

Quantifying the illegal trade in European glass eels (*Anguilla anguilla*): Evidences and Indicators

Sustainable Eel Group
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Preamble

The brief report summarizes recent findings and available information in relation to the trafficking of European eels. This is a complex subject and note that the presented results include uncertainties and simplifications. Nevertheless, the Sustainable Eel Group (SEG) intends to continue to draw attention to the urgent matter by presenting the best available data that indicate the current dimension and scale of this specific European Illegal Wildlife Trade issue. Furthermore, SEG raises the concern that the illegal trade in European eels from Europe to Asia keeps and amplifies the pressure on a stock that urgently needs greater protection. Trafficking in eels is considered to be a serious threat to the future of the species and the livelihood of up to 10 000 people across Europe.

1. Background

The European eel (*Anguilla anguilla*) is an important commercial freshwater fish species, exploited in nearly all countries in Europe and in the Mediterranean, parts of Africa and the western edge of Asia (e.g. Turkey)¹. The species is currently classified as Critically Endangered (CR) by the International Union for Conservation of Nature (IUCN)² and listed in Appendix II of Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The eel is subject to EU Council Regulation (EC) No 1100/2007 aiming to establish a framework for the protection and sustainable use of the stock³. Export out of and import into Europe has been suspended since December 2010⁴.

There are a range of factors that account for the declines in *A. anguilla* stocks including habitat loss, migration barriers, changing oceanic conditions, predation, pollution, disease and parasites, and overexploitation⁵. Recovery of the stock will require action in the fields of water management, hydropower generation, pollution, fisheries management, and more. In this document, the focus is on the illegal exports of glass eels caught within the EU – the likely overall numbers and economic value. The enormity and continuing scale in trafficking, potentially being three times as large as the legal market, is not only a massive human impact on the stock but also fundamentally undermines the credibility of the European eel protection plans.

2. Enforcement operations

Scientific studies have proven that European glass eels are illegally exported to Asia⁶ and that farmed European eel products subsequently return to Europe for consumption purpose⁷. Enforcement operations in Europe resulted in interceptions of glass eel shipments and arrests. Major police operations led by Spanish SEPRONA/Guardia Civil and EUROPOL uncovered different international operating networks smuggling glass eels out of Europe in suitcases (Operation *Black Glass*⁸) and in cargo (Operation *Abaia*⁹). In season 2016/2017, European enforcements arrested 48 people involved in eel trafficking. At the Standing Committee 69, CITES published a document by the European Union that summarizes eel seizures across Europe and Asia between 2013 and 2017¹⁰. Though the enforcement operations were able to catch and arrest illegal exports, that has not brought the illegal export to an end yet. Whereas the total volume of illegal exports is estimated at ca. 30 t (see below), the total volume intercepted in enforcement operations was in the order of 8 t.

For updated seizure records, media publications and general updates on eel trafficking and subsequent prosecutions please visit: <http://www.sustainableeelgroup.org/trafficking-updates/>

3. European glass eel market surveys

In spring 2016 and 2017, SEG carried out investigations in order to estimate the annual European glass eels market demand. Questionnaires were sent to national and regional eel restocking authorities, fishery and angling associations as well as glass eel traders across Europe. Accordingly, information about glass eel quantities, demanded for restocking programmes and aquaculture use were collated. In the final step, the discrepancy between the declared European catch and legal market demand was calculated.

In fishing season 2015/2016, 59.2 t of glass eel catches were declared to national authorities in France, Spain, Portugal and UK. In season 2016/2017, 64.3 t were declared (Fig 1). Based on the data from the questionnaires, SEG determined the scale of the European market consisting of the demand of commercial aquaculture and for restocking programs.

In 2016, 17.4 t were used for aquaculture purpose and 19.1 t in 2017, respectively. The amount used for restocking was significantly lower in both years: 12.2 t in 2016 and 13.4 t in 2017. France is the only country in Europe that seeks to manage the fishery through a glass eel fishing quota which was set to 57.5 t in 2015/2016 and 65 t in

2016/2017 – exceeding the European glass eel demand by 94 % and 100 %, respectively. In both seasons, the proportion of eels which was untraceable, accounted to some 50 % (30 t) of the declared European catches (Fig 1). Considering that 1 kg of European glass eels consist of 3 500 pieces, 30 t of eels account for 105 million eels.

The absolute numbers have to be regarded with caution and be used as indicative. The market surveys were carried out just after the glass eel fishing season in the United Kingdom was closed (25 May) aiming to provide an early-warning indication for authorities and enforcement agencies. Consequently, not all trade transactions as well as restocking measures in all countries might have been completed. Additionally, there is evidence from recent years that eels which were purchased for restocking purpose ended up in commercial farms or were illegally traded to Asia. Therefore, uncertainty and related under- and over estimation is likely. Our market surveys do not take into account any data on Illegal, Underreported and Unregulated (IUU) fishing of glass eels.

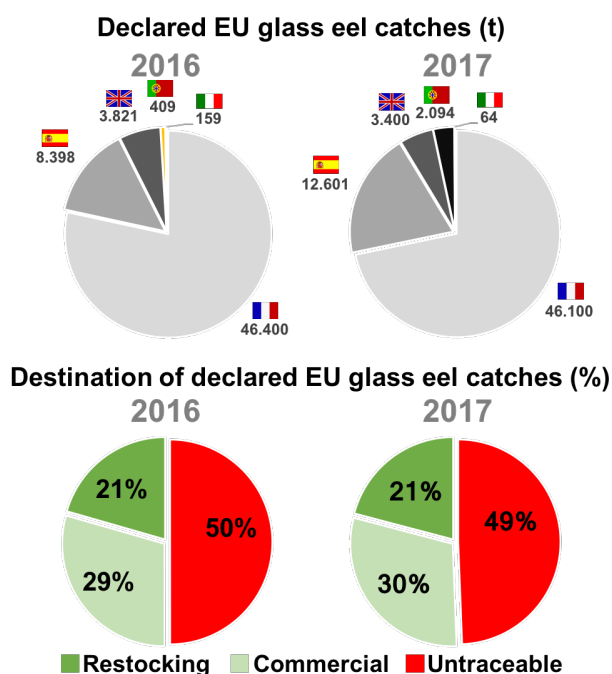


Figure 1: Glass eel catches and destinations. Catch data were extracted from WGEEL reports 2016 and 2017. Source: SEG-Report-2018-1-V1

Compilation of available data sources reveals a fundamental lack in glass eel traceability (Fig 2). The Joint EIFAAC/ICES/GFCM Working Group on Eel (WGEEL) determined that 23 % and 43 % of the annual catch was not traceable between 2012 and 2016. The Japanese Eel News Paper Nihon Yoshoku Shimbun reported annual imports of European eel as between 18 t and 30 t between 2013 and 2017. This source does not distinguish between legal sourced from outside the EU such as North African countries and European countries. Enforcement records of those caught in illegal transit were additionally compiled per fishing seasons and account for up to 9.5 % of the annual catch.

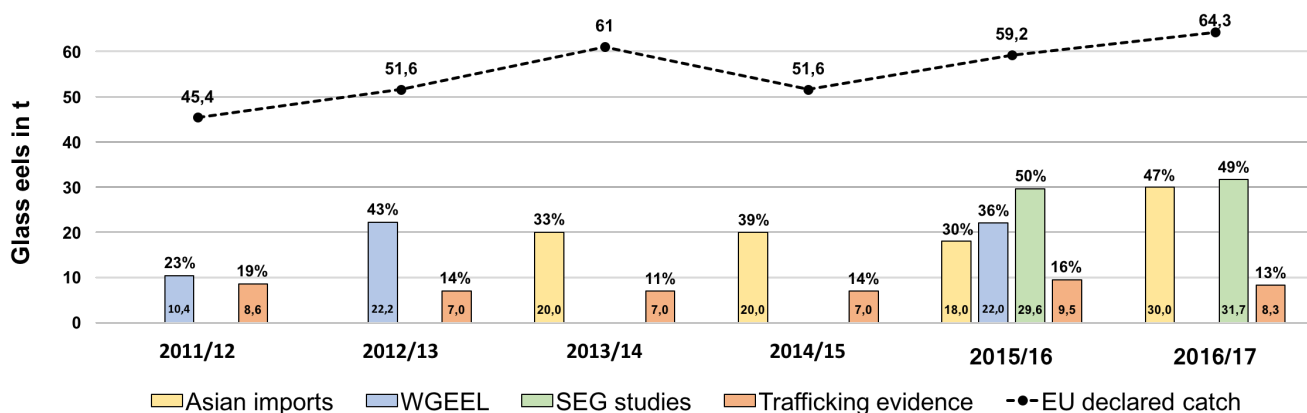


Figure 2: Traceability of eels relative to declared European catches. Numbers at the bottom of the columns show the absolute value in t. Numbers on top of the columns represent the proportion in relation to the total declared European annual catch in glass eels in percentage. Black points represent the accumulated European glass eel catches. Asian imports = imports of European glass eels reported by Japanese News Paper Nihon Yoshoku Shimbun; WGEEL = Annual reports of the Joint EIFAAC/ICES/GFCM Working Group on Eel (2012,2013,2016); SEG studies = Glass eel market surveys conducted by the Sustainable Eel Group; Trafficking evidence = Press releases by national enforcement agencies; Source: SEG-Report-2018-1-V1

4. Impacts of illegal trade in European glass eels

Public attention on the illegal trade in glass eels has recently been raised globally through media coverage of the successful police operations concluding with seizures, arrests and court cases. However, the economic and biological impacts have not been quantified consequently SEG has created a range scenarios in order to help make assessments:

Scen1	Takes into account the quantity of eels which was proved by enforcement operations in fishing season 2016/2017	8 t
Scen2	Takes into account the approximate quantity of eels which remained untraceable in SEG's market surveys for season 2015/2016 and 2016/2017	30 t
Scen3	Takes into account the approximate quantity of eels which was guesstimated by Spanish enforcements ¹¹ for season 2016/2017 and includes IUU	60 t
Scen4	Takes into account the quantity of eels that circulates as persistent rumour every season	100 t

4.1 Economic value of trafficked European glass eels

In January 2018, the glass eel market price for Japanese eel reached a high record (26 709 €/kg) based on historically low supply¹². Due to this shortage prices for other freshwater eel species increased globally. Price in Asia raised to 6 250 €/kg for European eel (*A. anguilla*) and 8 000 €/kg for American eel (*A. rostrata*).

Information about eel farm productivity and prices paid per kilogram for raw filet and processed eel filet were provided by DUPAN, the Dutch foundation of eel traders, farmers and professional fishermen. For simplification, SEG used the following parameter/values: 1 kg glass eels (3 500 pcs) – when grown in modern aquaculture - produces 1 260 kg live eels (400g/pcs, 10% mortality considered) and subsequently 592 kg of raw filet and 387 kg of processed eel kabayaki filet. The following values are considered: raw filet at wholesale level = 12 €/kg; processed filet at wholesale level = 36 €/kg; processed filet at consumer level = 60 €/kg.

Scenario	Glass eels (t)	Raw filet (t)	Wholesale Raw filet (€)	Wholesale processed filet (€)	Consumer processed filet (€)
Scen1	8	4 915	59 million	113 million	188 million
Scen2	30	17 766	213 million	408 million	680 million
Scen3	60	35 532	426 million	816 million	1 36 billion
Scen4	100	59 220	711 million	1 36 billion	2 27 billion

Table 1: Economic value of trafficked European eel. Source: SEG-Report-2018-1-V1

Depending on the scenario and the defined parameters, the economic values resulting from trafficked European eels vary from 59 million € to 711 million € for the raw filet and from 188 million € to 2 27 billion € for the processed filet at consumer level (Tab 1). It should be recognised that the parameters are simplified and scenarios rely on guesstimates. The true value is probably in the middle of this range and varies enormously from year to year.

4.2 Illegal trade relative to annual European glass eel recruitment

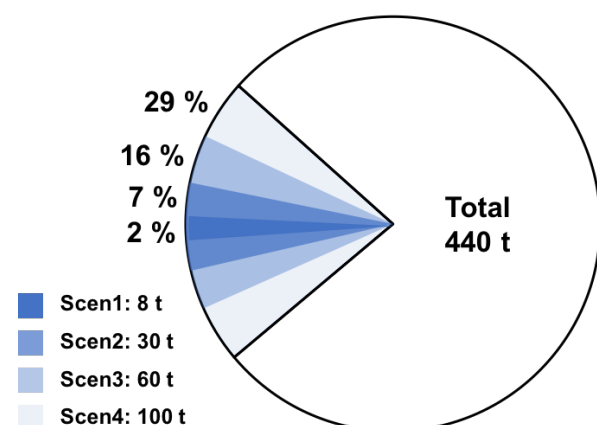


Figure 3: Trafficked European glass eel quantities relative to annual European glass eel recruitment. Annual European glass eel recruitment refers to Bornarel et al 2017. Source: SEG-Report-2018-1-V1

The European eel's extensive range from North Africa to the Barents Sea constitutes just a single biological population, with individuals from all areas potentially interbreeding.

Based on lacking international collaborations throughout its' vast natural range, the stock size is difficult to quantify. The trend in glass eel recruitment (the number of glass eels that enter continental waters) is one of the indicators used by the WGEEL to assess the stock status. Bornarel et al (2017) applied a Bayesian model, the Glass Eel Recruitment Estimation Model (GEREM), to model the annual absolute recruitment. According to the model, the European eel recruitment was 10 825 t in 1960 and 440 t in 2015. For the simplified calculation, we considered 440 t as the current annual recruitment.

Enforcement agencies determined evidence that in season 2016/2017 about 8 t were trafficked to Asia e.g. were destined to be sent to Asia. This accounts for 2 % of the

annual glass eel recruitment. Scenarios 2-4 imply that 7-29 % of the European glass eel recruitment are annually trafficked.

4.3 Illegal trade relative to global eel aquaculture production

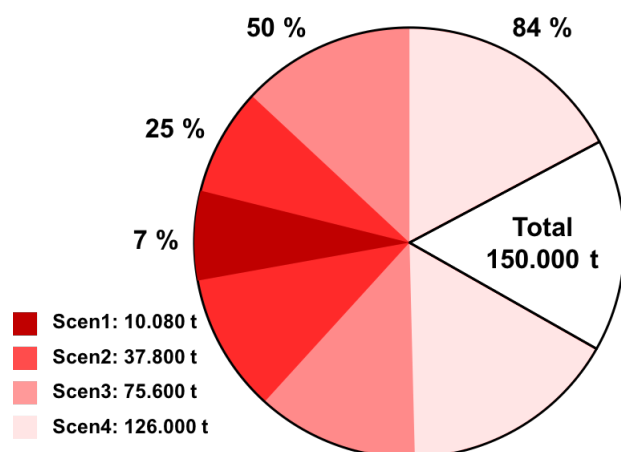


Figure 4: Trafficked European eels relative to global eel production. Global eel aquaculture production refers to TRAFFIC 2015; Scenarios base on the assumption that 1 kg of glass eels produces 1 260 kg of live eels. Source: SEG-Report-2018-1-V1

Information about the quantity of global eel production differs significantly by source. The Food and Agriculture Organization of the United Nations (FAO) estimated the global aquaculture production in *Anguilla* eels to be 274 000 t in 2015¹⁴. The Wildlife Trade Monitoring Network TRAFFIC based the estimate for global aquaculture production on the Joint Statement by China, Japan, Korea and Taiwan¹⁵. We used TRAFFIC's estimate of 150 000 t global aquaculture production for the calculations.

The amount of live eels resulting from 1 kg of glass eels farmed in modern aquaculture is calculated as 1 260 kg. The proportion of trafficked European eels with enforcement evidence (Scen1) accounts for 7 % of the global annual eel production. The untraceable proportion from the market surveys (Scen2) accounts for 25 % and the guesstimate by Spanish enforcements for 50 % of the global annual eel production.

5. Conclusions

The listing of the European eel in CITES Appendix II and its subsequent implementation by the EU has been made to protect the eel. The EU established the Eel Regulation³ to ensure protection and enable sustainable use. In Article 12: 'Control and enforcement concerning imports and exports of eel', the EU is very explicit about the obligations concerning traceability: "No later than 1 July 2009, Member States shall: - take the measures necessary to identify the origin and ensure the traceability of all live eels imported or exported from their territory (...)". For the past two fishing seasons, SEG estimates that about 50 % of the annually declared glass eel catches in the EU are not traceable due to the absence of an effective traceability system. Due to cross-border trade activities, a European-wide and harmonised electronic system seems to be most adequate to meet full traceability. Such an approach is now vital to the attainment of the goal 'the protection and sustainable use' as well as the preservation of small community livelihoods across Europe. Also, it should be noted that genetic studies have shown that European eels which likely originated from illegal export from Europe are returning to the EU as processed products without CITES permit and therefore in violation of international law and so further undermine Europe eel community and industry.

In order to implement full traceability in eels and therefore effectively counter eel trafficking, SEG advises is to:

- 1) implement a European-wide electronic system that ensures full traceability of all eel trade
- 2) genetically test all *Anguilla* imports into the European Union
- 3) increase enforcement to ensure that eel fishery and trade is sufficiently controlled

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