L 27: 1–168. <http://data.europa.eu/eli/reg/2018/120/oj>
- EU. (2019a). Council Regulation (EU) 2019/124 of 30 January 2019 fixing for 2019 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters. *Official Journal of the European Union*, L 29: 1–166. <http://data.europa.eu/eli/reg/2019/124/oj>
- EU. (2019b). Council Regulation (EU) 2019/2236 of 16 December 2019 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas. *Official Journal of the European Union*, L 336: 14–25. <http://data.europa.eu/eli/reg/2019/2236/oj>
- EU (2020). COUNCIL REGULATION (EU) 2020/123 of 27 January 2020 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters. *Official Journal of the European Union*, L 25: 1–156. <http://data.europa.eu/eli/reg/2020/123/oj>

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three-
month
eel
fishing
closures«



EU (2021a). Council Regulation (EU) 2021/90 of 28 January 2021 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas. Official Journal of the European Union, L 31: p. 1–19. <http://data.europa.eu/eli/reg/2021/90/oj>

EU. (2021b). Council Regulation (EU) 2021/92 of 28 January 2021 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters. Official Journal of the European Union, L 31: 31–192. <http://data.europa.eu/eli/reg/2021/92/oj>

Gascuel, D., Feunteun, E. & Fontenelle, G. (1995). Seasonal dynamics of estuarine migration in glassseels (*Anguilla anguilla*). *Aquatic Living Resources*, 8(2): 123–133. <https://doi.org/10.1051/alr:1995009>.

GFCM. (2018). Recommendation GFCM/42/2018/1 on a multiannual management plan for European eel in the Mediterranean Sea. Issued by the General Fisheries Commission for the Mediterranean: <http://www.fao.org/gfcm/decisions/en/>

Gosset, C., Travade, F., Durif, C., Rives, J., & Elie, P. (2005). Tests of two types of bypass for downstream migration of eels at a small hydroelectric power plant. *River Research and Applications*, 21(10): 1095–1105.

Havs- och vattenmyndigheten. (2021). Fisk- och skaldjursbestånd i hav och sötvatten 2020: Resursöversikt. Rapport 2021:6. ISBN 978-91-89329-05-8.

Huisman, J., Verhelst, P., Deneudt, K., Goethals, P., Moens, T., Nagelkerke, L.A.J., Nolting, C., Reubens, J., Schollema, P.P., Winter, H.V. & Mouton, A. (2016). Heading south or north: novel insights on European silver eel *Anguilla anguilla* migration in the North Sea. *Marine Ecology Progress Series*, 554: 257–262. <https://doi.org/10.3354/meps11797>

ICES. (2019). European eel (*Anguilla anguilla*) throughout its natural range. In Report of the ICES Advisory Committee, 2019. ICES Advice 2019, ele.2737.nea, <https://doi.org/10.17895/ices.advice.4825>

ICES. (2020a). Workshop on the temporal migration patterns of European eel (WKEELMIGRATION). ICES Scientific Reports. 2:25. 109 pp. <http://doi.org/10.17895/ices.pub.5993>

ICES. (2020b). EU request on temporal migration patterns of European eel (*Anguilla Anguilla*) in all relevant ecoregions. In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, sr.2020.01, <https://doi.org/10.17895/ices.advice.5994>

ICES. (2020c). Joint EIFAAC/ICES/GFCM Working Group on Eels (WGEEL) + associated Country Reports. ICES Scientific Reports. 2:85. 223 pp. <http://doi.org/10.17895/ices.pub.5982>

ICES. (2020d). European eel (*Anguilla anguilla*) throughout its natural range. In Report of the ICES Advisory Committee, 2020. ICES Advice 2020, ele.2737.nea, <https://doi.org/10.17895/ices.advice.5898>

Italian Ministry Decree N°. 403 of 25.07.2019 sets out the provisions for the Italian closure.

Jørgensen, C., Dunlop, E. S., Opdal, A. F. & Fiksen, Ø. (2008). The evolution of spawning migrations: state dependence and fishing-induced changes. *Ecology* 89: 3436–3448. <https://doi.org/10.1890/07-1469.1>



Kara, M. H. & Quignard, J. P. (2019). Fishes in Lagoons and Estuaries in the Mediterranean 3A: Migratory Fish. John Wiley & Sons.

Kettle, A. J., Asbjørn Vøllestad, L. & Wibig, J. (2011). Where once the eel and the elephant were together: decline of the European eel because of changing hydrology in southwest Europe and northwest Africa?. *Fish and Fisheries*, 12(4): 380–411.

Lambert, P. (2008). Evaluation des effets possibles de différents niveaux de réduction des impacts anthropiques sur le temps de restauration du stock d'anguille européenne, p. 26.

Lennox, R.J., Paukert, C.P., Aarestrup, K., Auger-Méthé, M., Baumgartner, L., Birnie-Gauvin, K., Bøe, K., Brink, K., Brownscombe, J.W., Chen, Y., Davidsen, J.G., Eliason, E.J., Filous, A., Gillanders, B.M., Helland, I.P., Horodysky, A.Z., Januchowski-Hartley, S.R., Lowerre-Barbieri, S.K., Lucas, M.C., Martins, E.G., Murchie, K.J., Pompeu, P.S., Power, M., Raghavan, R., Rahel, F.J., Secor, D., Thiem, J.D., Thorstad, E.B., Ueda, H., Whoriskey, F.G. & Cooke, S.J. (2019). One Hundred Pressing Questions on the Future of Global Fish Migration Science, Conservation, and Policy. *Frontiers in Ecology and Evolution*, 7: 286. <https://doi.org/10.3389/fevo.2019.00286>

Ložys, Linas (pers. comm. 2020), Chief Researcher & Head of Laboratory, Laboratory of Fish Ecology, Institute of Ecology, Nature Research Center, Lithuania.

MacNamara, R., Koutrakis, E.T., Sapounidis, A., Lachouvaris, D., Arapoglou, F., Panora, D. & McCarthy, K.T. (2014). Reproductive potential of silver European eels (*Anguilla anguilla*) migrating from Vistonis Lake (Northern Aegean Sea, Greece). *Mediterr. Mar. Sci.* 15: 539. <https://doi.org/10.12681/mms.614>

Moriarty, C. (2003). A review of Eel Fisheries in Ireland and Strategies for future development. In D.A. Dixon (ed.) *Biology, management and protection of catadromous eels*, pp 217–224. American Fisheries Society Symposium 33, Bethesda, Maryland.

Morović, D. (1948). Godišnje kretanje ulova jegulje i cipala u donjoj Neretvi. *Ribarstvo Jugoslavije (Croatian Journal of Fisheries)*, 3: 83–86.

Pike, C., Crook, V. & Gollock, M. (2020). *Anguilla anguilla*. *The IUCN Red List of Threatened Species* 2020: e.T60344A152845178. <https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T60344A152845178.en>

Piria, Marina (pers. comm. 2020), Prof. PhD, University of Zagreb, Faculty of Agriculture, Department of Fisheries, Beekeeping, Game Management and Special Zoology, Zagreb, Croatia.

Poole, W. R., Reynolds, J. D. & Moriarty, C. (1990). Observations on the silver eel migrations of the Burrishoole River system, Ireland, 1959 to 1988. *Internationale Revue der gesamten Hydrobiologie und Hydrographie*, 75(6), 807–815.

Prigge, E., Marohn, L. & Hanel, R. (2013). Tracking the migratory success of stocked European eels *Anguilla anguilla* in the Baltic Sea. *Journal of Fish Biology*, 82(2): 686–699. <https://doi.org/10.1111/jfb.12032>

Righton, D., Westerberg, H., Feunteun, E., Økland, F., Gargan, P., Amilhat, E., Metcalfe, J., Lobon-Cervia, J., Sjöberg, N., Simon, J., Acou, A., Vedor, M., Walker, A., Tancart, T., Brämick, U. & Aarestrup, K. (2016). Empirical observations of the spawning migration of European eels: The long and dangerous road to the Sargasso Sea. *Science Advances*, 2(10): e1501694. <https://doi.org/10.1126/sciadv.1501694>

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- Sandlund, O. T., Diserud, O. H., Poole, R., Bergesen, K., Dillane, M., Rogan, G., Durif, C., Thorstad, E. B. & Vøllestad, L. A. (2017). Timing and pattern of annual silver eel migration in two European watersheds are determined by similar cues. *Ecology and Evolution*, 7: 5956–5966.
- Svärdson, G. (1976). The decline of the Baltic eel population. Institute of Freshwater Research, Drottningholm, Report 55: 136–143
- Tesch, F.-W. (1977). The Eel - Biology and Management of Anguillid Eels. Springer Netherlands. ISBN 978-94-009-5763-3.
- Verhelst, P.J., Buysse, D., Reubens, J., Pauwels, I., Aelterman, B., Van Hoey, S., Goethals, P., Coeck, J., Moens, T. & Mouton, A. (2018). Downstream migration of European eel (*Anguilla anguilla* L.) in an anthropogenically regulated freshwater system: Implications for management. *Fisheries Research* 199: 252–262.
<https://doi.org/10.1016/j.fishres.2017.10.018>
- Vøllestad, L. A., Jonsson, B., Hvidsten, N. A., Næsje, T. F., Haraldstad, Ø. & Ruud-Hansen, J. (1986). Environmental factors regulating the seaward migration of European silver eels (*Anguilla anguilla*). *Canadian Journal of Fisheries and Aquatic Sciences*, 43(10): 1909–1916.<https://doi.org/10.1139/f86-236>
- Weber, M. (1986). Fishing method and seasonal occurrence of glass eels (*Anguilla anguilla* L) in the Rio Minho, West Coast of the Iberian Peninsula. *Vie et Milieu/ Life & Environment, Observatoire Océanologique - Laboratoire Arago*, pp. 243–250.
<https://hal.sorbonne-universite.fr/hal-03024095>
- Weldon, L., O'Leary, C., Steer, M., Newton, L., Macdonald, H. & Sargeant, S.L. (2020). A comparison of European eel *Anguilla anguilla* eDNA concentrations to fyke net catches in five Irish lakes. *Environmental DNA*, 2: 587–600.
<https://doi.org/10.1002/edn3.91>
- Westerberg, H. (1998). The migration of glass-eel and elvers in the Skagerrak and the Kattegatt. *ICES Ecology of Diadromous Fishes during the Early Marine Phase*, CM 1998N:11.
- Westerberg, H. & Wickström, H. (2016). Stock assessment of eels in the Baltic: reconciling survey estimates to achieve quantitative analysis. *ICES Journal of Marine Science*, 73: 1: 75–83. <https://doi.org/10.1093/icesjms/fsvo49>
- Zompola, S., Katselis, G., Koutsikopoulos, C. & Cladas, Y. (2008). Temporal patterns of glass eel migration (*Anguilla anguilla* L. 1758) in relation to environmental factors in the Western Greek inland waters. *Estuarine, Coastal and Shelf Science*, 80(3): 330–338.

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Annex I. The legal provisions

1. Agreed in December 2017 [only the text on European eel has been included]:

COUNCIL REGULATION (EU) 2018/120 of 23 January 2018 fixing for 2018 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters, and amending Regulation (EU) 2017/127

(9) As regards European eel (*Anguilla anguilla*) stock, the ICES has advised that all anthropogenic mortalities should be reduced to zero, or kept as close to zero as possible. In the light of that advice, it is appropriate to establish a temporary prohibition to fish for European eel of an overall length of 12 cm or longer in Union waters of ICES area including in the Baltic Sea, to protect spawners during their migration.

Article 10

Measures on European eel fisheries

It shall be prohibited for Union fishing vessels and third country vessels, as well as for any commercial fisheries from shore, to fish for European eel of an overall length of 12 cm or longer in Union waters of ICES area, including in the Baltic Sea, for a consecutive three-month period to be determined by each Member State between 1 September 2018 and 31 January 2019. Member States shall communicate the determined period to the Commission not later than 1 June 2018.

2. Agreed in December 2018 [only the text on European eel has been included]:

COUNCIL REGULATION (EU) 2019/124 of 30 January 2019 fixing for 2019 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters

(10) As regards the European eel (*Anguilla anguilla* L.) stock, the ICES has advised that all anthropogenic mortalities, including recreational and commercial fisheries, should be reduced to zero, or kept as close to zero as possible. Moreover, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 establishing management measures for European eel in the Mediterranean Sea. It is appropriate to establish a level playing field across the Union and hence to establish also for the Union waters of the ICES area as well as brackish waters such as estuaries, coastal lagoons and transitional waters a consecutive three-month closure period for all fisheries of European eel at all life stages. As the fishing closure period should be consistent with the conservation objectives set out in Council Regulation (EC) No 1100/2007 and with the temporal migration patterns of European eel, for the Union waters of the ICES area it is appropriate to set it in the period between 1 August 2019 and 29 February 2020.

(38) At its 42nd annual meeting in 2018, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 establishing management measures for European eel (*Anguilla anguilla* L.) in the Mediterranean Sea. These measures are already implemented at Union level through Regulation (EC) No 1100/2007. The Recommendation also includes an annual closure period of three consecutive months which needs to be transposed into Union law and defined by each Member State in accordance with the conservation objectives of Regulation

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(EC) No 1100/2007, its management plan(s) for eel and the temporal migration patterns of eel in the Member State. The closure shall apply to all marine waters of the Mediterranean and to brackish waters such as estuaries, coastal lagoons and transitional waters, in accordance with the Recommendation.

Article 11

Measures on European eel fisheries in Union waters of the ICES area

Any targeted, incidental and recreational fishery of European eel shall be prohibited in Union waters of the ICES area and brackish waters such as estuaries, coastal lagoons and transitional waters for a consecutive three-month period to be determined by each Member State between 1 August 2019 and 29 February 2020. Member States shall communicate the determined period to the Commission not later than 1 June 2019.

Article 42

European eel in the Mediterranean Sea (GSAs 1 to 27)

1. All activities by Union vessels and other Union fishing activities catching European eel, namely targeted, incidental and recreational fisheries, shall be subject to the provisions of this Article.

2. This Article shall apply to the Mediterranean Sea and to brackish waters such as estuaries, coastal lagoons and transitional waters.

3. It shall be prohibited to fish for European eel in Union and international waters of the Mediterranean Sea, for a consecutive three-month period to be determined by each Member State. The fishing closure period shall be consistent with the conservation objectives set out in Regulation (EC) No 1100/2007, with national management plans in place and with the temporal migration patterns of European eel in the Member States concerned. Member States shall communicate the determined period to the Commission no later than one month before the entry into force of the closure and in any case no later than 31 January 2019.

3. Agreed in December 2019 [only the text on European eel has been included]:

COUNCIL REGULATION (EU) 2020/123 of 27 January 2020 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters

(12) As regards the European eel (*Anguilla anguilla*) stock, ICES has advised that all anthropogenic mortalities, including recreational and commercial fisheries, should be reduced to zero, or kept as close to zero as possible. Moreover, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 establishing management measures for European eel in the Mediterranean. It is appropriate to maintain the level-playing field across the Union and hence to maintain also for the Union waters of the ICES area as well as brackish waters such as estuaries, coastal lagoons and transitional waters a consecutive three-month closure period for all fisheries of European eel at all life stages. As the fishing closure period should be consistent with the conservation objectives set out in Council Regulation (EC) No 1100/2007 and with the temporal migration patterns of European eel, for the Union waters of the ICES area it is appropriate to set it in the period between 1 August 2020 and 28 February 2021.

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Article 11

Measures on European eel fisheries in Union waters of the ICES area

Any targeted, incidental and recreational fishery of European eel shall be prohibited in Union waters of the ICES area and brackish waters such as estuaries, coastal lagoons and transitional waters for a consecutive three-month period to be determined by each Member State concerned between 1 August 2020 and 28 February 2021. Member States shall communicate the determined period to the Commission no later than 1 June 2020.

In 2019, the provision for the Mediterranean Member States was transposed instead into [only text specifically on European eel has been included]:

COUNCIL REGULATION (EU) 2019/2236 of 16 December 2019 fixing for 2020 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas

(6) At its 42nd annual meeting in 2018, the General Fisheries Commission for the Mediterranean (GFCM) adopted recommendation GFCM/42/2018/1 on a multiannual management plan for European eel in the Mediterranean Sea, which established management measures for European eel (*Anguilla anguilla*) in the Mediterranean Sea (GFCM geographical subareas 1 to 27). Those measures include an annual closure period of three consecutive months to be defined by each Member State in accordance with the conservation objectives of Council Regulation (EC) No 1100/2007, the national management plan(s) for eel and the temporal migration patterns of eel in the Member State. The closure shall apply to all marine waters of the Mediterranean Sea and to brackish waters such as estuaries, coastal lagoons and transitional waters, in accordance with that recommendation. That measure should be implemented in Union law.

Article 2

Scope

1. This Regulation applies to Union fishing vessels exploiting the following fish stocks: (a) European eel (*Anguilla anguilla*) in the Mediterranean Sea, as defined in Article 4(b);

Article 4

Fishing zones

(b) 'Mediterranean Sea' means the waters in GFCM geographical subareas 1 to 27, as defined in Annex I to Regulation (EU) No 1343/2011;

Article 5

European eel

1. All activities by Union fishing vessels and other Union fishing activities catching European eel (*Anguilla anguilla*), namely targeted, incidental and recreational fisheries, shall be subject to the provisions of this Article.

2. This Article applies to the Mediterranean Sea and to brackish waters such as estuaries, coastal lagoons and transitional waters.

3. It shall be prohibited for Union fishing vessels to fish for European eel in Union and international waters of the Mediterranean Sea for a consecutive three-month period to be determined by each Member State. The fishing closure period shall be consistent with the conservation objectives set out in Regulation (EC) No 1100/2007,

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with national management plans in place and with the temporal migration patterns of European eel in the Member States concerned. Member States shall communicate the determined period to the Commission no later than one month prior to the entry into force of the closure and in any case no later than 31 January 2020.

4. Agreed in December 2020 [only text specifically on European eel has been included]:

COUNCIL REGULATION (EU) 2021/92 of 28 January 2021 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks, applicable in Union waters and, for Union fishing vessels, in certain non-Union waters

(12) As regards the European eel (*Anguilla anguilla*) stock, ICES has advised that all anthropogenic mortalities, including those due to recreational and commercial fisheries, should be reduced to zero, or kept as close to zero as possible. Moreover, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 establishing management measures for European eel in the Mediterranean. It is appropriate to maintain the level-playing field across the Union and hence to maintain also for the Union waters of the ICES area as well as brackish waters such as estuaries, coastal lagoons and transitional waters a consecutive three-month closure period for all fisheries of European eel at all life stages. As the fishing closure period should be consistent with the conservation objectives set out in Council Regulation (EC) No 1100/2007 and with the temporal migration patterns of European eel, for the Union waters of the ICES area it is appropriate to set it in the period between 1 August 2021 and 28 February 2022.

Article 12

Measures on European eel fisheries in Union waters of the ICES area

Any targeted, incidental and recreational fishery of European eel shall be prohibited in Union waters of the ICES area and brackish waters such as estuaries, coastal lagoons and transitional waters for a consecutive three-month period to be determined by each Member State concerned between 1 August 2021 and 28 February 2022. Member States shall communicate the determined period to the Commission no later than 1 June 2021.

COUNCIL REGULATION (EU) 2021/90 of 28 January 2021 fixing for 2021 the fishing opportunities for certain fish stocks and groups of fish stocks applicable in the Mediterranean and Black Seas

(7) At its 42nd annual meeting in 2018, the General Fisheries Commission for the Mediterranean (GFCM) adopted Recommendation GFCM/42/2018/1 on a multiannual management plan for European eel in the Mediterranean Sea, which established management measures for European eel (*Anguilla anguilla*) in the Mediterranean Sea (GFCM geographical subareas 1 to 27). Those measures include catch or effort limits and an annual closure period of three consecutive months to be defined by each Member State in accordance with the conservation objectives of Council Regulation (EC) No 1100/2007, the national management plan or plans for eel and the temporal migration patterns of eel in the Member State. Where national management plans resulting in effort or catch reductions of at least 30 % have been in place before the entry into force of that Recommendation, the catch or fishing effort limits already established and implemented should not be exceeded. The closure should apply to all marine waters of the Mediterranean Sea and to brackish waters such as estuaries, coastal lagoons and transitional waters, in accordance with that Recommendation. Those measures should be implemented in Union law.

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Article 2

Scope

1. This Regulation applies to Union fishing vessels exploiting the following fish stocks: (a) European eel (*Anguilla anguilla*), red coral (*Corallium rubrum*) and common dolphinfish (*Coryphaena hippurus*) in the Mediterranean Sea, as defined in point (b) of Article 4;

Article 4

Fishing zones

(b) 'Mediterranean Sea' means the waters in GFCM geographical subareas 1 to 27, as defined in Annex I to Regulation (EU) No 1343/2011;

Article 5

European eel

1. This Article applies to all activities by Union fishing vessels and other Union fishing activities catching European eel (*Anguilla anguilla*), namely targeted, incidental and recreational fisheries, in all marine waters of the Mediterranean Sea, including freshwaters and transitional brackish waters, such as lagoons and estuaries.

2. It shall be prohibited for Union fishing vessels to fish for European eel in Union and international waters of the Mediterranean Sea for a consecutive three-month period to be determined by each Member State. The fishing closure period shall be consistent with the conservation objectives set out in Regulation (EC) No 1100/2007, with national management plans and with the temporal migration patterns of European eel in the Member States concerned. Member States shall communicate the period determined to the Commission no later than one month prior to the entry into force of the closure and in any case no later than 31 January 2021.

3. Member States shall not exceed the maximum level of catches or fishing effort of European eel established and implemented by means of their national management plans, adopted in accordance with Articles 2 and 4 of Regulation 1100/2007.

These are the articles referred to in Council Regulation 2021/90 from the so called Eel Regulation 2007/1100:

COUNCIL REGULATION (EC) No 1100/2007 of 18 September 2007 establishing measures for the recovery of the stock of European eel

Article 2

Establishment of Eel Management Plans

1. Member States shall identify and define the individual river basins lying within their national territory that constitute natural habitats for the European eel (eel river basins) which may include maritime waters. If appropriate justification is provided, a Member State may designate the whole of its national territory or an existing regional administrative unit as one eel river basin.

2. In defining eel river basins, Member States shall have the maximum possible regard for the administrative arrangements referred to in Article 3 of Directive 2000/60/EC.

3. For each eel river basin defined under paragraph 1, Member States shall prepare an Eel Management Plan.

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4. The objective of each Eel Management Plan shall be to reduce anthropogenic mortalities so as to permit with high probability the escapement to the sea of at least 40 % of the silver eel biomass relative to the best estimate of escapement that would have existed if no anthropogenic influences had impacted the stock. The Eel Management Plan shall be prepared with the purpose of achieving this objective in the long term.

5. The target level of escapement shall be determined, taking into account the data available for each eel river basin, in one or more of the following three ways:

(a) use of data collected in the most appropriate period prior to 1980, provided these are available in sufficient quantity and quality;

(b) habitat-based assessment of potential eel production, in the absence of anthropogenic mortality factors;

(c) with reference to the ecology and hydrography of similar river systems.

6. Each Eel Management Plan shall contain a description and an analysis of the present situation of the eel population in the eel river basin and relate it to the target level of escapement laid down in paragraph 4.

7. Each Eel Management Plan shall include measures to attain, monitor and verify the objective set out in paragraph 4. The Member States may define the means depending on local and regional conditions.

8. An Eel Management Plan may contain, but is not limited to, the following measures:

— reducing commercial fishing activity,

— restricting recreational fishing,

— restocking measures,

— structural measures to make rivers passable and improve river habitats, together with other environmental measures,

— transportation of silver eel from inland waters to waters from which they can escape freely to the Sargasso Sea,

— combating predators,

— temporary switching-off of hydro-electric power turbines,

— measures related to aquaculture.

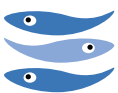
9. Each Eel Management Plan shall contain a time schedule for the attainment of the target level of escapement laid down in paragraph 4, following a gradual approach and depending on an expected recruitment level; it shall include measures that will be applied as of the first year of application of the Eel Management Plan.

10. In the Eel Management Plan, each Member State shall implement appropriate measures as soon as possible to reduce the eel mortality caused by factors outside the fishery, including hydroelectric turbines, pumps or predators, unless this is not necessary to attain the objective of the plan.

11. Each Eel Management Plan shall include a description of the control and enforcement measures which will apply in waters other than Community waters in accordance with Article 10.

12. An Eel Management Plan shall constitute a management plan adopted at national level within the framework of a Community conservation measure as referred to in Article 24(1)(v) of Council Regulation (EC) No 1198/2006 of 27 July 2006 on the

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Article 4

Communication of Eel Management Plans

1. Member States shall communicate to the Commission not later than 31 December 2008 Eel Management Plans prepared in accordance with Article 2.

2. A Member State which has not submitted an Eel Management Plan to the Commission for approval by 31 December 2008 shall either reduce fishing effort by at least 50 % relative to the average effort deployed from 2004 to 2006 or reduce fishing effort to ensure a reduction in eel catches by at least 50 % relative to the average catch from 2004 to 2006, either by shortening the fishing season for eel or by other means. This reduction shall be implemented from 1 January 2009.

3. The reduction in catches set out in paragraph 2 may be substituted in whole or in part by immediate measures concerning other anthropogenic mortality factors, which will allow a number of migrating silver eels equivalent to that which the reduction of catches would allow to escape to the sea to spawn.

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