CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Thirty-second meeting of the Animals Committee
Geneva (Switzerland), 19-23 June 2023

Species conservation and trade

Aquatic species

EELS (*ANGUILLA* SPP.)

1. This document has been prepared by the Secretariat.

2. At its 18th meeting (CoP18, Geneva 2019), the Conference of the Parties adopted a set of Decisions on *Eels (*Anguilla anguilla*)* including Decision 18.197 and 18.198 as follows:

Directed to range States of European eels (*Anguilla anguilla*)

18.197 *Range States of European eel (*Anguilla anguilla*) are encouraged to:*

a) submit any non-detriment finding studies on European eel they have undertaken to the Secretariat for inclusion on the CITES website; explore the different approaches that might be taken for making non-detriment findings for European eels traded as fingerlings (FIG) compared with those traded as other live eels (LIV); collaborate and share information with other Parties regarding such studies and their outcome, especially where the Parties share catchments or water bodies; seek review and advice from the Animals Committee or other suitable body on any non-detriment findings for European eels where appropriate;

b) develop and/or implement adaptive European eel management plans at national or sub-national (or catchment) level, with defined and time-bound goals, and enhance collaboration within countries between authorities and other stakeholders with responsibilities for eel management, and between countries where water bodies or catchments are shared;

c) share information on stock assessments, harvests, the results of monitoring and other relevant data with the Joint Working Group on Eels (WGEEL) of the European Inland Fisheries and Aquaculture Advisory Commission, the International Council for the Exploration of the Seas and the Central Fisheries Commission for the Mediterranean (EIFAAC/ICES/GFCM), so that a full and complete picture of the state of the European eel stock can be established;

d) develop measures or implement more effectively existing measures to improve the traceability of eels in trade (both live and dead);

e) provide the Secretariat with information regarding any changes to measures they have in place to restrict the trade in live 'glass' or fingerling European eels; and

f) provide information to the Secretariat on the implementation of this Decision to allow it to report to the Animals Committee and Standing Committee, as appropriate.

Directed to range States of non-CITES Anguilla spp. in international trade (particularly* A. rostrata, A. japonica, A. marmorata *and* A. bicolor*)

18.198 Range States of non-CITES Anguilla *spp. in international trade are encouraged to:*

a) where appropriate, implement conservation and management measures, such as adaptive eel management plans, enhanced collaboration within countries, between authorities and other stakeholders with responsibilities for eel management, and related legislation to ensure the sustainability of harvests and international trade in Anguilla *spp. and make these widely available;*

b) collaborate and cooperate with other range States on shared stocks of Anguilla *spp. to develop shared objectives for these stocks and their management, improve the understanding of the biology of the species, conduct joint programmes of work and share knowledge and experience;*

c) establish monitoring programmes and develop abundance indices in range States where none exist. For ongoing programmes, identifying opportunities for expanding to new locations and/or live stages would be favourable;

d) improve traceability of Anguilla *spp. in trade (both live and dead); and*

e) provide information to the Secretariat on the implementation of this Decision to allow it report to the Animals Committee and Standing Committee, as appropriate.

3. At its 19th meeting (CoP19; Panama City, 2022), the Conference of the Parties adopted a new set of Decisions 19.218 to 19.221 on *Eels* (Anguilla *spp.)* as follows:

Directed to Range States of European eels (*Anguilla anguilla*), transit and importing Parties

19.218 *Range States of European eel (*Anguilla anguilla*), transit and importing Parties are encouraged to:*

a) strengthen co-ordination between range States, (re-)exporting and importing Parties to improve traceability and effective enforcement measures for trade in Anguilla *spp., particularly the European eel;*

b) submit any non-detriment finding studies on European eel they have undertaken to the Secretariat for inclusion on the CITES website; explore the different approaches that might be taken for making non-detriment findings for European eels traded as fingerlings (FIG) compared with those traded as other live eels (LIV); collaborate and share information with other Parties regarding such studies and their outcome, especially where the Parties share catchments or water bodies; seek review and advice from the Animals Committee or other suitable body on any non-detriment findings for European eels, where appropriate;

c) develop and/or implement adaptive European eel management plans at national or sub-national (or catchment) level, with defined and time-bound goals, and enhance collaboration within countries between authorities and other stakeholders with responsibilities for eel management, and between countries where water bodies or catchments are shared;

d) implement the reporting recommendations in document SC75 Doc. 12 to ensure that, where possible, trade in Anguillid eels is reported at species-level and differentiated by life stage (as set out in the Guidelines for the Preparation and Submission of CITES Annual Reports*).*

e) share information on stock assessments, harvests, the results of monitoring and other relevant data with the Joint Working Group on Eels (WGEEL) of the European Inland Fisheries and Aquaculture Advisory Commission, the International Council for the Exploration of the Seas and the Central Fisheries Commission for the Mediterranean (EIFAAC/ICES/GFCM), so that a full and complete picture of the state of the European eel stock can be established;

f) develop measures or implement more effectively existing measures to improve the traceability or assessment of legal acquisition of eels in trade (both live and dead) and aquaculture and share these with the Secretariat;

g) *provide the Secretariat with information regarding any changes to measures they have in place to restrict the trade in live 'glass' or fingerling European eels;*

h) *share with the Secretariat, where available, protocols and guidelines for reintroduction of seized live European eels to the wild; and*

i) *provide information to the Secretariat on the implementation of this Decision or any updates to the information previously submitted in response to Notification to the Parties No. 2021/018 on eels, to allow it to report to the Animals Committee and Standing Committee, as appropriate.*

Directed to the Secretariat

19.219 *The Secretariat shall:*

a) *issue a notification inviting range States of European eel (*Anguilla anguilla*), transit and importing Parties to submit to the Secretariat information on the implementation of Decision 19.218, any information sought in Notification 2021/018 not already provided or any updates to the information previously submitted in response to Notification to the Parties No. 2021/018 on eels, especially information on current levels of, or emerging trends in, trade in specimens of* Anguilla *spp;*

b) *prepare and submit a summary of the responses to Notification to the Parties No. 2021/018 on eels, including any updates provided under Decision 19.218, with draft recommendations on the conservation and management of European eel to the Animals Committee and draft recommendations to improve implementation of the Convention for European eel to the Standing Committee, for their consideration; and*

c) *submit the study prepared in the implementation of Decision 18.199, paragraph d), on levels of trade and trade patterns, especially in live eels for aquaculture, and sources of supply, identify any disparities between these, and draft recommendations for the more effective future management of harvests and trade for consideration by the Animals Committee and Standing Committee, as appropriate.*

Directed to the Animals Committee

19.220 *The Animals Committee shall:*

a) *if requested, consider any reports submitted by Parties with respect to the making of non-detriment findings for trade in European eel and provide advice and guidance as needed; and*

b) *consider the study referred to in paragraph c) of Decision 19.219, the report produced by the Secretariat under paragraph b) of Decision 19.219 and make recommendations to improve the conservation and management of European eel, for consideration by the Standing Committee or the 20th meeting of the Conference of the Parties, as appropriate.*

Directed to the Standing Committee

19.221 *The Standing Committee shall:*

a) *consider the report prepared by the Secretariat and any other available information relating to illegal trade in European eel and make recommendations as appropriate;*

b) *review any advice and recommendations from the Animals Committee concerning Decision 19.220 and make recommendations to improve the implementation of the Convention for European eel and the applicability of developing a specific Resolution to the Parties or the Conference of the Parties, as appropriate;*

c) *with the assistance of the Secretariat, engage with the World Customs Organization to examine the feasibility of harmonizing customs codes relevant to trade in all* Anguilla *species; and*

d) report on the implementation of this decision to the 20th meeting of the Conference of the Parties.

Background

4. As reported in document CoP19 Doc. 61, in order to facilitate the collation of the information sought under the Decisions on eels Decisions 18.197 and 18.198 from Parties and to allow the Secretariat to report to the Animals and Standing Committees, the Secretariat developed a questionnaire to be completed by the range States of all anguillid eels (*Anguilla* spp.). Decision 18.197 was directed to range States of European eel (*Anguilla anguilla*), while Decision 18.198 was directed to range States of non-CITES listed *Anguilla* spp.[1] in international trade. This questionnaire was made available in Annex 2 to Notification to the Parties No. 2021/018 of 8 February 2021 and is referred to in paragraph i) of Decision 19.218.

5. The following 27 Parties responded to the questionnaire referred to in paragraph 3 above: Algeria, Australia, Canada, Croatia, Cuba, Czech Republic, Denmark, Dominican Republic, Estonia, Finland, Greece, Ireland, Japan, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Norway, Slovakia, Republic of Korea, Spain, Sweden, Tunisia, Ukraine, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. Of the 27 Parties that responded, 16 Parties are range States of *A. anguilla*, one has an introduced population of *A. anguilla*, and the remaining ten are range States of at least one non-CITES *Anguilla* species.

6. To facilitate the collation of the information sought from Parties under Decision 18.199, paragraph c), and allow the Secretariat to report to the Animals and Standing Committees as instructed in paragraph e) of Decision 18.199, a questionnaire was included in Annex 3 to Notification to the Parties No. 2021/018. This questionnaire sought to collect information from Parties regarding current levels of, or emerging trends in, trade in specimens of *Anguilla* spp. and was to be completed by those Parties that are source, transit or destination countries for the anguillid eels referred to in paragraph 4 above. The information collected in response to this questionnaire was used to inform the study referred to in Decision 18.199, paragraph d) and Decision 19.219 paragraph c).

7. A summary of Parties' responses to Notification to the Parties No. 2021/018 was presented in Annex 1 to the addendum to document AC31 Doc. 22 and was also submitted to the Standing Committee in Annex 2 to document SC74 Doc. 64.1, in compliance with paragraph e) of Decision 18.199.

Implementation of Decision 19.219

8. Concerning paragraph a) of Decision 19.219, the Secretariat issued Notification to the Parties No. 2023/062 on 18 May 2023 inviting range States of European eel (*Anguilla anguilla*), transit and importing Parties to submit any information sought in Notification No. 2021/018 not already provided or any updates to the information previously submitted by those Parties indicated in paragraph 5 above, especially information on current levels of, or emerging trends in, trade in specimens of *Anguilla* spp. The Notification also invites Parties to submit information on the implementation of Decision 19.218 that was not included in Notification No. 2021/018, specifically with regards to sharing protocols and guidelines for reintroduction of seized live European eels to the wild. The Notification encourages Parties to provide their responses by 15 June 2023. Any responses received by the deadline will be collated with the responses received to Notification to the Parties No. 2021/018 and provided as an information document to this meeting.

9. Concerning paragraph b) of Decision 19.219, as the Committee may not have sufficient time to review the responses at this meeting, it may wish to consider establishing an intersessional working group to consider the responses to the Notification and draft recommendations for the next meeting of the Animals Committee.

10. Concerning paragraph c) of Decision 19.219, the study prepared in the implementation of Decision 18.199, paragraph d), is presented in the Annex to this document. The study, financed by the European Union, was also submitted to the 74th meeting of the Standing Committee in Annex 4 to document SC74 Doc. 64.1.

11. At SC74, the Standing Committee invited the Secretariat to review the responses to Notification to the Parties No. 2021/018 in Annex 2 to document SC74 Doc. 64.1; the case study on glass eels in the 2nd World Wildlife Crime report; the analysis of the data compiled from annual illegal trade reports submitted by Parties in Annex 3 to document SC74 Doc. 64.1; and the findings of the study presented in Annex 4 to document SC74

[1] *Anguilla australis, A. bengalensis, A. bicolor, A. borneensis, A. celebesensis, A. dieffenbachii, A. interioris, A. japonica, A. luzonensis, A. marmorata, A. megastoma, A. mossambica, A. obscura, A. reinhardtii* and *A. rostrata.*

Doc. 64.1, and prepare a consolidated set of draft recommendations for consideration by the Standing Committee at its 75th meeting (SC75; Panama City, November 2022).

12. At SC75, the Secretariat presented document SC75 Doc. 12 and the Standing Committee agreed on a number of recommendations, *inter alia*, to address illegal trade, enforcement challenges, improved reporting and traceability of trade in European eel.

13. The report entitled "*Status of use and trade in anguillid eels*" contained in Annex 4 to document SC74 Doc. 64.1 is presented again in the Annex to this document. Paragraph c) of Decision 19.219 also instructs the Secretariat to draft recommendations for the more effective future management of harvest and trade for consideration by the Animals Committee and Standing Committee, as appropriate. Recommendations for consideration by the Animals Committee are contained in paragraph 16 of this present document.

Implementation of Decision 19.220

14. Concerning paragraph a) of this Decision, the Animals Committee has not received any requests for advice and guidance from Parties with respect to the making of non-detriment findings for trade in European eel since CoP19.

15. Concerning paragraph b) of this Decision, preliminary results of the study referred to in Decision 18.199 paragraph d) on levels of trade in eels and trade patterns, especially in live eels for aquaculture, were reported to the Animals Committee at its 31st meeting (AC31; online, June 2021) in Annex 2 to the addendum to document AC31 Doc. 22. The completed study was presented in Annex 4 to document SC74 Doc. 64.1

16. With a focus on scientific matters raised in the study, the Secretariat proposes several recommendations for consideration by the Animals Committee as follows:

    a) encourage Parties when recording data on *Anguilla* eel species to record to the species level (rather than recording as *Anguilla* spp.) and to differentiate between juvenile (glass eels) and larger size live eels to improve accurate trade monitoring for all *Anguilla* eel species;

    b) encourage Parties to use the descriptions for specimen codes provided in the *Guidelines for the Preparation and Submission of CITES Annual Reports* and the *Guidelines for the preparation and submission of CITES annual illegal trade reports* to standardize reporting and facilitate better data collection;

    c) encourage range States to collaborate and share their experiences on the making of non-detriment findings;

    d) encourage range States to share their experiences with any challenges and benefits of available techniques and mechanisms to address identification issues concerning *Anguilla* species in trade;

    e) encourage range States to conduct research to increase the understanding of the basic biology and life histories of anguillid eel species; conduct joint programmes of work, experience knowledge and best practice; and manage their *Anguilla* resources in a sustainable manner;

    f) encourage range States to establish abundance monitoring programmes for the different life stages of *Anguilla* species; and

    g) encourage range States to fully implement Decision 19.218.

Recommendations

17. The Animals Committee is invited to:

    a) consider the recommendations outlined in paragraph 16 above;

    b) consider establishing an intersessional working group, with a mandate to:

        i) review the summary of the responses to Notification to the Parties No. 2021/018 and Notification to the Parties No. 2023/062 on eels, including any updates provided under Decision 19.218 and any recommendations from the Secretariat; and

ii) make draft recommendations on the conservation and management of European eel for consideration by the Animals Committee at its 33rd meeting.

AC32 Doc. 36
Annex
(English only / seulement en anglais / únicamente en inglés)

Status of use and trade of anguillid eels

Prepared under contract from the CITES Secretariat by the Zoological Society of London.

This Guidance has been commissioned by the CITES Secretariat and supported by the European Union, implemented by ZSL, working with TRAFFIC.

Acknowledgments

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Parties are thanked for completing the questionnaires that informed this report and also the individuals who responded to specific requests for information and clarification.

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Executive Summary

There are 16 species within the family Anguillidae, all of the genus *Anguilla*. They are globally distributed, inhabit the fresh, brackish and coastal waters of more than 150 different countries and spawning occurs in the marine environment. Anguillid eels have a complex life history which means they are susceptible to a range of threats. They are exploited from juvenile to adult life stages; however, fisheries and associated trade are among a number of threats that include barriers to migration (including hydro-power stations which damage and/or kill eels), loss of growth habitat, disease, pollution and changes in oceanic currents and/or climatic conditions.

At the 14th meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES CoP14) in 2007, the European eel (*Anguilla anguilla*) was listed in Appendix II of the Convention. This listing came into force in March 2009, and soon after, in December 2010, the European Union (EU) ceased the import and export of European eel. At CITES CoP17 held in Johannesburg, South Africa in 2016, four Decisions (17.186-17.189) relating to anguillid eels were adopted. Two reports were produced as part of these Decisions and they precede the present study. The first specifically examined the implementation of the Appendix II-listing of the European eel and the second the status of the other 15 anguillid eels in the context of the European eel listing.

At CITES CoP18, held in Geneva, Switzerland in 2019, six further Decisions (18.197-18.202), relating to anguillid eels were adopted. Decision 18.199, paragraphs c)-e), forms the basis of this report:

18.199 - Decision directed to: the Secretariat

The Secretariat shall:

c) invite Parties, through a Notification, to submit information regarding current levels of, or emerging trends in, trade in specimens of Anguilla spp;

d) subject to the availability of resources, commission a study to consider levels of trade and trade patterns, especially in live eels for aquaculture, and sources of supply, identify any disparities between these and make recommendations for the more effective future management of harvests and trade; and

e) prepare and submit a summary of the responses to the Notification and the study referred to in paragraph d) of this Decision, if available, with draft recommendations to the Animals Committee and Standing Committee as appropriate for their consideration.

The CITES Secretariat contracted the Zoological Society of London (ZSL) to deliver the aforementioned study and ZSL worked with two consultants with expertise in eel trade issues to deliver the report. A questionnaire developed to gather relevant information was made available to Parties as an Annex to Notification No. 2021/018. Twenty eight responses were received from Parties – 14 from Europe; three from North Africa; four from the Americas; two from East Asia; three from South/Southeast Asia, and two from Oceania – and a number of these were contacted directly for further information/clarification. In parallel to this a review of relevant scientific and grey literature was conducted, and trade data were analysed. In addition to this, an author attended AC31 and SC73.

Eel harvest

According to FAO data, global eel capture production (catch of all lifestages) has been steadily declining over the last three decades and ranged from 6,800 to 8,100 tonnes (t) during 2015-2019. With the expansion of farming, capture production accounted for only 2.8% of total eel production in 2019. Responses to the notification, other supporting information and comparisons with the reports published in 2018 have all highlighted that the availability of harvest data and the status of fisheries management of the 16 anguillid eels are still hugely variable.

Legal harvest of the European eel continues to primarily be for domestic/intra-EU use, except for a few non-EU countries which catch yellow and silver eels for export to East Asia. Glass eel fisheries for European eel remain limited to a small number of range States with capture of yellow and silver eels being more widespread. It should be noted that in November 2021, the updated International Council for the Exploration of the Sea (ICES) Advice relating to the European eel stated there should be a 'zero catch' for all life stages.

Overall, there has been a decline in harvest of all Japanese eel (*A. japonica*) life-stages in the past decade, however harvest of glass eels is still clearly driven by aquaculture input/demand (see farming below). A number of American eel (*A. rostrata)* range States continue to catch the species for export, but in recent years there appears to have been a glass eel harvesting "boom" in Caribbean countries, particularly Haiti. Harvest of juvenile eel in Southeast Asia – mainly the Shortfin eel (*A. bicolor)* – is still poorly understood, but Customs data from the past three years indicates that the Philippines remains a source of seed for farming in South Korea and Japan. Data from Oceania indicates that Southern Shortfin eel (*A. australis*) is the favoured species for harvest across Australia and New Zealand, with only the former harvesting glass eels. Harvest of this species have declined in these two countries in the past five years.

Overall, there remains a lack of information on harvest of *Anguilla* spp. in key locations, especially the Caribbean, Southeast/Southern Asia and some East Asian and North African countries. Illegal and/or unsustainable harvest of glass eels in particular to supply aquaculture demands continue to be a concern, with several recent reports of illegal, unreported and unregulated (IUU) fishing.

Eel farming

According to FAO data, total annual global *Anguilla* production (catch and aquaculture) has steadily increased since the 1950s, mainly due to the expansion of farming in China, Japan, South Korea and Taiwan Province of China. In 2019, eel farming accounted for 98% of total eel production (279,410 t), with China responsible for 86% of total farm production.

The Japanese eel is the favoured species for input to East Asian farms, but in the absence of this species, demand for juvenile eels for farm input has been increasingly met by the Americas and Southeast Asia since the EU export ban on European eel in 2010. In 2014 China, Japan, South Korea and Taiwan Province of China agreed to set input limits into farms, for both *A. japonica* and other *Anguilla* spp., to indirectly limit catches of glass eels for the 2014-2015 fishing season. Since then, the input limits for the coming fishing season have been set at an annual meeting. The limits remain unchanged up to the 2021-2022 fishing season for Japan, South Korea and Taiwan Province of China, while China has not involved in the agreement since 2018. However, data indicates that these limits have sometimes been breached. The absence of a notification response from China, mean there are still significant knowledge gaps relating to eel farming production.

According to notification responses, farming within European eel range States is almost exclusively for domestic/intra-EU use. Over the past decade, the majority of farming has occurred in four countries: Netherlands, Denmark, Germany and Italy, but there has been a decrease in the number of farms during this time. Morocco is currently the only country that farms European eel for export mainly to East Asia. While the Americas and Southeast Asia provide juvenile eels for farming in East Asia, neither region are known to successfully farm *Anguilla* eels at a large scale - despite foreign investment interest and/or attempts - and updated information indicates that this remains the case. Small scale aquaculture exists in Australia with available data indicating stable or declining production in the past five years.

Eel trade

Live, fresh, frozen and prepared anguillid eels are traded globally. According to FAO fishery commodities and trade statistics, the volume of global live, fresh, frozen and prepared/preserved eel exports peaked at approximately 133,000 t in 2001, after which they declined to below 81,000 t in 2011 before increasing slightly again in recent years. Global 2020 eel exports reported to UN Comtrade were 87,000 t. East Asian countries/territories continue to play a crucial role in anguillid eel trade, being the principal importers of live eel fry used for farming from all over the world. It important to recognise that the availability of *A. japonica* live eel fry appears to be a key driver of the scale of trade (and harvest) in glass eels of other anguillid species, and that import and export in all *Anguilla* is complicated by the use of transit/re-export countries. In addition, East Asian countries/territories are the main importers and exporters of processed products; over the last decade China has continued to be the main eel exporter and Japan the main importer.

Since the EU established a zero-import/export policy in 2010, reported global trade in *A. anguilla*, in particular glass eels, has declined significantly. In the past five years Algeria, Egypt, Morocco, Tunisia and Turkey have exported to East Asia. These are primarily large yellow or silver eels and/or processed products, and total export has declined since 2018, partly due to some North African Parties having imposed export limitations as a result of being included in the CITES Review of Significant Trade process. Between 2016 and 2019, according to CITES trade data, China has remained the principal re-exporter of *A. anguilla*, though quantities have decreased. On-going illegal trade of the European eel glass eels, mainly *en route* to East Asia for farming purposes, was identified through a number of seizures over the past five years.

Despite the reported volume of live juvenile eel traded within East Asia, the full scale of *A. japonica* trade is unknown as a large number of glass eels are traded via Hong Kong SAR together with other *Anguilla* species. Imports of live eel fry from the Americas (likely to be *A. rostrata*) and Southeast Asia (likely to be primarily *A. bicolor*) have increased since 2011, accounting for more than 90% of reported annual non-*A. japonica* imports into East Asia from 2017 onwards. Annual imports of live juvenile eels from the Americas remain high, ranging between 23 t and 47 t in the last five years, with imports of glass eels from the Dominican Republic and Haiti, in particular, on the rise. Live large eel exports from Australia and New Zealand have declined considerably over the past decade, from 834 t in 2011 to 61 t in 2020.

CITES implementation (*A. anguilla*)

Legal commercial trade in the European eel was identified from a small number of range States outside of the EU. Responses to the notification and other sources suggest that illegal trade in glass eels, concerns over the original sourcing and legality of (re-)exports and (re-)imports of processed European eel farmed in non-range States, and associated enforcement and implementation challenges have continued over the past five years. Parties report having overcome some enforcement challenges described in previous

reports by strengthening inter-agency and/or international cooperation, participating in multi-lateral operations, carrying out regular/random inspections of eel shipments (declared as CITES or non-CITES listed species) and/or improving species identification techniques. However, notification responses suggest that European eel trade enforcement still appears to be challenging for some Parties.

Traceability and other challenges (all *Anguilla* spp.)

Traceability of eels in trade both nationally and internationally remains a key issue for all *Anguilla* spp. Responses from some Parties indicated that progress had been made in the past five years, but overall, there were still considerable challenges with regards to traceability. Concerns were raised regarding lack of and/or inaccurate reporting, enforcement agents not having access to all the relevant documents in order to take action, and difficulties in identifying the final destination of shipments, be this as a result of the use of transit countries in trade or, for the European eel, the free movement of goods within the EU. The extent to which sub-national, national and international traceability mechanisms currently link to form a single chain of custody is very variable and continues to provide loopholes for illegal activities.

Parties in North America, Europe and East Asia reported specific challenges related to harvesting, which included IUU fishing, mixing of legal and illegal catch, identifying perpetrators of illegal activities and subsequently proving guilt in fisheries-related legal cases. Some EU Member States reported difficulties relating to implementing the EU Eel Regulation (*Council Regulation (EC) No 1100/2007*). In some cases, progress had been made in reducing mortality, but this was still under the prescribed targets, and it was also noted that it was challenging to get sufficiently robust data to both implement and evaluate effective management measures in line with the legislation.

Discussion and Recommendations

Overall, in light of the present report, available data indicate there have not been any significant regional changes in legal and illegal eel trade dynamics over the past three years. Europe/North Africa, East Asia, the Americas, and to a lesser extent Southeast Asia and Oceania, continue to play key roles in the trade of live eel and eel products, as major harvesters, exporters, importers and/or farmers of anguillids. However, there have been some developments in certain harvest/export/transit countries that merit further examination, and in particular a continued increasing trend in glass eel imports into East Asia from *A. rostrata* range States has been identified. The following points are highlighted for further discussion and consideration:

a) Knowledge gaps:

- East Asia: China is the largest farm producer of anguillids in the world, Taiwan Province of China is also a major eel farmer and Hong SAR the principal entry/transit point for glass eels coming into the region. A lack of information from these important players makes it very challenging to put responses from other Parties into context and direct input from relevant authorities is vital.
  In addition, it was not possible to carry out a follow-up interview with South Korea and further information would be beneficial.
- Americas: Haiti and the Dominican Republic have become key exporters of glass eels of the American eel in recent years, and it would be helpful to understand more on their harvest and export.
- North Africa: Data indicates Egypt and Turkey have harvested and exported European eel in recent years; further clarity on use and trade in these countries would be useful.

b) Customs/Tariff codes and other trade reporting requirements:

- Parties should modify their national Customs code system to disaggregate juvenile and larger size live *Anguilla* eels - and where possible/relevant refine these further to the species level.
- There is a need for improved regulation and/or monitoring within transit/re-export countries/territories to address mis-reporting and illegal trade.

c) Illegal harvest/trade and enforcement challenges:

- It is important that national fisheries management is aligned with the opportunities to legally fulfil demand, whether this is farming, restocking or consumption.
- In order to help ensure importing countries are aware of exporting countries' legislation, and vice versa, an information portal on legislation could be established.
- To build on the successes of enforcement operations and seizures, it is important to maintain, extend and further strengthen sub-national, bi-lateral and multi-lateral cooperation within/between countries involved in eel trade.
- It would be hugely valuable if Parties were to further share best practices in relation to overcoming management and enforcement challenges specific to eel harvest and trade.

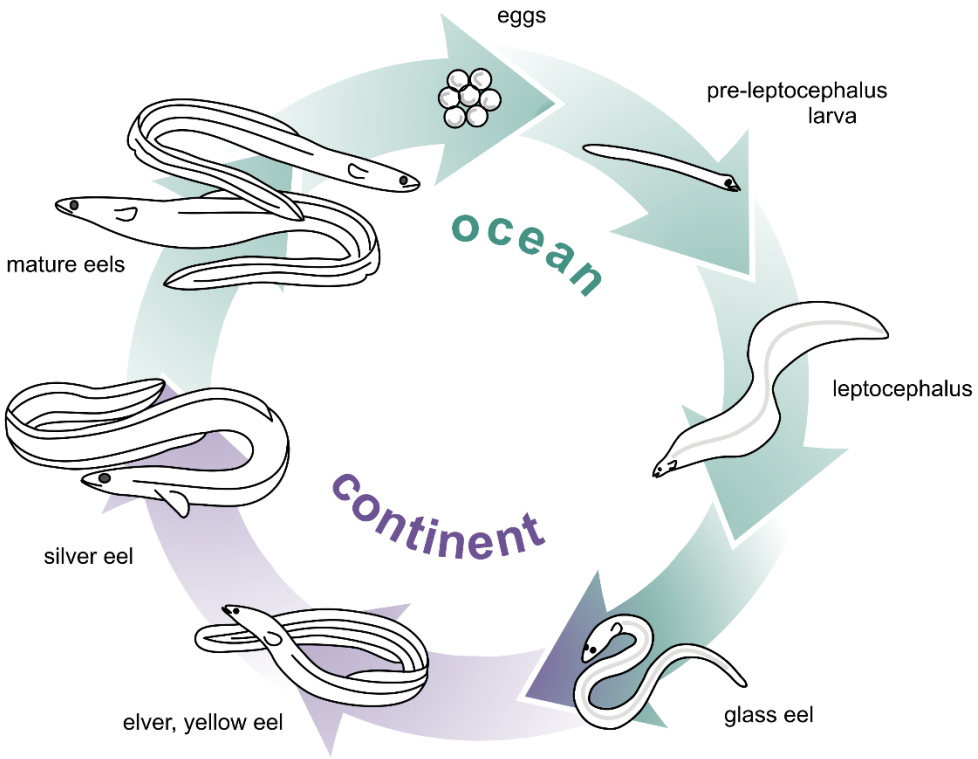
d) Traceability:

- Parties would benefit from sharing experiences on traceability challenges and solutions, particularly relating to the international eel supply chain, possibly in the form of a workshop/webinar.
- Traceability mechanisms currently in use/being developed for other species/fisheries and could be tested out and/or modified for eel should be examined.
- Where national traceability frameworks/legislation are already in place, but not yet applied to *Anguilla* spp., countries could consider amending these.

1. Introduction

There are 16 species within the family Anguillidae. They are globally distributed, inhabit the fresh, brackish and coastal waters of more than 150 different countries and spawning occurs in the marine environment (Tesch, 2003; Jacoby *et al*., 2015). While there is some understanding of the eel's continental life history, relatively little is known about its marine phase. Anguillid eels have multiple life stages (Figure 1), are semelparous, i.e. have a single spawning event; and come from a single breeding population (panmictic) (Aida *et al*., 2003; Als *et al*., 2011; Côté *et al*., 2013; van Ginneken and Maes, 2005).

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



There are a number of phases in an eel's life with associated terminology that will be used throughout this document. After hatching, the marine larval leptocephalus stage is leaf-shaped and very different from the elongate shape most associated with the anguillids (Aoyama, 2009; Tesch, 2003). During migration towards the continental shelf the leptocephali grow and lengthen to become transparent glass eels – it is this life stage that is the primary focus of global exploitation (Shiraishi and Crook, 2015; Gollock *et al.*, 2018; Musing *et al.*, 2018). As the glass eels grow and pigment – be it in fresh or saline waters - they become elvers and then yellow eels; these are morphologically similar, distinguished primarily by size, with a counter-shade of yellow / brown / green dorsum and lighter ventrum (Aoyama, 2009; Tesch, 2003). Anguillid eels are generally separated into 'bi-coloured' or 'mottled' species, which applies to the dorsal colouration (Silfvergrip, 2009). The final stage is the marine-migratory silver eel, which will ultimately mature to breed. This is characterised by a darkened dorsum, silvery counter-shading and large eyes (Aoyama, 2009; Tesch, 2003).

This idiosyncratic and complex life history means that anguillids are susceptible to a range of threats, both in the marine and freshwater environments, and present unique challenges in relation to conservation, management and policy development (Righton *et al.,* 2021). They are exploited from juvenile to adult life stages, however, fisheries and trade are among a number of threats that include changes in oceanic currents and/or climatic conditions; barriers to migration (including hydro-power stations which damage and/or kill eels); loss of freshwater habitat; disease; and pollution (Jacoby *et al*., 2015; Drouineau *et al.,* 2018; Righton *et al.,* 2021). How these threats impact different eel species across their range varies hugely and in many cases is poorly understood, however, stocks of a number of anguillids, most notably those in temperate Northern Hemisphere regions, have exhibited declines in recent decades (Casselman, 2003; Dekker and Casselman, 2014; Drouineau *et al*., 2018; Haro *et al*., 2000; Jacoby *et al.*, 2015; Tsukamoto *et al.*, 2003; ICES, 2021a).

All continental life stages of a number of anguilld species are commercially harvested, traded and used directly for human consumption (Gollock *et al.,* 2018). Wild juvenile glass eels are also caught and then used as "seed" in farming/aquaculture operations, as closed-cycle captive breeding is not yet commercially viable (Butts *et al*., 2016; Kuroki *et al*, 2019). While farming operations exist in a number of countries/territories, they predominantly occur in East Asia, particularly in China, followed by Taiwan Province of China Province of China, Japan and the Republic of Korea (hereafter, South Korea), with the Hong Kong Special Administrative Region (SAR) playing an important role as a trade hub for glass eels destined for farming operations in the region (Crook and Nakamura, 2013; Shiraishi and Crook, 2015; Gollock *et al.,* 2018). Prior to the 1990s, eel farming and trade predominantly relied upon species of local provenance, such as *Anguilla japonica,* the Japanese eel, in East Asia and *A. anguilla* in Europe (Ringuet *et al.,* 2002). However, as recruitment of *A. japonica* into continental waters rapidly declined (Dekker *et al.,* 2003; Dekker and Casselman, 2014), East Asian farms, predominantly in China, looked for alternative sources, in particular *A. anguilla,* and more recently *A. rostrata* and *A. bicolor* (Ringuet, *et al.,* 2002; Shiraishi and Crook, 2015; Stein *et al.,* 2016; Gollock *et al.,* 2018).

At the 14th meeting of the Conference of the Parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES CoP14) in 2007, the European eel was listed in Appendix II of the Convention. Implementation was delayed and the listing came in to force in March 2009. Soon after, in December 2010, the European Union (EU) ceased the import and export of European eel, as the EU Scientific Review Group (SRG) '*agreed that it was not possible to perform a "non-detriment finding" for the export of European eels, i.e. that it was not possible for the SRG to consider that the capture or collection of European eel specimens in the wild or their export will not have a harmful effect on the conservation status of the species or on the extent of the territory occupied by the relevant population of the species.*' This situation remains unchanged at the time of writing, however, since this decision there has been an increase in exports of European eel from outside of the EU and of other anguillid species, particularly the American eel (*A. rostrata*) and the shortfin eel (*A. bicolor*) (Gollock *et al.,* 2018). There have also been concerns surrounding the illegal harvest and trade of a number of anguillid eel species, including the European eel (Gollock *et al.,* 2018; Musing *et al.,* 2018). It should be noted that the UK have since left the EU, and are presently developing an NDF for the European eel (see Section 7.2.1). Further, Algeria, Morocco and Tunisia are presently in the Review of Significant Trade (RST) process (See Section 7.2.1)

At CITES CoP17 held in Johannesburg, South Africa in 2016, four Decisions (17.186 - 17.189) relating to anguillid eels were adopted[1]. Two reports were produced and submitted to the 30th meeting of the Animals Committee (AC30; Geneva, 2018) as part of these Decisions and they precede the present report.

The first report (Musing *et al.,* 2018), specifically examined the implementation of the Appendix II-listing of the European eel[2]. The second report (Gollock *et al.,* 2018) examined the status of the other 15 anguillid eels in the context of the European eel listing[3] (see Section 3).

In addition to these reports two workshops relating to anguillid eels in the context of CITES were held prior to AC30; one in London which focussed on the genus as a whole[4], and the other, in the Dominican Republic, which focussed on the American eel (*A. rostrata*)[5].

A number of recommendations were produced from both reports in response to the Decisions, which focussed on key actions relating to improved co-ordination and co-operation of anguillid range States and/or destination countries, strengthened data collection and analysis, and improved traceability. These recommendations are repeated in Annex 1 of this report.

In light of these recommendations, at CITES CoP18, held in Geneva, Switzerland in 2019, six further Decisions (18.197 - 18.202), relating to anguillid eels were adopted[6]. Decision 18.199, paragraphs c)-e), forms the basis of this report:

18.199 - Decision directed to: the Secretariat

The Secretariat shall:

c) invite Parties, through a Notification, to submit information regarding current levels of, or emerging trends in, trade in specimens of Anguilla spp;

d) subject to the availability of resources, commission a study to consider levels of trade and trade patterns, especially in live eels for aquaculture, and sources of supply, identify any disparities between these and make recommendations for the more effective future management of harvests and trade; and

e) prepare and submit a summary of the responses to the Notification and the study referred to in paragraph d) of this Decision, if available, with draft recommendations to the Animals Committee and Standing Committee as appropriate for their consideration.

[1] https://cites.org/eng/dec/valid17/81868
[2] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-18-01-A1.pdf
[3] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-18-01-A2.pdf
[4] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-18-01-A3.pdf
[5] https://cites.org/sites/default/files/eng/com/ac/30/E-AC30-18-02.pdf
[6] https://cites.org/eng/taxonomy/term/42080

2. Methods

2.1 Questionnaire and interviews

A questionnaire was developed by the authors to gather *Anguilla* harvest, farming and trade information from CITES Parties and made available through Notification to the Parties 2021/018[7], published by the Secretariat on 8 February 2021. The focus was on collecting recent data (2015 to 2020) and information on relevant legislation, management and traceability measures, implementation of the *A. anguilla* CITES listing, challenges in relation to eel management/control, and any changes noted by Parties since the previous request for information in 2018. The full questionnaire is provided in Annex 2[8].

Questionnaire responses were submitted by the following 28 Parties, and additional information was obtained through follow-up emails and/or interviews to request further input/clarification of responses from those marked with an asterisk (*)[9]:

Algeria*, Australia*, Canada*, Croatia*, Cuba, Czech Republic*, Denmark*, Estonia*, Finland, France*, Greece*, India, Ireland, Japan*, Malaysia*, Mexico, Morocco*, Netherlands, New Zealand, Norway, Republic of Korea, Singapore, Slovakia, Spain*, Sweden*, Tunisia*, the United Kingdom (UK)*, and the United States of America (USA)*.

The report is fundamentally based on information received through the questionnaire, supplemented by additional sources where applicable, see below. Consolidation and analysis of responses in Sections 4-9 generally follow the structure of the questionnaire and the eel supply chain, but, depending on the information received, some parts have been combined for continuity. Where no information/data was submitted, relevant sections are left blank in the text and/or tables. The term 'N/A' was used when data were not available.

Questionnaire titles are used to structure the sections and responses have been summarised, translated and/or paraphrased – where large sections of text have been taken directly from the responses – in some cases with minor edits for clarity - these are shown in *italics*. In some cases, responses have been taken from one section and reported in another depending on where the information was most relevant. In instances where responses are duplicated and/or relevant to other Parties, these may be amalgamated e.g. for EU Member States.

2.2 Review of published studies, reports and data

Information and data received from Parties was supplemented by, and compared with, published scientific papers and reports, grey literature, engagement with relevant stakeholders, and production and trade data for *Anguilla* spp. (see below).

This additional information is used mainly in the summaries at the start of each section - general harvest, farming and trade, and also for each region - to provide background information and set the scene. Additional sources are also included in the main analysis, where differences in available data have been identified and/or there are significant gaps in the information received from Parties. In particular,

[7] https://cites.org/sites/default/files/notifications/E-Notif-2021-018.pdf

[8] Note that two questionnaires were distributed as part of CITES Notification 2021/018 – this report pertains only to the one included in Annex 3. A summary of responses relating to the other questionnaire can be found here: https://cites.org/sites/default/files/eng/com/ac/31/Docs/E-AC31-22-Add.pdf

[9] This applies throughout the document.

additional sources were analysed for East Asia and the Americas, where responses from some principal countries/territories harvesting, farming and/or trading in eels were lacking. When other sources are used these are always referenced in the text; all other information provided has come from Notification responses.

As noted above, the focus of the Notification and report is on new available information – the previous reports produced for AC30 (Gollock *et al.,* 2018; Musing *et al.,* 2018) extensively reviewed other studies, reports and data and this information is not repeated here. However, an overview of findings from these reports is provided in Section 3 as a basis to identify any changes and/or progress since their publication.

2.3 Data sources and Customs codes/terms

The main additional global/regional harvest, farming and trade data sources used to supplement notification responses are listed below. The most recent data available from all sources were downloaded in August 2021, unless specified otherwise. 2015-2019 was considered the most recent relatively complete five-year period for analysis; in most cases 2020 data was incomplete, however it was included where available.

Globally, there are several six-digit Harmonised Systems (HS) Customs codes designated for eel, however these codes do not differentiate between the various life stages or species:

- live eels (*Anguilla* spp.) (HS 030192);
- fresh or chilled eels (*Anguilla* spp.) (HS 030274);
- frozen eels (*Anguilla* spp.) (HS 030326); and
- prepared/preserved eels (HS 160417)[10].

Some countries/territories have more detailed Customs codes for live eels, differentiating between "live eel fry" and larger live eels; for this report, unless otherwise specified, the following terms apply:

- "live eel fry" refers to juvenile/young eels (irrespective of the size, including glass eels and elvers) used for farming; and
- "other live eel" refers to larger sized eels used for consumption (including large elvers, yellow and silver eels).

Note that the terms "live eel fry", "elver" and "glass eel" are used by different Parties in different contexts to refer to juvenile/young eels, as such, they are all used throughout the document.

Eel weight is presented in either kilogrammes (kg) or tonnes (t) throughout the report, depending on the detail available/provided by Parties and the quantities involved (such as for glass eel harvest and trade when detail would be lost in the conversion to tonnes): 1 tonne = 1 metric ton = 1000 kg.

For further details of Customs and CITES trade data analysis methodology, more specific *Anguilla* Customs codes available in some countries/territories and data/reporting issues, see previous reports produced for AC30 (Gollock *et al.,* 2018; Musing *et al.,* 2018).

[10] HS Nomenclature 2017 edition: http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2017-edition/hs-nomenclature-2017-edition.aspx

CITES

Anguilla anguilla trade data, CITES Trade Database: https://trade.cites.org/ (last downloaded in October 2021).

East Asian Customs

East Asian *Anguilla* import and export data:

- China Customs statistics online platform: http://43.248.49.97/indexEn
- Hong Kong Census and Statistics Department: https://tradeidds.censtatd.gov.hk
- Ministry of Finance, Trade Statistics of Japan: http://www.customs.go.jp/toukei/info/
- Korea International Trade Association: http://www.kita.org/
- Taiwan Province of China Bureau of Foreign Trade: https://cuswebo.trade.gov.tw/FSCE010F/FSCE010F/

Eurostat

EU Member State *Anguilla* export and import data: http://ec.europa.eu/eurostat/web/main/home

Food and Agriculture Organization (FAO) Production and Trade data

Global and country/territory specific *Anguilla* production (capture (wild-take) and aquaculture (farming)), as well as trade data: http://www.fao.org/fishery/statistics/en

FAO catch production data do not differentiate life stages.

UN Comtrade

Global *Anguilla* export and import data: http://comtrade.un.org/

2014 "Joint Statement" and 2021 "Joint Press Release"

Live eel fry input data and other data related to farming provided by East Asian countries/territories:

- Live eel fry input into farms for 2004–2014 is provided by China, Japan, South Korea and Taiwan Province of China as per the "Joint Statement on International Cooperation for Conservation and Management of *A. japonica* and other relevant *Anguilla* spp." in September 2014 (hereafter, Joint Statement): https://www.jfa.maff.go.jp/j/saibai/pdf/140917unagi_data.pdf
- Joint Press Release on the occasion of the Fourteenth Meeting of the Informal Consultation on International Cooperation for Conservation and Management of Japanese Eel Stock and Other Relevant Eel Species in 2021 (hereafter, Joint Press Release): https://www.jfa.maff.go.jp/j/press/sigen/attach/pdf/210727-3.pdf
- Annex 1 of Joint Press Release: https://www.jfa.maff.go.jp/j/press/sigen/attach/pdf/210727-7.pdf

3. Summary of previous CITES reports and processes

As previously stated, prior to the present report, two comprehensive *Anguilla* use and trade studies have been written in the context of CITES Decisions. At CITES CoP17 held in Johannesburg, South Africa in 2016, four Decisions (17.186 - 17.189) relating to anguillid eels were adopted. Decision 17.186 directed the CITES Secretariat, subject to external funding, to undertake the following:

a) contract independent consultants to undertake a study compiling information on challenges and lessons learnt with regards to implementation of the Appendix II listing of European Eel (Anguilla anguilla) and its effectiveness. This includes in particular the making of non-detriment findings, enforcement and identification challenges, as well as illegal trade. This study should notably take account of the data compiled and advice issued by the ICES/GFCM/EIFAAC Working Group Eel;

b) contract independent consultants to undertake a study on non-CITES listed Anguilla species:

i) documenting trade levels and possible changes in trade patterns following the entry into force of the listing of the European Eel in CITES Appendix II in 2009;

ii) compiling available data and information on the biology, population status, use and trade in each species, as well as identifying gaps in such data and information, based on the latest available data and taking account inter alia of the Red List assessments by the IUCN Anguillid Eel Specialist Group; and

iii) providing recommendations for priority topics for technical workshops based on gaps and challenges identified under i)-ii);

These were delivered by the authors of the present report, and others. The findings of these two reports are summarised below, as context for the present report and, where relevant, a baseline for comparison.

Implementation of the CITES Appendix II listing of European Eel *Anguilla anguilla*

The European eel (*A. anguilla*) is the only anguillid to be listed in the CITES Appendices. The listing came into force in 2009, and a report (Musing *et al.* 2018) was prepared with a view to examine the successes and challenges of implementing the listing. The CITES Secretariat made a questionnaire available to Parties as Annex 1 to Notification to the Parties No. 2018/018; 28 responses were received, including 25 Parties, 17 of which were range States. In parallel to this, a review of relevant scientific and grey literature was conducted, and recent CITES and Customs trade data were analysed in detail. Please see Musing *et al.* (2018) for further information and references supporting the information summarised below.

CITES Reporting

Several reporting issues were identified through analysis of CITES trade data, including discrepancies between exporter and importer reported data (see below), temporal discrepancies and errors in use of codes, terms and units. It was noted that some could possibly be explained by the time lag between listing and implementation, and the multiple cut-off dates that were introduced to help try to deal with the complexities of eel trade (such as use of "pre-Convention"). The inconsistent use of the terms 'fingerling' (FIG) or 'live' (LIV) for glass eels was highlighted. Arguably, FIG is the most appropriate term, allowing the distinction between juvenile and larger specimens, but was rarely used by Parties, making identifying glass eel trade challenging. Similarly, depending on the commodity and associated term, trade was reported in

weight (kg) or pieces – sometimes interchangeably – making analysis and comparison challenging. These issues were discussed at AC30 and recommendations produced.[11]

CITES and Customs trade analysis

Analysis of CITES trade data of live eel from 2009 to 2016 highlighted discrepancies between exporter and importer data, as described above, with 2014 and 2015 showing significant disparities. This resulted in a poor understanding of which range States were exporting, but seemed to be less of an issue when examining importers and re-exporters. With regard to trade in meat and bodies from 2009-2016, there were also significant discrepancies between CITES exporter and importer data, with the total quantity reported by the latter being 20 times greater.

Analysis of recent Customs data indicated that trade in live eels (*Anguilla* spp.) from the EU declined considerably after the ban in 2010. Exports of both live and processed eels from non-EU *A. anguilla* range States fluctuated considerably. Prior to the EU ban, live eel exports, primarily from Morocco, Norway and Tunisia, were destined for the EU. After the ban, Morocco and Tunisia exported to East Asia – China, Hong Kong SAR, Japan and South Korea depending on the life-stage. 'Trade' within the EU continued post-ban, however, quantities generally declined.

Implementation

Since December 2010, the EU SRG have not been able to make a NDF for *A. anguilla* primarily due to its concerning status, and therefore exports from, and imports into, the EU have not been permitted. Outside of Europe, at the time of this report (2018), Algeria, Morocco and Tunisia had entered the CITES RST process as a result of analysis carried out by UNEP-WCMC and information provided indicated that export of glass eels was not permitted. This did not appear to align, however, with trade reported in Customs data.

EU Council Regulation (EC) No 1100/2007 set out a clear framework as to Member State's obligations concerning traceability of *A. anguilla* trade; however a harmonised system was not in place when the report was published in 2018. Parties noted, that in addition to the challenge of monitoring trade in a species with a range beyond EU borders, issues around accurate record keeping, reporting and documentation along the eel supply chain from catch to sale further hampered traceability, raising concerns around the legality of a proportion of the *A. anguilla* being harvested and traded in the EU. Differences between national and sub-national regulations within EU Member States led to further complexities. Improving national, regional and international co-operation appears to be core to addressing the challenges relating to traceability, with a lack of information sharing and differing national priorities being raised as key factors.

Illegal trade

In the years following the CITES listing and associated EU ban, available data indicated that illegal trade in *A. anguilla* to meet demand in East Asia, particularly of glass eels, has increased significantly. Evidence of mis-declaration of *A. anguilla* specimens as pre/post-Convention and as other *Anguilla* species was reported by enforcement authorities across the EU. Further, it appeared that smuggling operations to evade controls became more organised and sophisticated. The establishment of Operation LAKE by EUROPOL proved a successful collaboration between EU range State law enforcement and Management Authorities, resulting in an increase in seizures and arrests. However, enforcement officers were often

[11] https://cites.org/sites/default/files/eng/com/ac/30/com/E-AC30-Com-05-R.pdf

reluctant to intercept live glass eels due to the high value of the commodity, the limited period that they can be kept alive during transportation and the challenges of identifying them to species level.

Effectiveness of the listing

At the EU level, the *A. anguilla* CITES listing combined with *EU Council Regulation (EC) No 1100/2007* led to the adoption of various management and conservation measures specifically designed to stimulate the recovery of species that have led to a reduction of legal catches of eels. At the national level, there were efforts to improve traceability, new laws developed and collaborative efforts to combat illegal trade. Conversely, there are concerns that the listing, and associated EU ban, has shifted trade to non-EU *A. anguilla* range States and other *Anguilla* species, and may have resulted in an overall increase in illegal and/or unsustainable harvest and trade in anguillids.

It is important to note that in view of the specificities of the life cycle of eels – for example, the average generation length of the European eel has been estimated as 15 years – it will take time before measurable progress can be identified as a result of the CITES listing and other management and conservation measures. More fundamentally, it is essential to determine how to measure progress in relation to implementation of the CITES listing to ensure actual progress is being made.

Ultimately, the study provided recommendations on how to help ensure the listing of *A. anguilla* is effectively implemented and any trade in the species is legal, traceable and sustainable; these are repeated in Annex 1 of the current report.

Status of non-CITES listed anguillid eels

As a result of the listing of *A. anguilla* in CITES Appendix II, impacts on other anguillid species have been observed, and another report (Gollock *et al.,* 2018) was prepared with a view to specifically examine this issue. The CITES Secretariat made a questionnaire available to Parties as Annex 2 to Notification to the Parties No. 2018/018; 20 responses were received. In parallel to this, a review of relevant scientific and grey literature was conducted, and recent Customs trade data were analysed. See Gollock *et al.* (2018) for further information and references supporting the information summarised below.

Species Accounts

Available data were compiled for each of the 15 non-CITES listed species to provide accounts of their present status, highlighting that knowledge relating to these is highly variable. Temperate species are generally better understood than tropical species, many of which have practically no readily available information relating to their biology and status. Yet, even for the temperate species there are often large variations in understanding across their ranges. Robust, long-term abundance data sets to allow monitoring of species status were generally lacking. Further, understanding of how various possible threats impact each species is generally poor. Temperate species were more likely to be considered at risk in the context of threats and associated population declines, and the status of the three species historically traded for consumption – *A. anguilla*, *A. japonica* and *A. rostrata* – were of greatest concern.

Trade of non-CITES listed anguillid eels

Following the EU *A. anguilla* trade ban in 2010, other regions have become increasingly important sources of juvenile *Anguilla* spp. for East Asian farms. Analyses of *Anguilla* spp. Customs trade data between 2008 and 2017 showed that there were substantial shifts in trade patterns relating to live eels, especially juveniles. In some cases, this trade shifted to species/populations that are poorly understood and to

where there is little fisheries management to ensure legal and sustainable off-take. Trade in anguillid eels was examined regionally due to the challenges in identifying individual species from the data available.

Imports of live juvenile eels from the Americas - assumed to be *A. rostrata* - into East Asia increased considerably, and most coming from the Caribbean were being traded via the USA or Canada. The demand for juvenile eel from Southeast/South Asia and East/Southern Africa – likely *A. bicolor* and *A. mossambica* respectively - also increased. However, these declined again after reaching a peak in 2013-2014. Data indicate that more non-*A. japonica* species are imported into East Asia in years of low *A. japonica* recruitment (see Figure 3). As such, it is likely that this pattern will continue in the future to fulfil demand.

Illegal harvest and trade in *Anguilla* spp. appeared to be a serious issue in many countries/territories especially in range States of *A. japonica* and *A. bicolor*. *Anguilla japonica* is considered the most commercially important species and illegal harvest and trade was prevalent in all the range States/territories. Although many Southeast Asian countries did not allow the export of glass/juvenile eels, a significant volume of imports sourced from this region was reported by East Asian counties/territories in 2011-2016.

Considering that abundance of several *Anguilla* spp. are reported to have declined over recent decades, it was considered urgent to adapt management and conservation measures in a regionally and/or globally co-ordinated manner to ensure sustainable use of *Anguilla* species into the future.

4. Eel harvest

4.1 Eel harvest summary

Responses to CITES Notification 2021/018 and other available information have highlighted that availability of harvest data and fisheries management of the 16 anguillid eels are hugely variable. Anguillid eels seem to be generally better managed and monitored in the range States of temperate species - *Anguilla anguilla, A. australis, A. diefenbacchi, A. japonica, A. reinhardtii* and *A. rostrata* - and in those which have a relatively longer history of fishing. In contrast, fisheries management and data collection and are less well developed in the countries/locations where exploitation began/expanded in recent years due to changes/increase in demand. In addition, tropical anguillid species - *A. bengalensis, A. bicolor, A. borneensis, A. celebesensis, A. interioris, A. luzonensis, A. marmorata, A. megastoma, A. mossambica* and *A. obscura* - which can have varying degrees of range overlap, are often exploited as by-catch of non-target eels or other fisheries species. This, along with the lower economic importance of tropical anguillid eels, seems to have made it difficult to collect any harvest data, let alone species-specific information. Overall, there is still a lack of information and data on harvest of *Anguilla* spp. in key areas of exploitation, especially the Caribbean, Southeast/Southern Asia and some East Asian and some North African countries.

Notification responses suggested there are also large variations in fisheries management measures in countries where temperate anguillid eels have historically been caught. While the various life stages, ranging from glass eel to silver eel, of *Anguilla* species are harvested and traded on a global scale for consumption (directly or after being farmed), the scale of, and/or target life stages for, fishing varies considerably between and/or within countries. As the understanding of the impact that fisheries or non-fisheries human-related factors have is still poor, various interventions have been made by range States but the effectiveness of these is not always clear.

According to FAO data, global eel capture production (catch of all lifestages) has been steadily declining over the last three decades and ranged from 6,800 to 8,100 metric tonnes (hereafter, t) during 2015-2019. With the expansion of farming, capture production accounted for only 2.8% of total eel production in 2019. It should be noted, however, that eel farming is reliant on wild-caught juvenile eels, as breeding in captivity is not yet commercially viable.

Harvest (and trade) in glass eels are of concern as the demand for aquaculture, mainly in East Asia, has resulted in reports of unsustainable exploitation and illegal, unreported and unregulated (IUU) fishing (UNODC, 2020). Gollock *et al.* (2018) raised concerns over IUU fishing and presented several recommendations to Parties in an attempt to help address these problems, however, responses to the recent notification and other supporting data suggest these issues are on-going. For example, there are IUU catches in emerging regions, and challenges with differentiating exports and re-exports from transit countries, and illegally caught/traded eels being mixed with legal shipments.

Notification responses also indicated there has been some progress in improving the traceability of eels, one of the issues identified in Decision 18.198 - '*improve traceability of Anguilla spp. in trade (both live and dead)'*. Some Parties reported having introduced, or are working to introduce, an online reporting system, which is expected to help improve traceability of anguillid eels. On the other hand, these examples are uncommon and traceability systems implemented nationally are rarely coordinated internationally, even within EU Member States (see Section 8).

It should be noted that in November 2021, ICES Advice relating to the European eel (ICES, 2021b) stated *'…that when the precautionary approach is applied, there should be zero catches in all habitats in 2022. This applies to both recreational and commercial catches and includes catches of glass eels for restocking and aquaculture. All other anthropogenic mortalities should be minimized and eliminated where possible.'* At the time of writing, it was not clear if range States would be implementing zero catches but this could obviously have significant effects on harvest, farming and trade of the species.

4.2 Eel harvest by region

4.2.1 Europe/North Africa (*Anguilla anguilla*)

i) Europe/North Africa harvest summary

Seventeen responses were received from Parties in this region - Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Morocco, Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia, and the UK.

According to FAO statistics, *A. anguilla* global capture production (all life stages) has declined over the last 30 years after reaching a peak of 19,878 t in 1986. During 2010-2019, annual *A. anguilla* capture production fluctuated between 3,000 t and 7,720 t, with Egypt accounting for 29%, the UK 10%, the Netherlands 9%, and France 9% of that reported to FAO.

In Europe, glass eel fisheries of *A. anguilla* exist in France, Spain, the UK, Portugal and Italy (ICES, 2021a). Annual commercial glass eel landings in Europe have declined considerably from up to 2000 t in the 1980s to around 40-60 t since 2009, just prior to the EU trade ban in 2010 - catches in 2019-2020 and 2020-2021 were 59 t and 52 t respectively (ICES, 2021a). This reduction in harvest was similar to the reported decline in recruitment over a similar period (ICES, 2021a). The responses to the notification highlighted that France has a large majority of the *A. anguilla* glass eel harvest. Among *A. anguilla* range States in North Africa, glass eels are only believed to be harvested in Morocco for domestic farming.

Party responses and additional data indicate that fishing for yellow and silver *A. anguilla* is much more widespread. The most recent data submitted to ICES noted catches in the following countries within the past five years - Albania, Algeria, Belgium, Croatia, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Morocco, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Tunisia, Turkey and the UK (ICES 2021a). The Czech Republic also reported catching yellow and/or silver eels in response to the notification, and Egypt have reported capture production to FAO and export data to the CITES database, which would indicate some domestic harvest.

The responses suggested some parties have implemented mechanisms relating to national traceability of *A. anguilla*, although systems do not appear to be coordinated between range States, even within the EU (see Section 8).

ii) Europe/North Africa harvest

C.1.1-2 Glass eel/elver fishery

Four Parties (France, Morocco, Spain, and the UK) reported having glass eel/elver fisheries. Total glass eel harvest in these countries during 2015-2020, as well as primary end uses, are shown in **Error! Not a valid bookmark self-reference.** and Figure 2. Based on this data, France was the dominant *A. anguilla* glass eel

harvesting nation, responsible for 73-85% of reported catch during 2015-2020. *Anguilla anguilla* glass eel fishing is also known to occur in Italy and Portugal (ICES, 2021a).

As part of its notification response and the associated follow up, Morocco noted that glass eel catch is not a good indication of stock status. Morocco presently have a quota of 2 t (see Table 1 for reported catch) which limits harvest. Further within this limit, fisheries are directly linked to national eel farms and fluctuations of glass eel landings are due to the changes in farm capacity and demand.

Table 1: Glass eel harvest and end use in A. anguilla *range States, 2015-2020[#], by weight (kg). Source: Responses to CITES Notification 2021/018.*

Party	2015	2016	2017	2018	2019	2020	End use
France	35,960	41,728	47,930	63,733	50,105	43,578	Grow-out in farms and direct consumption in the EU (47-55%), restocking in the EU, including France (45-53%)
Morocco	1,013	1,512	481	1,144	306	909	Grow-out in domestic farms (90%), restocking (10%)
Spain	9,563	6,475	11,790	5,492	4,554	6,820	Grow-out in farms in the EU (90-95%), domestic grow-out (4-10%), domestic direct consumption (1-2%)
UK	2,800	4,040	3,315	4,260	6,030	3,760	Grow-out in farms or stocking in the EU (71-100%)[&], and national stocking

[#] Commercial fishing data and the reporting cycle is based on the fishing season crossing years.
[&] At the time of submitting the response (29th April 2021) the UK reported it has not issued any export permits for eels since leaving the EU on 1st January 2021.

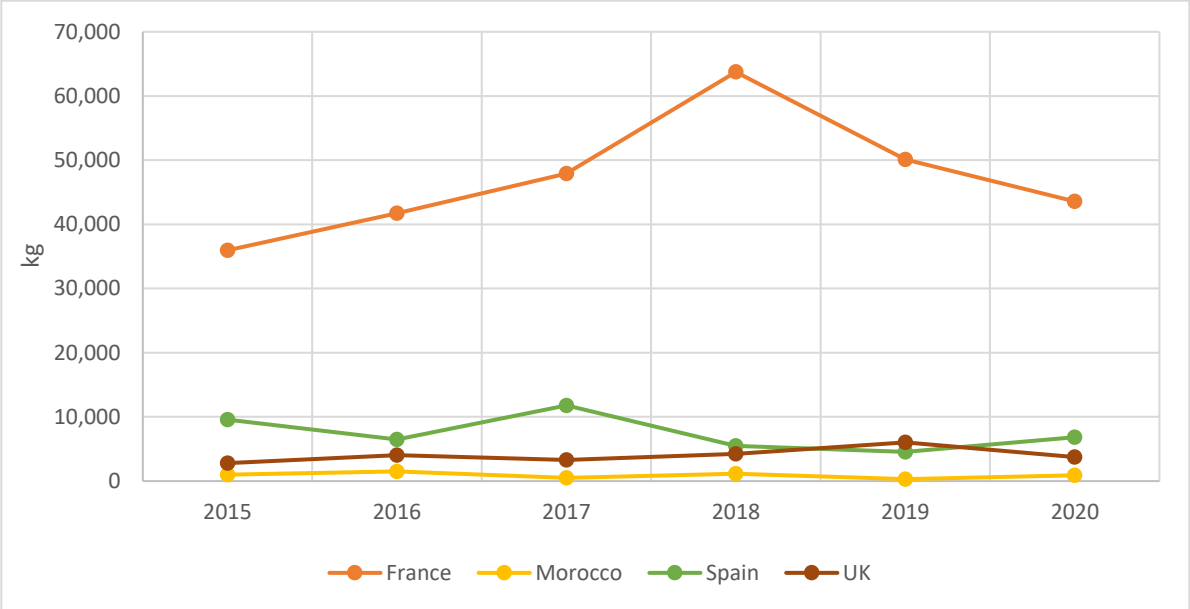


Figure 2: Glass eel harvest reported by A. anguilla *range States, 2015-2020. Source: Responses to CITES Notification 2021/018.*

C.1.1-2 Yellow/Silver eel fishery

Sixteen Parties (Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Morocco, the Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia and the UK) reported having fisheries for other life stages.

The total reported harvest[12] and primary end uses for yellow and silver eel are shown in Table 2 and

Table 3. Several Parties reported that harvest of yellow and silver eels are not distinguished (Czech Republic, Estonia, Finland, the Netherlands, and Slovakia) or only to some extent (Spain and Sweden); this data is included in

Table 3.

Table 2: Total harvest of yellow eel reported by A. anguilla *range States, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.*

Party	2015	2016	2017	2018	2019	2020	End use
Algeria	98,000	99,000	90,000	76,000	28,000	23,000	Mainly for direct domestic consumption[#]
Croatia (commercial)[&]	149	595	560	610	366	388	Direct domestic/EU consumption (100%)
Denmark	66,164	78,555	76,938	89,321	85,233	78,194	Direct domestic/EU consumption (>99%)
France	217,619	222,284	301,344	388,218	228,293	178,988	Direct domestic/EU consumption
Norway	None	2,707	13,261	5,874	7,555	6,982	Direct domestic consumption (100%)
Spain	743	1,020	1,134	646	437	299	No data or estimate available.
Sweden	226,817	260,737	225,770	225,349	159,114	156,409	Direct domestic/EU consumption (100%)
UK	285,910	289,590	259,130	267,440	221,000	97,000	Direct consumption in the EU (86%), direct domestic consumption (14%)

[#] All the yellow eels were used for direct domestic consumption in Algeria in 2015 and 2018-2020, while 20 kg and 5,380 kg of yellow eels were exported for direct consumption in 2016 and 2017 respectively, and an additional 72 kg were exported for breeding purposes in 2017.

[&] Presented data is based on commercial fishing logbooks. Scientific assessment of catches in recreational fishing indicates that annual catch is at level of 15 t per year.

[12] Reported harvest was almost entirely for commercial purposes – indeed a number of Parties indicated recreational fishieres for eels were prohibited.

Table 3: Total harvest of silver eel (may include yellow and silver eels for countries which do not distinguish these life stages) reported by A. anguilla *range States, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.*

Party	2015	2016	2017	2018	2019	2020	End use
Czech Republic[#]	14,000	12,000	13,000	17,000	13,000	N/A	Direct domestic/EU consumption (100%)
Denmark	197,271	189,316	182,575	94,352	101,049	104,735	Direct domestic/EU consumption (>98%)
Estonia[#]	15,221	15,848	16,419	18,885	22,348	39,644	Direct domestic/EU consumption (100%)
France	37,631	102,106	77,211	90,218	81,700	58,348	No information
Finland[#],[&]	609	9,326	1,081	3,095	299	N/A	Direct domestic/EU consumption (100%)
Greece	55,429	83,999	66,264	57,963	21,562	N/A	No information
Morocco	5,000	2,996	0	695	0	0	Export for direct consumption (100%)
Netherlands[#]	306,178	345,123	435,934	481,023	500,386	479,773[$]	Direct domestic/EU consumption (100%)
Slovakia[#],[£]	2,743	3,054	2,665	2,394	2,708	2,546	Direct domestic/EU consumption (100%)
Spain[#]	60,848	82,110	75,567	47,255	42,083	26,785	No data or estimate available.
Sweden[#]	17,417	19,147	18,142	19,600	12,880	14,904	Direct domestic/EU consumption (100%)
Tunisia[#]				166,300	129,000	N/A	Direct domestic consumption and export for direct consumption
UK	55,110	57,760	61,460	59,720	46,000	65,000	Export for direct consumption in the EU (86-91%), direct domestic consumption (9-14%)

[#] Data include those for yellow eel and silver eel: Czech Republic, Estonia, Finland, Netherlands, Slovakia, Spain, Sweden, and Tunisia.

[&]Finland's data include 8,000 kg and 2,000 kg of recreational catch in 2016 and 2018 respectively.

[$] The Netherlands' data for 2020 is preliminary data.

[£] Slovakia noted harvest data for 2017, 2018 and 2020 was reported only by the Slovak Fishing Association and those from the Statistical Office of the Slovak Republic were not publicly available.

Algeria reported that the decline in yellow eel harvest was due to a temporary cessation of eel exports between 2018 and 2020, which was introduced as a provisional precautionary measure by the fisheries administration.

While a response was not received from Turkey, data relating to landings of yellow and silver eel were available from the ICES Working Group on Eel (WGEEL) report (ICES, 2021a). Landings were as follows: 71,000 kg in 2015; 75,000 kg in 2016; 81,000 kg in 2017; 111,000 kg in 2018; 330,000 kg in 2019; 232,750 kg in 2020. It is noted from 2016 onwards, Turkey submitted export quotas to CITES of 70,000-100,000 kg (see Table 20), which would indicate that there are varying levels of domestic use across this period.

B.3.2 and C.1.3 *Anguilla* harvesting regulation and management measures

Fifteen Parties (Algeria, Croatia, Czech Republic, Denmark, Estonia, France, Greece, Morocco, the Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia and the UK) provided information on eel fishery seasons and reporting mechanisms for collecting catch data, and where appropriate, how this is coordinated nationally (Annex 3). Again, in the case of EU Member States, there are both national and EU reporting requirements, but across all respondents logbooks, catch reporting systems and/or online forms are used to collect data. Generally, this varies depending on whether the catch is recreational or commercial, which life stage is being targeted, and/or where the eels are caught. Of note is that in 2018 the EU introduced a closure period of three consecutive months, to be decided by each Member State, which is currently applied to commercial and recreational fishing for eels of all life stages in the Atlantic, North and Baltic Seas, and the Mediterranean[13].

Seventeen Parties (Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Morocco, the Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia and the UK) reported that harvest and domestic use of *Anguilla* species is regulated in the country through national legislation, and fifteen provided information on other fisheries management measure (e.g. gear limitations, quotas). Regulations and management measures related to a range of issues including specific fishing seasons, quotas, gear types, minimum landing sizes, locations, data collection and any relevant prohibitions. For EU Member States, domestic use is regulated at the EU level as well as at the national level. In the EU context, Member States reported that more relevant details can be found in the report on the evaluation of the Eel Regulation[14], as well as the Common Fisheries Policy (CFP)[15], the annual Council Regulation on Fishing Opportunities[16], Council Regulation (EC) No 1224/2009 on Control of the CFP[17], Common Market Organisation in fishery and aquaculture products[18], and the Data Collection Framework (DCF)[19].
For full descriptions from respondents, see Annex 4.

C.1.5 Changes to eel harvest management since 2018

Nine Parties (Denmark, Estonia, France, Greece, Slovakia, Spain, Sweden, Tunisia, and the UK) reported having implemented changes to eel harvest management since 2018 and/or experienced challenges, with regard to fisheries, reporting and traceability. The three month closures in EU Member States mentioned above were the most commonly cited change to harvest management. In addition to this, Sweden indicated that in 2020 the national fishery control regulation was tightened. As such, *'…notification must be made at least two hours before arrival at port and eel fishermen must report the positions of in-water holding cages prior to fishing'.* Further, Sweden reported having implemented a centralized traceability system in January 2019 in accordance with *Council Regulation (EC) No 1224/2009*, which includes eels legally caught from the ocean (see Section 8).

[13] https://ec.europa.eu/oceans-and-fisheries/ocean/marine-biodiversity/eel_en
[14] https://op.europa.eu/en/publication-detail/-/publication/afe6ca55-5f58-11ea-b735-01aa75ed71a1
[15] https://ec.europa.eu/oceans-and-fisheries/policy/common-fisheries-policy-cfp_en
[16] 2021 Regulation - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0092
[17] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32009R1224
[18] https://www.europarl.europa.eu/factsheets/en/sheet/118/common-market-organisation-in-fishery-and-aquaculture-products
[19] https://ec.europa.eu/oceans-and-fisheries/fisheries/scientific-input/scientific-advice-and-data-collection_en

Tunisia reported having implemented a reduction in fishing effort/catch of at least 30% compared to the three-year 2006-2008 baseline period, in accordance with the General Fisheries Commission for the Mediterranean (GFCM) *Recommendation GFCM/42/2018/1 on a multiannual management plan for European eel in the Mediterranean Sea*. The reduction is applied progressively on the basis of an annual reduction of 10% over the three-year period from 1 January 2019.

4.2.2 East Asia (*Anguilla japonica*)

i) East Asia harvest summary

Two responses were received from Parties in this region – Japan and South Korea.

In East Asia, *A. japonica*, native to the region, has been used historically in Japan, China, South Korea and Taiwan Province of China, with large eels being caught for direct consumption and juvenile eels for farming (Ringuet *et al*., 2002).

According to FAO statistics, *A. japonica* capture production has been in decline, from 364 t in 2010 to 121 t in 2019, most of which was reported by Japan (accounting for 62% during 2010-2019) and South Korea (37%). China has not reported any *Anguilla* capture production to FAO, while it has reported *Anguilla* aquaculture production from 1989 onwards.

There seems to be no publicly available data for *A. japonica* glass eels harvest in the region. Yet, farm input data can be used to estimate glass eel harvest in East Asia as *A. japonica* are exclusively used for grow-out in the region. Japan and South Korea's responses to the notification, Annex 1 of the Joint Press Release and other information suggest that *A. japonica* glass eel landings fluctuated greatly between the 2010-2011 and 2019-2020 fishing seasons, ranging between 22 t (in 2018-2019) and 98.5 t (in 2013-2014). In September 2014, China, Japan, South Korea and Taiwan Province of China started to set input limits of live eel fry (*A. japonica* and other *Anguilla* spp.) into grow-out eel farms to indirectly limit catch of glass eels for the 2014-2015 fishing season (see Joint Statement). Since then, the input limits for the coming fishing season have been agreed at each annual meeting. The limits have remained unchanged up to the 2021-2022 fishing season for Japan, South Korea and Taiwan Province of China, while China has been absent from these agreements since 2018 (Anon, 2018). Although the agreement is not legally binding, some participants have developed mechanisms to ensure compliance. For example, an eel farming licensing system was introduced in Japan in 2015 under the Inland Water Fishery Promotion Act, with the initial juvenile input allocation being restricted for each individual farmer (Gollock *et al*., 2018).

To date a region-wide assessment of the *A. japonica* stock, the associated fisheries and other anthropogenic impacts has not been carried out. Japan, South Korea and Taiwan Province of China noted in their 2021 Joint Press Release that they would hold the first scientific meeting on Japanese eel in late 2021 to share knowledge and experience, as well as to provide advice for conservation and management measures of the species (Anon, 2021a).

The notification responses and the 2021 Joint Press Release by Japan, South Korea and Taiwan Province of China suggest that various fisheries management measures have been introduced in these countries/territories, such as a ban on fishing of silver eels in some prefectures (Japan), closed fishing seasons, and size limits (South Korea).

Illegal fishing and trade, mainly in glass eels, remains a problem in East Asia (Gollock *et al*., 2018). For example, 36,000 live eel fry worth ~TWD 3 million (USD 106,623) was seized by Kimmen Coast Guard on

export from Taiwan Province of China to China in December 2019 (Anon, 2019). In July 2020, seven Japanese nationals were arrested in an attempt to illegally export glass eels from Japan (Anon, 2020). In China, Fujian marine police reportedly seized 15 boxes of live eel fry worth ~CNY 5 million (USD 773,531) in February 2021 (Dong, 2021). According to the notification responses, some control measures have recently been taken, and further actions are already proposed, e.g. Japan will introduce stricter penalties for catching glass eels without a fishing permit in 2023. See Gollock *et al.* (2018) for further details about illegal fishing and trade in glass eels in the region.

ii) East Asia harvest responses

C.1.1-2 Glass eel/elver fishery

Both Parties reported having a glass eel/elver fishery but only Japan provided data. Total harvest and information on the end use of glass eels harvested in Japan are shown in Table 4. Japan's glass eel harvest fluctuated over the years, decreasing considerably to 3,700 kg in the 2018-2019 fishing season, after which it reached more than 17,000 kg in 2019-2020. Japan noted that this fluctuation was due to natural recruitment, rather than changes in fishing effort. South Korea reported that "…*statistical data on overall harvest and proportional usage of Anguilla spp. by life stage is not available*."

Table 4: Total harvest of A. japonica *glass eel and end use reported by A. japonica range States, 2015-2020, by weight (kg). Source: Japan's response to CITES Notification 2021/018 and Annex 1 to the Joint Press Release.*

Party	2015	2016	2017	2018	2019	2020	End use
Japan	15,300	13,600	15,500	8,900	3,700	17,100	Grow-out in domestic farms (100%)
South Korea	4,700	1,800	2,700	1,000	600	4,500	No information provided

Note: Glass eel harvest is reported based on the fishing season crossing years.

C.1.1-2 Yellow/silver eel fishery

Both Parties reported having fisheries for other life stages but only Japan provided data. The total harvest and information on the end use of yellow/silver eels harvested in Japan are shown in Table 5. Japan noted "…*yellow eels and silver eels are not distinguished in Japanese statistics*…" but *"…almost all catch is (of) yellow eels because catching silver eels contributing to spawning is prohibited in almost all prefectures where wild adult eels are distributed*." South Korea reported "…*statistical data on overall harvest and proportional usage of Anguilla spp. by life stage is not available*."

Table 5: Total harvest of yellow/silver eel reported by A. japonica *range States, 2015-2020, by weight (kg). Source: Japan's response to CITES Notification 2021/018 and Annex 1 to the Joint Press Release in 2021.*

Party	2015	2016	2017	2018	2019	2020	End use
Japan	70,000	71,000	71,000	69,000	66,000	N/A	Direct domestic consumption (100%)
South Korea	80,000	68,000	48,000	59,999	64,000	N/A	No information provided

Note: 2020 data was not available at the time of request.

B.3.2 and C.1.3 *Anguilla* harvesting regulation and management measures

Japan provided information on fisheries seasons which are managed through a Prefecture-level permit system. The glass eel fishing season in Japan is from December to April; fishermen must provide regular catch reports to prefectural governments, which submit monthly data to the national government. In

most prefectures, the catch of adult eels is not allowed from October to March, when silver eels migrate from rivers to the sea for spawning.

Japan and South Korea also provided information on national legislation and associated management measures to regulate domestic use (harvesting and farming) of *Anguilla* species, which is shown in Annex 5.

B.4 & C.1.5 Changes to eel harvest management since 2018
Japan reported having implemented changes to eel harvest management measures since 2018 and/or experienced challenges, with regard to fisheries, reporting and traceability (see Section 9). It was also noted that in April 2020, the national maximum for farm input was close to being reached and the Fisheries Agency of Japan instructed prefectural governments to cancel fishing permits in order to halt catch of glass eels.

4.2.3 Americas (*Anguilla rostrata*)

i) Americas harvest summary
Four responses were received from Parties in this region – Canada, Cuba, Mexico and USA. France reported *A. rostrata* is distributed in its overseas territories (Martinique, Guadeloupe and Saint-Pierre-et-Miquelon), but information about harvest was not provided.

According to FAO production data, the USA (since 1950), Canada (since 1956), Mexico (since 1975), Cuba (since 1989), and the Dominican Republic (since 1995) have reported catch production of *Anguilla* spp. (assumed to be *A. rostrata*) to FAO. The reported *A. rostrata* capture production has declined after reaching a peak of 2,648 t in 1975. In 2010-2019, capture production, most of which were reported by the USA and Canada, was in further decline from 1,114 t in 2012 to 398 t in 2019. FAO catch production data do not differentiate life stages.

Yellow and silver eel fisheries exist in Canada and the USA, and landings declined sharply in the 1990s and 2000s (Jacoby *et al*., 2017). According to the responses to the notification and the report of the 2021 workshop of range States of the American eel (Sargasso Sea Commission, 2021), yellow and silver eel harvest in these countries continued to decline in the last six years, due to market shrinkage and reduced value.

Conversely, East Asian Customs data suggest glass eel/elver fishing in the region appears to be on the increase, and is currently known to occur in North America (Canada and the USA) and the Caribbean (Cuba, the Dominican Republic, Haiti and Jamaica). However, the extent and scale of *A. rostrata* glass eel harvest and export from the Caribbean region (and possibly Central America) is still relatively unknown, as fisheries and/or trade data are not fully available. Of the Caribbean countries where glass eel fishing exists, only Cuba responded to the questionnaire. Available national harvest and export data, and other literature, suggests that the current average legal annual glass eel/elver catch for the region is ~ 20 t (Pike *et al.*, in prep). Demand for *A. rostrata* and associated high prices appear to be causing various challenges for range States, including illegal harvesting and trade.

ii) Americas harvest responses
C.1.1-2 Glass eel/elver fishery
Canada, Cuba, and the USA reported having a glass eel/elver fishery. The total harvest and end uses of glass eels are provided in Table 6.

Table 6: Glass eel harvest and type of use in A. rostrata range States, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.

Party	2015	2016	2017	2018	2019	2020	End use
Canada	3,600	5,200	5,200	6,950	7,350	N/A	Export for grow-out in farms (100%)
Cuba	435	104	160	1,388	1,654	950	Export for grow-out in farms (100%)
USA[#]	2,386	4,263	4,238	4,170	4,423	4,378	Export for grow-out in farms (>99%)

[#]Harvest reported in pounds was converted to kg (1 pound = 0.45359237 kg).

According to the report of the 2021 range States workshop (Sargasso Sea Commission, 2021), Customs data and media reports, glass eel fishing (and export) also occurs in Haiti, the Dominican Republic, and Jamaica; however detailed catch data for these countries is not available.

Canada reported that '*…the increase of elver harvest* (between 2015 and 2019) *may be due to an increase in elver abundance in the harvesting rivers. A fishery-independent elver abundance index of the East River - Chester shows an increasing trend in abundance since the early 1990s. The elver fishery has never reached the annual quota* (9,960 kg)*. In recent years, it has been easier for harvesters to come closer to reaching their individual quota within the licensed season.*'

Harvest of glass eels is prohibited in the USA, except in Maine and South Carolina (ASMFC, 2018). Maine had 425 state-issued elver licenses with a total quota of 9,688 pounds (approximately 4,394 kg), and at the time of writing the fishing season runs from 22 March to 7 June[20]. The fishery in South Carolina is very small in comparison to Maine with a catch of less than 750 pounds (341 kg); as such, catch data is confidential to preserve fisher anonymity (ASMFC, 2018).

C.1.1-2 Yellow/silver eel fishery

Canada, Mexico and the USA reported having fisheries for other life stages. Mexico reported "A. rostrata *is not a species with economic importance or subject to any fishing income, although it is caught incidentally on the coasts and lagoons of the Gulf of Mexico and the Caribbean Sea*." Mexico did not provide harvest data, but noted that harvested eels are consumed domestically. The total harvest of yellow and silver eels in Canada and the USA is provided in Table 7.

Table 7: Total harvest of yellow/silver eel reported by A. rostrata range States, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.

Party	Life stage(s)	2015	2016	2017	2018	2019	2020	End use
USA[#]	Yellow eel	393,774	428,104	386,296	351,864	232,487	102,109	Export for direct consumption (~80%), used as bait (~20%)
Canada	Yellow and silver eel	241,000	252,00	185,000	226,000	84,000	N/A	Proportion unknown

[#] Harvest reported in pounds was converted to kg (1 pound = 0.45359237 kg).

[20] https://www.maine.gov/dmr/science-research/species/eel-elver/factsheet.html

Canada added '*…the catch of yellow and silver eel is relatively small in Canada and has been decreasing in recent years as the demand and price for yellow and adult eel in Canada has been decreasing. The majority of license holders have licenses for other more lucrative fisheries. Depending on the state of other fisheries where they hold additional licenses, harvesters may not harvest yellow/silver eel in a given year*.'

B.3.2-B.4 and C.1.3 *Anguilla* harvesting regulation and management measures
Canada, Cuba, and the USA provided information about fishing seasons and how catch is reported Annex 6. These seasons vary depending on the life stage being harvested and reporting mechanisms in Canada and the USA are managed at the sub-national level.

These Parties reported harvesting is regulated through national legislation and associated management measures (Annex 7). Mexico noted 'A. rostrata *is not listed in NOM-059-SEMARNAT-2010 (national risk list) and is not a target species for harvesting'*. No Party reported having experienced challenges with regard to implementing the legislation and/or initiatives above.

Other *A. rostrata* range States - Dominican Republic, Haiti and Jamaica - provided information on fisheries management measures related to glass eels in the country according to the information provided at the 2021 range States workshop (Sargasso Sea Commission, 2021) (Annex 7). This highlighted fisheries have been increasing over the past decade in the Caribbean and that in some cases these are not well regulated.

C.1.5 Changes to eel harvest management since 2018
Canada and the USA provided information on changes to eel harvest management since 2018 and/or experiencing any challenges, with regard to fisheries, reporting and traceability (see Section 8). Canada reported that incidences of fishing outside what is permitted in the Elver Integrated Fisheries Management Plan in the Maritimes Region has increased since 2018 and the 2020 elver fishing season was closed early due to conservation concerns.

Supplementary information and data sources suggest there has been a "boom" in glass eel harvest in the Caribbean region over the last few years, in particular, Haiti, where there are reports of over 8 t being caught annually. However, information on whether any changes in harvest regulation/management are being considered to ensure long-term sustainability is currently lacking (Saragasso Sea Commission, 2021; Pike *et al.,* in prep).

Cuba noted in its notification response that in the last few years there has been an increase in interest in both exploitation and protection of *A. rostrata*, with 30 rivers now being fished (although 90% of catch is still in traditional areas). They also noted that information and data prior to 2019 was poor and inaccurate and that data and traceability has improved considerably since then through official reports provided by the Grupo Empresarial de la Industria Alimentaria (GEIA) - a business group set up under the Ministry of Food Industry (see Section 8). Specific legislation covering use of *A. rostrata* is also in preparation.

4.2.4 Southeast/South Asia (*Anguilla bicolor* etc.)
i) Southeast/South Asia harvest summary

Three responses were received from Parties in this region – India, Malaysia and Singapore. Note that Singapore is not a range State of *Anguilla* spp. and therefore most questions in the notification relating to harvest were not answered.

As there are several *Anguilla* species distributed in Southeast/South Asia including *A. bicolor, A. marmorata* and *A. bengalensis,* depending on the country, eel catch in these countries may contain more than one. However, data indicates that *A. bicolor* is the species that is harvested and traded in greatest quantities (Gollock *et al.,* 2018). Indonesia and the Philippines are the only two countries in Southeast/South Asia to have reported catch production for *Anguilla* to FAO. According to this source, combined eel catch production for Indonesia and the Philippines increased gradually from <1,400 t in 2007 to >5,400 t in 2013, after which it dropped to ~2,700 t in 2018-2019.

Although *Anguilla* spp. (all life stages) are believed to be caught - including as bycatch - in other Southeast/South Asian countries, such as Bangladesh, India, Malaysia, Myanmar, Thailand and Viet Nam (responses to notification; Gollock *et al.*, 2018; SEAFDEC, 2019), many do not have official *Anguilla* catch and farming production statistics (SEAFDEC, 2019). In line with previous findings, responses to the notification highlighted that 'eel' catch data can include non-*Anguilla* spp. in some Southeast/South Asian countries.

The survey conducted by SEAFDEC in 2017-2019 found that anguillid eel fisheries exist in Indonesia, the Philippines and Viet Nam, while the species are caught incidentally/as by-catch in Thailand and Myanmar (SEAFDEC, 2019). The same survey noted the annual harvest of glass eels in Indonesia (>19 t in 2017) and the Philippines (12.5 t in 2017) was much higher than those in Viet Nam (0.6-0.75 t per year), although the survey data was collected from a limited number of respondents and may not be comprehensive.

ii) Southeast/South Asia harvest responses

C.1.1-2 Glass eel/elver fishery

No Party reported having a glass eel/elver fishery. India noted that although anguillid species are harvested in the country, detailed information and/or data is not available.

C.1.1-2 Yellow/silver eel fishery

Malaysia reported having a fishery for other *Anguilla* life stages. It is important to note that Malaysia's response to the notification covers only Sabah, and not Peninsular Malaysia and Sarawak. However, Malaysia's response suggested that anguillid eels are caught throughout national waters, but landings are not significant, accounting for approximately 1%, compared to other types of non-*Anguilla* eels (pike conger, moray and swamp eel) in Peninsular Malaysia and probably Sarawak. The total harvest 'eels' reported by Malaysia is provided in Table 8: Total harvest of "eel" reported by Malaysia, 2015-2020, by weight (kg).

Table 8: Total harvest of "eel" reported by Malaysia, 2015-2020, by weight (kg). Source: Malaysia's response to CITES Notification 2021/018.

2015	2016	2017	2018	2019	2020	End use
732,120	547,430	516,410	520,060	462,600	356,430	Export for direct consumption (85%), direct domestic consumption (15%)

Note: Malaysia reported *Anguilla* spp. accounts for approximately 1% of the total reported eel harvest described in the data.

India reported that further information and data on harvest (C.1.1-C.1.5) is not available but provided the following:

Data on anguillid landings is available from 2007 onwards with the National Marine Fisheries Data Centre of ICAR-CMFRI. On the basis of a ten-year average (2011-2020) 582 tons of anguillids are landed in the marine fisheries of India annually. The bulk of the catch comes from the states of Andhra Pradesh (annual average 277 tons), Odisha (235 tons) and Karnataka (58 tons). The fishery is supported by two species, namely Anguilla bengalensis *and* Anguilla bicolor*. While species composition data is not available, it is known that the latter dominates in the fishery in Odisha whereas both species are found in the Andhra Pradesh and Karnataka anguillid fishery. Landings of anguillids have also been monitored in the fisheries of all other maritime states except Gujarat. They are mainly landed through trawl and hook and line fishery.*

Malaysia reported exploitation of eels is allowed throughout the year, and fisheries management measures include gear limitations.

C.1.3 Reporting mechanisms

Malaysia reported '…*landing data is collected by government officials on daily basis at landing jetties, and data kept as monthly and yearly statistics at district level (16), state (Sabah) and national (Malaysia) digitally*, while *record (logbook, invoice etc) is kept by commercial fishers as the records need to be produced as part of the yearly fishing license's renewal*'.

4.2.5 Oceania (*Anguilla australis* etc.)

i) Oceania harvest summary

Two responses were received from Parties in this region – Australia and New Zealand. In addition, France reported some *Anguilla* spp. are distributed in its overseas territories in Oceania (*A. australis* and *A. reinhardtii* in New Caledonia, *A. megastoma* in Tahiti and French Polynesia, and *A. obscura* in Rurutu and Tubuai, French Polynesia), but information about harvest was not provided.

According to FAO statistics, capture production of *Anguilla* spp. in Oceania (excluding *A. japonica* production reported by Guam in 1979-1981), declined over the years after reaching a peak of 2,789 t in 1994. Between 2010 and 2019, annual capture production of *Anguilla* spp. in Oceania, most of which was reported by New Zealand (91%), peaked at 1,117 t in 2013, after which it dropped to <500 t in 2018-2019.

The responses to the notification suggest Australia currently has both glass and yellow/silver eel fisheries, with species composition (*A. australis* and *A. reinhardtii*) varying between jurisdictions – these were not always being reported in the questionnaire response. New Zealand has yellow, and very limited silver, eel fisheries for *A. australis* (80%) and *A. dieffenbachii* (20%).

ii) Oceania harvest responses

C.1.1-2 Glass eel/elver fishery

Only Australia has glass eel/elver fisheries and reported harvest by state jurisdiction (Table 9). Information on end use was not provided.

Table 9: Total harvest of glass eel/elver reported by state jurisdiction in Australia, 2015-2020, by weight (kg). Source: Australia's response to CITES Notification 2021/018.

State	2015	2016	2017	2018	2019	2020
Tasmania	1,067	1,607	1,434	1,710	1,160	1,723
Queensland[#]	7.05	0	0	0	20.4	0

[#] While the fishery includes *A. reinhardtii* and *A. australis,* the catch is predominantly *A. reinhardtii* due to the distributions of these species.

C.1.1-2 Yellow/silver eel fishery

Both Australia and New Zealand reported having fisheries for other life stages. Australia reported four separate state jurisdictions manage harvest of yellow/silver eel, and available data and information varies between these. Information on end use was not provided. The summarised total harvest in Australia for 2015-2020 is shown in Table 10.

Table 10: Total harvest of yellow/silver eel reported by state jurisdiction in Australia, 2015-2020, by weight (kg). Source: Australia's response to CITES Notification 2021/018.

State	2015	2016	2017	2018	2019	2020
New South Wales	74,363	30,337	19,167	18,268	12,383	13,037
Queensland[#],[&]	29,272	9,051	9,832	8,219	3,168	37
Tasmania	68,821	52,594	53 320	45,337	32,595	22,351
Victoria - *A.australis*[#],[$]	44,926	63,294	68,204	48,070	52,898	41,090
Victoria - *A.reinhardtii*[#],[$]	id	id	id	8,282	17,727	id

[#] Data include those for yellow eel and silver eel.

[&] While the fishery includes *A. australis,* the catch is predominantly *A. reinhardtii* due to the distributions of these species.

[$] The life stage of the harvested eels was not reported in the response to the Notification.

id - insufficient data to report because there are less than five licence holders (policy requirement to protect).

New Zealand also reported having yellow and silver eel fisheries – yellow eel harvest by species is shown in Table 11; silver eel catch was reported as minimal or zero.

Table 11: Total harvest of yellow by species in New Zealand, 2015-2020, by weight (kg). Source: New Zealand's response to CITES Notification 2021/018.

Species	2015	2016	2017	2018	2019	2020	End use
A. australis	429,600	376,900	430,600	418,300	355,900	264,300	Export for direct consumption (>90%), direct domestic consumption (<10%)
A. dieffenbachii	115,200	80,500	80,700	86,900	66,200	75,100	Export for direct consumption (>90%), direct domestic consumption (<10%)

B.3.2-B.4 *Anguilla* harvesting regulation and management measures

Both Australia and New Zealand provided information about fisheries seasons and how they are reported. Australia indicated that '*Catch is reported by calendar year, eel fisheries are generally open year-round and occasionally have seasonal closures'.* New Zealand stated '*The fishing year runs from 1 October to 30 September. The above catches are reported on that basis, so the tonnages for 2020 are actually for 1 October 2019 to 30 September 2020. Most of the catch is taken in the spring and summer (so about September to March). The export and import data, however, is by calendar year.'* Both Parties provided information on fisheries management measures and/or national legislation related to harvesting of *Anguilla* spp. Australia devolves management to the state level, while New Zealand uses a quota system.

More information can found in Annex 8.
Neither reported having experienced challenges with regard to implementing of the legislation and/or initiatives described above. New Zealand added '*…the number of fishers and processors is small and well-informed so there have been no substantial issues; in some other New Zealand fisheries, there are instances of poaching, but this does not seem to be a significant problem for any of our eel species'*.

C.1.5 Changes to eel harvest management since 2018
New Zealand reported '*…total allowable commercial catches have been reduced for South Island longfin eels* (A. dieffenbachi) *due to public perceptions about stock status, not due to scientific stock assessments, which generally indicate stable or increasing sub-populations*.'

4.2.6 East/Southern Africa (*Anguilla mossambica* etc.)

i) East/Southern Africa harvest summary
With regard to the species distributed in its overseas territories, France reported that fishing is banned for *A. bicolor* and *A. mossambica*, and only recreational fishing is allowed for *A. marmorata* in Reunion and Mayotte. France also noted that *A. bengalensis* is rarely seen in Reunion. No other East/Southern Africa countries provided responses to the notification.

There are several *Anguilla* species distributed in East/Southern Africa including *A. mossambica* and *A. marmorata* - and *A. bicolor* and *A. bengalensis* depending on the country - therefore catch and exports/imports from these countries may contain more than one. No country in the region has reported *Anguilla* catch production to FAO, however farming production has been reported by Madagascar since 2009, ranging from zero to 40 t between 2010-2019.

5. Eel farming

5.1 Eel farming summary

According to FAO data, total annual global *Anguilla* production (catch and aquaculture) has steadily increased since the 1950s, mainly due to the expansion of farming in China, Japan, South Korea and Taiwan Province of China. In 2019, eel farming accounted for 97% of total eel production (279,410 t), with China responsible for 86% of total farming production (FAO, 2021a). Eel farming is reliant on wild-caught juvenile eels (glass eels/elvers) as "seed" because breeding in captivity is not yet commercially viable (Butts *et al.,* 2016; Kuroki *et al.,* 2019). Historically, eel farms, mainly in Europe and Asia, used species of local provenance; however, over the past 30 years in particular, East Asian farms have been looking for, and switching to, alternative glass eel sources (Ringuet *et al.,* 2002; Shiraishi and Crook, 2015; Gollock *et al,.* 2018).

Changes in "source" regions of live eel fry imported into East Asia during 2005-2020 are shown in Figure 3 in order to illustrate trade trends after the CITES listing of *A. anguilla* came into force in March 2009 and trade to and from the EU was banned in December 2010. Imports of live eel fry from the Americas (likely to be *A. rostrata*) and Southeast/South Asia (likely to be *A. bicolor* and other tropical *Anguilla* species) have increased since 2011, accounting for more than 90% of reported annual non-*A. japonica* imports into East Asia from 2017 onwards. Annual imports of live eel fry from the Americas remain high, ranging between 23 t and 47 t in the last five years, suggesting there is a high demand for *A. rostrata*. Considerable levels of illegal fishing and trade, driven by the demand for farming, have been documented in many countries since the CITES listing came into force (see Section 6).

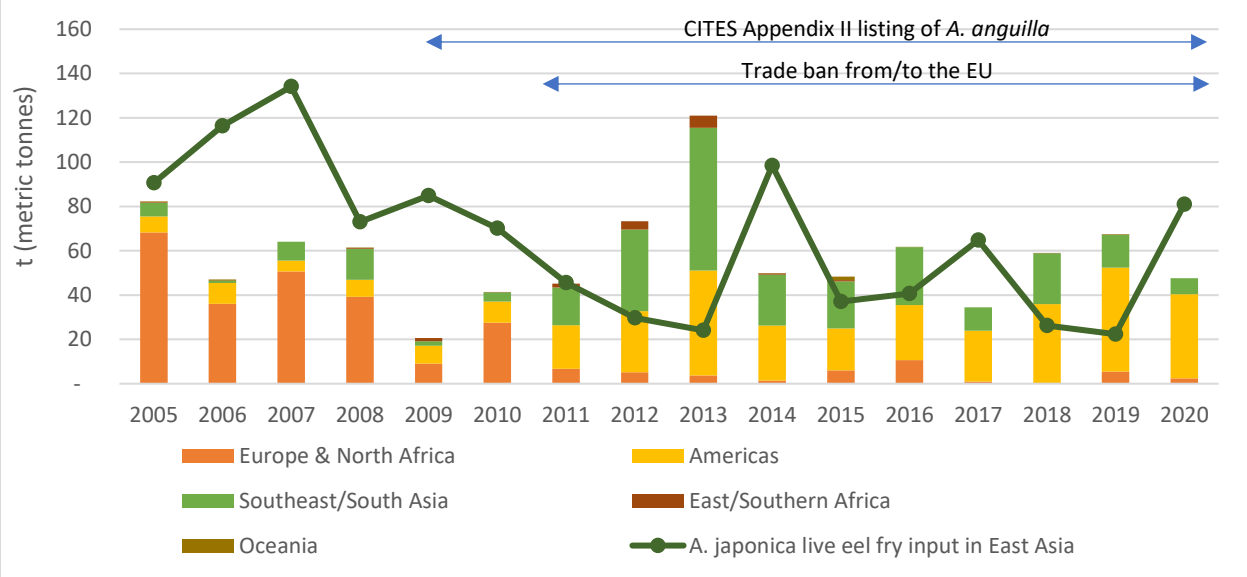


Figure 3: Reported imports of live eel fry for farming (all sizes) into East Asia and A. japonica *glass eel input, 2005-2020, by weight (t). Source: East Asian Customs (reported imports), Joint Statement, Annex 1 of the Joint Press Release, and Anon (2021b) (A. japonica live eel fry input).*

Note: ***Europe and North Africa*** *(likely to be A. anguilla):* Algeria, Belgium, Denmark, Egypt, France, Germany, Greece, Ireland, Italy, Morocco, the Netherlands, Romania, Spain, Tunisia and the UK*;* ***Americas*** *(likely to be A. rostrata): Canada,* Cuba, Dominican Republic, Haiti and the USA*;* ***Southeast Asia*** *(likely to be A. bicolor and other tropical Anguilla species):* Bangladesh, Timor Leste, Indonesia, Malaysia, Philippines, Singapore, Thailand and Viet Nam*;* ***East/Southern Africa*** *(likely to be A. mossambica and other tropical species): Madagascar, Mauritius and South Africa;* ***Oceania*** *(likely to be A. australis): Australia.*

According to the responses to the notification, 13 Parties (Australia, Canada, Denmark, Estonia, Greece, Japan, Morocco, the Netherlands, Slovakia, South Korea, Spain, Sweden, and the USA) reported farming eels for domestic consumption and/or export for processing and/or consumption. Some are also used for re-stocking domestically and/or internationally. Where data were available, farming appeared to have declined over the past decade, with a reduction in both the number of farms and total capacity. However, this was not always proportional and indicated that small farms were closing and larger capacity facilities were still in production. There were two instances where national farm capacity had increased. It is important to note that there are still a number of large knowledge gaps in relation to eel farming, in particular in China, South Korea and Taiwan Province of China; a response to this notification was not received from China, currently known to be the main *Anguilla* farming nation in the world.

5.2 Eel farming by region

5.2.1 Europe/North Africa

i) Europe/North Africa farming summary

Seventeen responses were received from Parties in this region - Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Morocco, Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia, and the UK.

According to FAO data, farming production for *A. anguilla* in Europe and North Africa was relatively stable at 4,900-6,800 t in 2010-2019, with the main farming countries being the Netherlands (accounting for a decadal average of 39%), Denmark (15%), Germany (15%), and Italy (12%) (Figure 4). Some countries saw a decline in farming production over the last decade (e.g. the Netherlands, Denmark), while farming production increased in some countries (e.g. Germany).

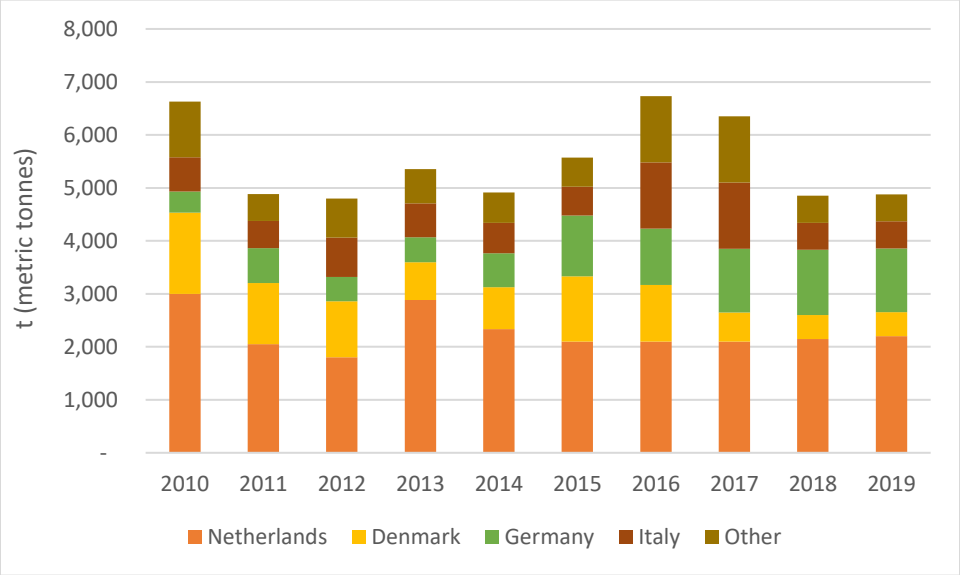


Figure 4: Reported farming production for A. anguilla *species in Europe and North Africa, 2010-2019, by weight (t). Source: FAO fisheries statistics.*

While eel farming seems to be regulated to varying extents by the Parties who responded to the notification, mechanisms and/or regulations related to the registration and reporting of eel farms differ considerably even among the EU Member States. Some Parties require a permit for eel farming (e.g.

Denmark, Sweden) and/or eel farms need to submit a yearly report on data related to production (e.g. Denmark, Greece), while reporting is voluntary in some countries (e.g. Slovakia).

ii) Europe/North Africa farming responses

D.1.1-D.1.4 Eel farming and input

Of the 17 responses representing *A. anguilla* range States, eight Parties reported anguillid eels are farmed in-country (Denmark, Estonia, Greece, Morocco, the Netherlands, Slovakia, Spain and Sweden). Two Parties (the Czech Republic and France) reported anguillid eels are not farmed, but provided the following additional information. The Czech Republic reported eels are sometimes farmed in mixed-species ponds, but amounts are negligible. France noted that fishermen and fishmongers may sometimes keep eels temporarily in tanks until they are sold, but there are no farming facilities in the country; for example, one of the main fish traders based in the Basque region sells glass eels, some of which are stored in tanks before they are sent to farms in the Netherlands and Germany.

The total annual glass eel input into farms reported by Parties is shown in Table 12. Four Parties (the Czech Republic, Greece, Slovakia and Spain) did not provide input information. Spain reported that there are two authorised *A. anguilla* eel farms in the Valencian community, one of which is a government-run facility and grows out eels exclusively for restocking, and the other private farm grows out eels for restocking and direct human consumption in the region. Neither were active during 2019.

Table 12: Total annual glass eel input into farms by country in Europe/North Africa, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.

Party	2015	2016	2017	2018	2019	2020
Denmark	2,776	3,864	4,168	2,587	1,044	2,776
Estonia	250	152	450	162	250	0
Morocco	1,013	1,512	481	1,144	306	909
Netherlands	5,200	6,250	5,890	6,280	5,340	5,380
Sweden	672	892	950	1,250	1,250	N/A

Seven Parties (Denmark, Estonia, Greece, Morocco, the Netherlands, Slovakia and Sweden) reported *A. anguilla* was the only species used for aquaculture in their country from 2015 to 2020. The EU countries, which provided details about source countries, noted eels used for farming 'arrived' (were imported) from other Member States such as France, Spain, the UK and Italy. Morocco reported all the eels used for aquaculture were harvested domestically.

D.1.5 Total farming output

Error! Reference source not found. Seven Parties reported total annual output from farming; it was mainly stable in Estonia, Morocco, the Netherlands and Sweden, while it reportedly declined in Denmark and Greece (Table 13).

Table 13: Total eel farming output by country in Europe/North Africa, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.

Party	2015	2016	2017	2018	2019	2020
Czech Republic	0	0	0	5,000	1,000	N/A
Denmark	1,231,492	1,067,389	549,501	451,351	486,665	N/A
Estonia	50,000	49,000	48,000	47,000	40,000	54,000

Greece	270,800	290,000	184,000	128,000	146,418	N/A
Morocco	275,000	236,821	261,486	201,680	273,547	271,528
Netherlands	2,000,000	2,000,000	2,000,000	2,150,000	2,200,000	2,035,000
Sweden	107,000	119,000	107,000	99,000	101,000	N/A

The EU Member States (Denmark, Estonia, Greece, Netherlands and Sweden) reported farmed eels were used mainly for direct consumption in the EU, and national stocking, while Morocco noted all the farmed eels are exported to countries such as South Korea, Japan, China and Viet Nam for direct consumption.

D.1.6 Registration and reporting of eel farms

Eight Parties (Algeria, Denmark, Estonia, Greece, Morocco, the Netherlands, Slovakia, and Sweden) provided information about mechanisms and/or regulations relating to the registration and reporting of eel farms in their country; the details are provided in Annex 9. These related to requirements for permitting and registration of farms, reporting, and input quotas.

D.1.7 Other information on eel farming

Seven Parties provided further details about eel farming, specifically on the number of farms, the national capacity, average turnover rate i.e. the time taken to grow from fry to a commercially viable size, and changes in these metrics over the past 10 years (Table 14). It seems from the farm capacities submitted by Parties in Table 14, and the outputs in Table 13, that many are producing below the maximum.

Table 14: Number of eel farms, national eel farm capacity and average turnover rate in Europe/North Africa. Source: Responses to CITES Notification 2021/018

Party	Number of eel farms	National eel farm capacity	Average turnover rate
Denmark	10 farms in 2009, three farms in 2019	5,235 t in 2015, 4,403 t in 2019	Approximately 18 months which has not changed over the last 10 years
Estonia	Two eel farms, - this has not changed in recent years	Stable in recent years	Eight months
Greece	Eight eel farms in 2010, three farms in 2019	1600 t in 2010 /520 t in 2019	
Morocco	Two aquaculture units	The annual allowable quota is 2000 kg glass eel, which enables production of 500 t depending on the capacity of the existing aquaculture infrastructure.	12 to 18 months Marketable size depends on the market, but 300 g has been preferred in the past few years.
Netherlands	There is a decreasing trend in the number of operating eel farms: 20 in 2017, 18 in 2018, 14 in 2019 and 15 in 2020.		
Slovakia	One small eel farm running from 2019		
Sweden	One eel farm has been active over the last 10 years	Max capacity has gone up from 50 t to 125 t	

5.2.2 East Asia

i) East Asia farming summary

Two responses were received from Parties in this region – Japan and South Korea.

The available data made it challenging to gain a clear understanding of the scale and dynamics of eel farming in the region as a response was not received from China, whose *Anguilla* farm production accounted for 86% of the global total in 2019 (FAO, 2021a). There are also still many knowledge gaps for South Korea and Taiwan Province of China. Supplementary information has been presented, where available, in an attempt to address some of these gaps. China, Japan, South Korea and Taiwan Province of China, whose cumulative total accounted for 98% of global farming production in 2019 (FAO, 2021a), agreed to set an upper limit on glass eel input in each country/territory in 2014. In their Joint Statement, they agreed that *A. japonica* glass eel input for 2014–2015 should be no more than 80% of that in 2013–2014 and for other *Anguilla* species "*to take every possible measure not to increase the amount of initial input of eel seeds from the recent level*." Since then, the input limits for the coming fishing season have been agreed at an annual meeting. The limits have remained unchanged up to the 2021-2022 fishing season. Table 15 shows glass eel input in these countries/territories from 2015 to 2020 from various sources including notification responses, Annex 1 to the Joint Press Release, and trade press, the upper limits. While the data from the notification responses were used, there are data disparities between glass eel input in Japan and South Korea from these, and those from Joint Statement and Joint Press Release. Note that the data indicates that in some years the upper limits were exceeded for both *A. japonica* (China and South Korea) and other species (China).

The data shows input of *A. japonica* for farming in East Asia fluctuated over the last seven years, reaching a peak of 81 t in the 2019-2020 fishing season, with farms in China (52%) and Japan (25%) inputting the majority. According to these data source, input of non-*A. japonica* species in East Asia - mainly in China - reached a peak of ~69 t in the 2017-2018 fishing season.

Table 15: Glass eel input (t) in China, Japan, South Korea and Taiwan Province of China from 2014 to 2021 and the upper limit of glass eel input agreed in the Joint Statement in 2014. Source: Responses to CITES Notification 2021/018 (in italics), [&] Anon (2021b), and [$] Annex 1 to the Joint Press Release.

Species	Country/ territory	'14-'15	'15-'16	'16-'17	'17-'18	'18-'19	'19-'20	'20-'21[&#]	Input limit
A. japonica	China[&]	9.3	8.2	26.0	5.5	3.0	42.0	30.0	36.0
	Japan	*18.3*	*19.7*	*19.6*	*14.2*	*15.1*	*20.1*	18.1	21.7
	S. Korea	*6.7*	*9.3*	*11.9*	*5.5*	*3.5*	*13.5*	6.7	11.1
	Taiwan Province of China[$]	2.8	3.6	7.3	1.0	0.8	8.1	3.3	10
***A. japonica* total**		**37.8**	**40.8**	**64.8**	**26.2**	**22.4**	**81.0**	**58.8**	**78.8**
Other *Anguilla* spp.	China[&]	35.5	39.5	54	65	31	30	19	32
	Japan	-	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.1	3.5
	S. Korea	*5.1*	*3.7*	*0.7*	*3.7*	*3.0*	*0.7*	0.4	13.1

	Taiwan Province of China[$]	0.2	0.1	0.1	0.1	0.1	1.0	0.1	10
Other *Anguilla* spp. total		**40.8**	**43.5**	**54.9**	**68.8**	**34.1**	**31.7**	**19.5**	**58.6**

[#]The data for 2020-2021 is preliminary.
Note: Values of 0.0 refer to unit value of less than 50 kg.

ii) East Asia farming responses

D.1.1-D 1.2 Eel farming and live eel fry input

Japan and South Korea reported that anguillid eels are farmed in-country. According to notification responses, the total annual *A. japonica* input into farms fluctuated during 2015-2020, especially in South Korea (Table 16). As explained in Section 4.2.2, China, Japan, South Korea and Taiwan Province of China have set an annual input quota for both *A. japonica* and non-*A. japonica* species since the 2014-2015 fishing season – China have not partipated since 2018 (Anon, 2018). The input limits for the coming fishing season have been agreed at each annual meeting although the limits have remained unchanged up to the 2021-2022 fishing season. The agreed input limits for Japan and South Korea are also shown in Table 16.

Table 16: Input of Anguilla *spp. used for farming in Japan and South Korea by weight (kg), 2015-2020. Source: Responses to CITES Notification 2021/018.*

Country	Species	2015	2016	2017	2018	2019	2020	Annual input limit
Japan	*A. japonica*	18,300	19,700	19,600	14,200	15,200	20,100	21,700
	A. bicolor	N/A	3.5	3.5	3.4	3.5	3.5	3,500
South Korea[#]	*A. japonica*	6,682	9,250	11,879	5,511	3,455	13,502	11,100
	A. rostrata	159	763	35	168	0	5	13,100
	A. bicolor *A. marmorata* *A. mossambica*	4,986	2,936	622	3,5212	2,959	647	

[#]*A. bicolor, A. marmorata* and *A. mossambica* were reported together by South Korea.
Note – for Japan, these are fishing years rather than calendar years; it was not possible to determine this for South Korea.

Japan reported the proportion of *Anguilla* for farming was >99% *A. japonica* during 2015 to 2020. Data from South Korea suggested the proportion of *A. japonica* varied significantly depending on the year, ranging between 53% and 95%. When *A. japonica* input is high (e.g. >11,000 kg in 2017 and 2020), the input of other *Anguilla* spp. tends to be lower (<700 kg).

Input of *A. rostrata* in South Korea reached 763 kg in 2016, after which it declined to zero in 2019 and 5 kg in 2020. The species proportion of *A. rostrata* for farming in South Korea was low (0-2%) during the period, except for 2016 when it reached almost 6%. Back and Park (2017) noted that although South Korean eel farmers have experimented with several *Anguilla* species as substitutes for *A. japonica*, including *A. anguilla*, *A. rostrata* and *A. bicolor,* only *A. bicolor* appears to be well suited to their farming methods.

Tropical *Anguilla* species input (*A. bicolor*, *A. marmorata* and *A. mossambica*) fluctuated in South Korea during the period, peaking at ~5,000 kg in 2015. The proportion of these three species being used in South

Korean farms - compared to *A. japonica* - consequently varied, being highest in 2015 and 2019 and very low in 2017 and 2020 (see Figure 5).

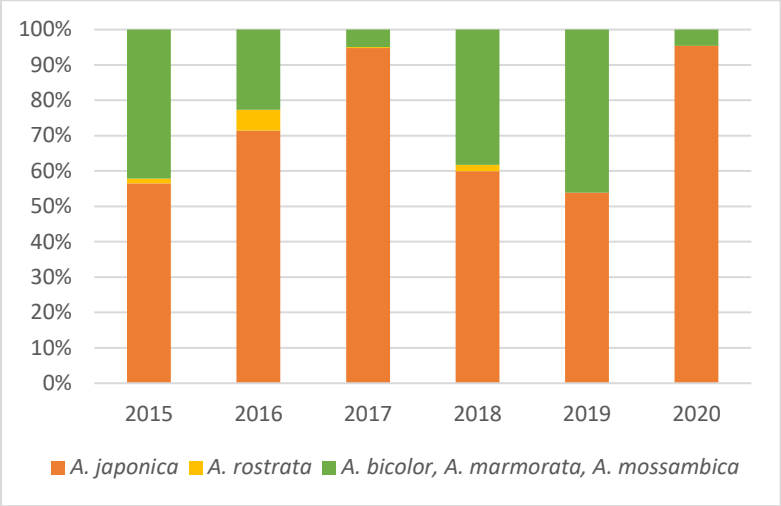


Figure 5: Species composition of live eel fry used for farming in South Korea, 2015-2020. Source: South Korea's response to CITES Notification 2021/018.

D.1.3-4 Origin of eels for farming

Japan reported that glass eels harvested domestically provided between 60% and 85% of total eel fry input into farms in 2015-2020, except for in 2019 when it dropped to 24% (see Section 4.2.2). Farms in South Korea received less than 40% of their eel fry from domestic harvest in 2015-2019; this reached 60% in 2020. The remaining eel for farming was imported - according to the notification response, Japan mainly imported from Hong Kong SAR during 2018-2020, and to a lesser extent from the Philippines, Taiwan Province of China, China, the USA, Cuba, Malaysia, and Canada. As glass eel fisheries or eel farming does not exist in Hong Kong SAR, and *A. japonica* is the main species used for farming in Japan, imports are likely to be sourced from other range States i.e. China, South Korea and Taiwan Province of China (Gollock *et al.,* 2018). South Korea listed China, Japan, Taiwan Province of China, New Zealand, Indonesia, Egypt, Australia, Tunisia, Morocco and Turkey as source countries/territories, although the notification response did not mention *A. anguilla* or *Anguilla* species found in New Zealand being used for farming between 2015 and 2020.

D.1.5 Total output from farming

Both Japan and South Korea reported that total eel farming output declined during 2015-2020, as shown in Table 17, and that almost all farmed eels (>99%) were used for direct domestic consumption. Japan noted that specific farming production for *A. bicolor* could not be provided, to protect the privacy of relevant eel farmers.

Table 17: Total output from eel farming in Japan and South Korea, 2015-2020, by weight (kg). Source: Responses to CITES Notification 2021/018.

Country	Species	2015	2016	2017	2018	2019	2020
Japan	*A. japonica*	20,119	18,907	20,979	15,111	17,073	N/A
South Korea	*A. japonica, A. rostrata,*	17,960	17,879	17,203	12,714	13,745	13,795

	A. bicolor, *A. marmorata,* *A. mossambica*						

D.1.6 Registration and reporting of eel farms

Japan reported that a licensing system for eel aquaculture has been in place since June 2015, under the *Inland Water Fishery Promotion Act*. The amount of initial input of glass eels by species is allocated to each individual farmer, and they are required to report the input and output amount to the central government every month.

South Korea noted that from 8th December 2020, eel farming is subject to government approval, whereas it was only subject to 'declaration (notification to the government)' in the past (*Article 43 of the Aquaculture Industry Development Act*). Approval for eel farming is granted only when facilities meet certain criteria (www.fips.go.kr).

D.1.7 Other information on eel farming

Regarding any changes in the number of eel farms over the past decade, Japan reported that '*since the number of ponds and the amount of glass eel inputs are regulated according to the Inland Water Fishery Promotion Act, expansion of aquaculture scale and new entry to eel aquaculture are restricted*'. South Korea reported the number of eel farms has not significantly changed, but the area of existing farms has increased due to remodeling.

Japan observed no significant changes in cumulative farm capacity over the last 10 years while South Korea reported that their production capacity has increased due to improvements in farming facilities and technology.

Both Japan and South Korea indicated the preferred size of farmed eels for consumption has become larger in recent years due to a decrease in glass eel supply (South Korea) and to ensure the most effective use of eel resources (Japan). Japan noted that the farming period has changed from between six and eighteen months to between six and twenty-four months. The average weight of marketable farmed eel has increased from 200 g for five eels to 350 g for three eels in South Korea.

5.2.3 Americas

i) Americas farming summary

Four responses were received from Parties in this region – Canada, Cuba, Mexico and USA.

There is no tradition of farming eels in the Americas and the responses to the notification suggest current farm production is minimal. Most glass eels harvested in the region are exported to countries and territories in East Asia for farming (see Section 6.2.3). Unlike some Southeast Asian countries where farming was piloted/initiated when East Asian demand for glass eels from new sources increased in the early 2010s, there seems to be less development in the Americas. No farming production was reported to FAO during 2010-2019.

ii) Americas farming responses

Canada and the USA reported that anguillid eels are farmed at a very small scale in-country which is regulated at the provincial/state level, and data on production cannot be disclosed for reasons of privacy.

Cuba noted that recently foreign investors have shown interest in developing eel farming in Cuba, but nothing was confirmed at the time of writing.

D.1.1-7 Farming input and output

Canada reported the existence of one farm in the province of Newfoundland and Labrador whose annual total glass eel/elver input was stable at 150 kg for 2015-2020. All the eels used for farming were *A. rostrata* harvested domestically. Canada noted it is not possible to report on output due to privacy rules.

Eel farming in Canada is regulated at the provincial level. Access to glass eels for aquaculture in Newfoundland is governed by *s52 of the Fisheries Act* and the *Access to Wild Aquatic Species for Aquaculture Purposes Policy*, both under the authority of Fisheries and Oceans Canada. Under the latter policy, the proponent must demonstrate they are conducting aquaculture and a licence is required to farm eels. This falls under the authority of the *Provincial Aquaculture Act*. The province adheres to the Aquaculture Policy and Procedures Manual as provided in the links below:

- DFO Policy on Access to Wild Aquatic Resources as it Applies to Aquaculture: https://www.dfo-mpo.gc.ca/aquaculture/ref/AWAR-ARAS-eng.htm
- *Fisheries Act*: https://laws-lois.justice.gc.ca/eng/acts/f-14/FullText.html
- *Aquaculture Act*: https://www.assembly.nl.ca/Legislation/sr/statutes/a13.htm
- Aquaculture Policy and Procedures Manual: https://www.gov.nl.ca/ffa/files/licensing-pdf-aquaculture-policy-procedures-manual.pdf

The USA reported that there is one eel farm in North Carolina, which will no longer operate in 2021, and another in Maine that has been in operation since 2019. However, this farm did not receive its elver allocation in 2020 via the 200 pound per state quota system as there was no harvest under the scheme due to COVID-19. Total farm input was less than one pound (approximately 0.5 kg) in 2017 and 143.82 pounds (approximately 65.2 kg) in 2019, although the responses state that the farms may have had other inputs that were not reported to the Atlantic State Marine Fisheries Commission (ASMFC). All the eels used for farming were *A. rostrata* harvested domestically in the states of Maine and North Carolina. The USA noted output information is not available nationally, although Law Enforcement Management Information System (LEMIS) data indicated that small amounts (<25kg) of farmed eel were being exported to Hong Kong SAR, Malaysia and Japan.

In the USA, individual states have specific requirements on permits and other processes related to aquaculture, but regional level guidance is provided in ASMFC regulations (*http://www.asmfc.org/uploads/file/57336cfcAmericanEel_AddendumIV_Oct2014.pdf*). Section 3.2 of the Addendum V to the American Eel Fishery Management Plan stipulates glass eel Aquaculture Plan provisions. With an approved Aquaculture Plan, states and jurisdictions may harvest a maximum of 200 pounds of glass eels annually from within their waters for use in domestic farm facilities. Eels harvested under an approved Aquaculture Plan may not be sold until they reach the legal size in the jurisdiction of operations, unless otherwise specified.

5.2.4 Southeast/South Asia

i) Southeast/South Asia farming summary

Three responses were received from Parties in this region – India, Malaysia and Singapore - all of which reported no domestic farming of anguillid eels.

According to FAO data, farming production of anguillid eels in the range States of *A. bicolor* and other tropical species in Southeast/South Asia fluctuated during 2010-2019, ranging between 28 t and 2,914 t, all of which was reported by Indonesia. Many Southeast Asian countries do not have official *Anguilla* catch and farming production statistics, but a recent report from SEAFDEC (2019) suggests that eel farming exists mainly in Indonesia, the Philippines and Viet Nam, and to a lesser extent in Cambodia, Myanmar and Thailand. Actual quantities of *Anguilla* farm production in these counties are still relatively unknown partially because catch, farm and trade statistics for anguillid eels are often reported under the general term 'eels' which includes non-*Anguilla* species (Gollock *et al.,* 2018). Although the survey conducted by SEAFDEC in 2017-2019 indicated that there are more than 1,320 eel farms in Viet Nam, with 4,500 t of farming production in Ca Mau Province in 2018 (SEAFDEC, 2019), most of them are likely to use non-*Anguilla* spp. (Table 18).

Table 18: Number of Anguilla eel farms and farming production in the baseline survey conducted by SEAFDEC in 2017-2019. Source: SEAFDEC (2019).

Country	Number of eel farms	Farming production (t)
Cambodia	1	0.5
Indonesia	12	N/A
Myanmar	1	15
Philippines	28	N/A
Thailand	1	0.3-0.5
Viet Nam	>1,320	>4,500

Note: There are no further details on the very high number of farms apparently in operation in Viet Nam.

5.2.5 Oceania

i) Oceania farming summary

Two responses were received from Parties in this region – Australia and New Zealand.

According to FAO statistics, Australia is the only country in Oceania which reported eel farming production between 2010 and 2019, ranging from 0 t to 73 t.

ii) Oceania farming responses

Of the two responses received from Parties in Oceania, only Australia reported farming anguillid eels. Note that farming in Australia does not rely on classical eel farm infrastructure – see below.

D.1.1-D.1.1.5 input and output for farming

Australia reported that a small aquaculture industry exists for the two commercially harvested species – *A. australis* and *A. reinhardtii*. Most seed fish are taken from Victorian and Tasmanian coastal rivers and grown out to a marketable size in lakes, swamps, wetlands and 'farm dams'. As such, these practices are more akin to marine ranching with little intervention beyond feeding. Data could only be obtained for two states (Queensland and Victoria) at this time.

In Queensland, there has been minimal farmed production of *A. reinhardtii* since 2014-15 (6,434 kg in 2014-2015, 1,720 kg in 2015-2016, 1,700 kg in 2016-2017) and none since 2017-18 as '*…the last eel farm stopped producing eels in 2017-2018 and no new farms have started producing'*. There has been no production of *A. australis* during this time. There is no data available on total annual eel input into farmed areas, origin of seed stock or end use.

There are less than five farm licence holders in Victoria and there is insufficient data for farming output for *A. australis* during 2015-2020 due to a policy requirement to protect commercial confidentiality of data, except for 2017 and 2018 whose farming output was 20,267 kg and 19,122 kg respectively. Additionally, there is no data for farming output of *A. reinhardtii* for 2015-2020.

D.1.6 Mechanisms and/or regulations relating to the registration and reporting of eel farms

Australia reported that all anguillid eel management is the responsibility of state fisheries management agencies. Details on the registration and reporting of eel farms can be found in the links below:

- Queensland: https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/fisheries-profiles/eel-fishery \
- New South Wales: https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/species-freshwater/eels-aquaculture-prospects
- Victoria: https://vfa.vic.gov.au/commercial-fishing/eels

D.1.7 Other information on eel farming

Australia reported '*…Queensland and Victoria are the only two jurisdictions in Australia that have eel farms, and the number of eel farms has dropped from ten to two in the past ten years'*; in Victoria, of the five eel farms that have been active over the last ten years, there are currently only two, while there have only ever been five or less in Queensland.

5.2.6 East/Southern Africa

No notification responses were received from Parties in East/Southern Africa.

According to FAO data, anguillid farming production reported by range States of *A. mossambica* and other tropical species in East/Southern Africa was in decline from 30 t in 2010 to 0.4 t in 2019, all of which was reported by Madagascar.

6. Eel trade

6.1 Trade Summary

Live, fresh, frozen and prepared anguillid eels are traded globally. According to FAO fishery commodities and trade statistics, the volume of global live, fresh, frozen and prepared/preserved eel exports peaked at approximately 133,000 t in 2001, after which they declined to below 81,000 t in 2011 before increasing slightly again to ~97,000 t in 2018 (FAO, 2021b). Export value peaked at USD ~1.6 billion in both 2012 and 2018.

According to UN Comtrade, while global reported exports of live, fresh, frozen and prepared eels for 2020 was approximately 87,000 t, the reported import quantity of those commodities for 2020 was only ~48,000 t. The discrepancy can be partially explained by some exporters using *Anguilla* spp. Customs codes incorrectly for reporting trade in other eel-like species (i.e. "look-a-like", non-*Anguilla* spp. such as Swamp eel *Monopterus albus*). The main eel exporter over the past decade has been China, with Japan the being the main importer.

In 2020, prepared eel was the main traded commodity, accounting for 51% and 63% in volume and value respectively, followed by live eel - 28% and 33% in volume and value respectively. For more information on trade in live eel fry used for farming, see Section 5.1.

6.2 Eel trade by region

6.2.1 Europe/North Africa

i) Europe/North Africa trade summary

Seventeen responses were received from Parties in this region - Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Morocco, Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia, and the UK.

Since the EU's Scientific Review Group (SRG) concluded in December 2010 that it was not possible to perform a Non-Detriment Finding (NDF) for the export of *A. anguilla*, a zero-import/export policy has been set. Exports and imports of *A. anguilla* from/into the EU are banned while intra-EU trade is still allowed. According to EUROSTAT, in which data on *Anguilla* spp. is not reported at the species level, intra-EU trade of eel and eel products declined from 5,590 t in 2016 to 3,931 t in 2020, with live eels accounting for more than 60% each year. Annual imports of eel and eel products from outside the EU were between 1,360 t and 1,490 t in 2016-2020 while annual exports from the EU Member States increased from 30-51 t in 2016-2019 to 180 t in 2020.

According to CITES trade data (based on exporters' reports downloaded on 26 October 2021), direct exports of live *A. anguilla* by weight reached over 333 t in 2018 and declined to less than 300 t in 2019 and 2020 (Table 19) in 2016-2020, with some additional exports which had no recorded units. The main exporters were Morocco, Tunisia, Egypt and Turkey in descending order of magnitude. Morocco, Tunisia, and Turkey also reported exports of *A. anguilla* bodies and/or meat during the period. South Korea was the main destination of both live eels (accounting for 92%) and bodies and meat (accounting for 75%) for these exporting countries.

Table 19: Direct exports of live and bodies and meat for A. anguilla *based on exporters' reports, 2016-2020, by weight (kg). Source: CITES trade database.*

Term	Exporter	2016	2017	2018	2019	2020	Total (2016-2020)
Live	Algeria	3,120					3,120
	Egypt	17,540	12,900	79,900			110,340
	Morocco	201,619	238,147	171,720	223,546	213,180	1,048,212
	Tunisia	97,321	65,268	51,190	26,246	53,770	293,795
	Turkey	160	5,190	30,255	23,232	14,987	73,824
Live total		**319,760**	**321,505**	**333,065**	**273,024**	**281,937**	**1,529,291**
Bodies and meat	Morocco	48,180	25,240	25,000	50,000	50,640	199,060
	Tunisia	39,796	68,547	22,139	19,645	19,733	169,860
	Turkey		37	2,610	2,000		4,647
Bodies and meat total		**87,976**	**93,824**	**49,749**	**71,645**	**70,373**	**373,567**

Note: Neither Algeria or Egypt have submitted their annual reports for 2019 and 2020 as of 27 October 2021.

Of the five Parties which reported direct exports of live *A. anguilla* to CITES in the last five years, four have submitted export quotas to CITES (Table 20). Algeria, Morocco and Tunisia are all presently in the RST process (see Section 7.2.1) and were advised to reduce their quotas by 33% at AC30 in 2018. Tunisia's present quota is in line with this reduction, but neither Algeria or Morocco had submitted export quotas prior to 2019. Turkey's annual export quota for *A. anguilla* increased from 70,000 kg in 2017-2018 to 100,000 kg in 2020-2021; in some years, these are significantly less than the annual domestic harvest (see Section 4.2.1). It is noted that the reported direct exports of *A. anguilla* from these countries have not exceeded the quotas for 2015-2020.

Table 20: A. anguilla *export quotas for 2016-2021 submitted by range States outside Europe to CITES), by weight (kg). Source: CITES export quota database.*

Country	2016	2017	2018	2019	2020	2021	Specimens
Algeria	N/A	N/A	N/A	N/A	0	0	glass eels
	N/A	N/A	N/A	N/A	8,000	8,000	wild-taken adult eels
Morocco	N/A	N/A	N/A	500,000	500,000	500,000	adult [raised in aquaculture based on a harvest of 2t on glass eels]
	N/A	N/A	N/A	5,500	5,500	5,500	wild-taken adult eels
	N/A	N/A	N/A	0	0	0	glass eels
Tunisia	13,500	13,500	13,500	90,000			wild-taken
					90,000	90,000	All. Export is restricted to specimens greater than 30cm in length
					0	0	glass eels
Turkey	0	70,000	70,000				wild-taken
				73,000	100,000	100,000	live or frozen, wild-taken

In their responses to the notification, some *A. anguilla* range States in North Africa reported recent exports of eel commodities. In 2018-2020, most trade was in live eels, with Morocco exporting on average 200 t annually, and Tunisia 25 t. According to the responses, and Gollock *et al*. (2018), exports of live eel fry <12 cm seem not to be permitted from the region, however, exports of live eel fry >12cm for aquaculture, are allowed in some countries. This may cause confusion as to whether *A. anguilla* fry can be exported legally from the range States for farming in East Asia, and raises challenges such as how to prevent mixing of legally and illegally traded eels.

ii) Europe/North Africa responses

B.1 (& C.2) Export/import of live eels during 2018-2020

Due to the EU's present policy, Member States that submitted notification responses reported no exports/imports of *A. anguilla* to/into the EU. The UK reported '*…prior to January 2021, UK eel movements were only within the EU and therefore not subject to CITES controls and no exports out of the EU occurred during the period covered by this report. Since January 2021, the UK has not issued any export permits for eels (at the time of submitting this report).*' Norway also reported *A. anguilla* was not traded during the period.

Morocco and Tunisia reported exports of eels during 2018-2020, which are shown in Table 21 and Table 222. Annual exports of live *A. anguilla* from Morocco ranged from 177 t to 224 t in 2018-2020, with South Korea being the main destination. Annual exports of live eels from Tunisia ranged between 11 t and 35 t during this period.

Table 21: Commercial exports of A. anguilla from Morocco, 2018-2020, by weight (kg). Source: Morocco's response to CITES Notification 2021/018.

Commodity	Country of destination	2018	2019	2020
Live eels	South Korea	176,080	207,729	215,760
	Viet Nam	600	4,897	2,100
	Japan	N/A	10,920	N/A
	China	N/A	N/A	3,028
Live eels total		176,680	223,546	220,888
Meat	South Korea	25,000	50,000	50,640

Table 22: Live eel exports from Tunisia, 2018-2020, by weight (kg). Source: Tunisia's response to CITES Notification 2021/018.

Year	Weight (kg)	Countries of destination
2018	34,748	Japan, Egypt, South Korea
2019	11,162	Ukraine, Egypt, South Korea
2020	27,789	Egypt, South Korea

Algeria's response to the notification stated that live eels were exported to Tunisia in 2016 and South Korea in 2017. According to CITES trade data (downloaded on 30 September 2021), exports of live *A. anguilla* were not reported by Algeria or any importing countries in 2018 and 2019. It should be noted that Algeria has not submitted its annual report from 2019 (as of 30 September 2021).

Apart from *A. anguilla*, Denmark reported imports of live eels (20cm and above) from the USA in 2018 and 2019 (3,600 kg in 2018, and 1,200 kg in 2019) while France reported imports of live eels of ≥ 20 cm (unspecified species) from Madagascar (4,758 kg in 2018 and 170 kg in 2019) and Indonesia (1 kg in 2019).

Sweden reported exports of smoked eels to Hong Kong SAR in 2017 and 2018 (11 kg and 6 kg respectively), as well as exports of eels to Norway in 2018 and 2019 (a total of 75 kg and 10 kg respectively), with five out of 25 packages of the 10 kg shipment in 2019 identified as *A. japonica* by DNA analysis. Sweden also noted that in 2018 it stopped exports of 12 kg of smoked eels to Hong Kong SAR and <1 kg of smoked eels to Norway.

B.2 Changes in demand, legal and illegal trade in non-CITES listed anguillid eels

Most Parties reported having observed no changes in demand of non-CITES listed anguillid eels (Algeria, Estonia, Ireland, Morocco, Slovakia and Spain) or having no information (Czech Republic, Denmark, Finland, Greece, Netherland and Tunisia). The UK reported no major discernible trends were observed, noting '*…occasional shipments of* A. rostrata *occur in the UK (primarily transiting through the UK)*.' Sweden also noted there were '*…too small amounts and too few cases to be able to draw any conclusions*.' Norway stated '*…a general reduction in domestic demand has been reported, possibly as a cause of information to the public on the precarious situation of the species*.'

B.3.1 Other national legislation to regulate *Anguilla* international trade

Eleven *A. anguilla* range States (Algeria, Croatia, Czech Republic, Denmark, Finland, France, Greece, Morocco, the Netherlands, Sweden, Tunisia) reported adopting legislation to regulate international trade (export/import) in *Anguilla* species, in addition to CITES implementing legislation for European eel. With regard to EU Member States, *Article 14(3) of Directive 2006/88/EC* sets out requirements concerning movements of aquaculture animals within the union when certification is required and all other movements of live aquaculture animals for farming or restocking purposes. This Directive has been applicable since 2008 and should therefore, have been transposed into national law in each Member State.

B.5/D.2 Other information regarding anguillid eel use and trade

Ten EU Member States (Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Netherlands and Sweden) mentioned a report on smoked eels published by EUMOFA (European market observatory for Fishery and Aquaculture products of the European Commission) in 2021[21] which includes an analysis of eel supply chains and prices.

'According to the report, EU-28 Member States produced 7,663 tonnes of eel in 2018 (-19% compared with 2009) and accounted for 3% of world production. The EU only produces European eel, and is the main producer of this species in the world, with 94% of European eel production in 2018. EU production mainly relies on aquaculture (68% of the volume) and to a lesser extent on fisheries (32%). The main producers of eel at EU level are the Netherlands, Germany, Italy and Denmark, with at least 600 tonnes of production each in 2018. In the intra-EU market, the Netherlands, France and Germany are the main exporters. France mainly exports live eel, while the Netherlands and Germany also export processed products (smoked and preserved). The Netherlands and Germany are also the main importers (mostly live, frozen and smoked eels).

The value of extra-EU imports of eel (all [Anguilla] *species included) has increased by 17% between 2012 and 2019 (+8% in real terms), and the volume increase was 38%. The increase in volume is related to the*

[21] https://eumofa.eu/documents/20178/429372/PTAT+smoked+eel_final.pdf

increase of imports of preserved and frozen eel (respectively +107% and +29%), as live eel imports have decreased (-46%). Extra-EU exports of eel and eel products amounted to 28 tonnes for EUR 0.82 million in 2019. This mainly consisted of processed eel (preserved and smoked), destined for Mexico and Switzerland. Extra-EU trade highly decreased between 2012 and 2016 (-78% in nominal value; -82% in real terms) and remained stable after this period.

Six Parties reported being involved in other aspects of eel trade/commercial use. France, the Netherlands and Norway mentioned eel processing (smoking), while Slovakia noted stocking/restocking conducted by the Slovak Fishing Association. The UK reported there are a small number of smokeries and jelliers that process yellow/silver eels for direct consumption. France reported smoking *A. anguilla,* and supplying glass eels for restocking purposes domestically and in other EU Member States. France also supplies to eel farms in other EU Member States, which in turn supply the food sector and restocking programmes within the framework of National Management Plans in accordance with *Regulation (EC) No 1100/2007*.

6.2.2 East Asia

i) East Asia trade summary

Two responses were received from Parties in this region – Japan and South Korea.

East Asian countries and territories play a crucial role in anguilld eel trade, being the principal importers of live eel fry used for farming from all over the world, as well as being the main importers and exporters of 'other' live eels and processed products.

According to UN Comtrade, annual exports of live eel (all life stages) from East Asia (China, Japan, South Korea and Taiwan Province of China) declined from over 32,000 t in 2004 to less than 5,400 t in 2012, after which these increased slightly to between 9,400 t - 11,200 t in 2018-2020. The annual imports of live eel into East Asia showed a similar trend, declining from ~32,000 t in 2004 to ~8,300 t in 2020. During this period, China has been the main exporter of live eels, while Japan the main importer. According to East Asian Customs data, other live eels, not including live eel fry for aquaculture, were imported from various countries including Australia, Egypt, Indonesia and Morocco during 2018-2020, suggesting a range of *Anguilla* species are imported and consumed in the region.

It is noted that China remains the principal re-exporter of *A. anguilla* by weight according to both exporters and importers reported CITES trade data between 2016-2019. China's re-exports of *A. anguilla* meat declined from 4,253 t in 2016 to 325 t in 2019 based on the exporters' reports. Japan has been the main importer of *A. anguilla* meat re-exported from China although there seem to be some discrepancies between importer and exporter data (Table 23).

Table 23: In-direct exports (re-exports) of A. anguilla *meat from China to Japan, 2015-2019, by weight (t). Source: CITES trade database.*

	2015	2016	2017	2018	2019	Total
China's *A. anguilla* meat re-exports to Japan	3,696	4,143	1,489	1,353	0	10,681
Japan's *A. anguilla* meat imports from China	2,799	4,381	911	1,371	1,835	11,297

Note: Neither China or Japan have submitted their 2010 annual reports to CITES as of 27 October 2021.

According to East Asian Customs, between 2005 and 2020 total imports of live eel fry (all *Anguilla* spp.) into China, Japan, South Korea and Taiwan Province of China (excluding those imported from Hong Kong SAR) and directly into Hong Kong SAR declined, with some fluctuations, from approximately 170 t in 2005 to 63 t in 2020. Imports of live eel fry from within the region (China, Japan, South Korea and Taiwan Province of China) likely to be *A. japonica* accounted for 5-84% over the last 15 years[22]. Despite the reported volume of live eel fry traded within East Asia, the full scale of *A. japonica* trade is unknown as a large number of glass eels are believed to go via Hong Kong SAR together with other *Anguilla* species (Gollock *et al*., 2018). Further, some live eel fry are traded as elver after being farmed for a short period of time - mainly from Japan to Taiwan Province of China. See Section 5.2.2 for further information on East Asian live eel fry imports from all regions.

ii) East Asia responses

B.1 Export/import of live eels during 2018-2020

Both Japan and South Korea provided information and data on imports and exports of live eels during 2018-2020. Table 24 and Table 25 present this, supplemented with Customs data. During this period, live eel exports (both live eel fry and other live eel) from Japan and South Korea were minimal compared to live eel imports. Japanese and Korean imports were dominated by other live eel coming from China and Taiwan Province of China - assumed to be consumption size eels coming from farms - ranging between 7,000 t and 9,000 t per year.

Japan's live eel fry imports fluctuated considerably during the period, with Hong Kong SAR being the main territory of export. Live eels (other than fry) were imported with CITES permits from Egypt and Morocco (*A. anguilla* range States) in 2019 and 2020, either directly from these countries or from countries where these eels were farmed (i.e. China) (Fisheries Agency of Japan, pers. comm., 2021). Imports of live eel fry from the Philippines increased to over 1 t in 2020. Imports of live eel fry from the Philippines - where exports of *Anguilla* eels ≤15 cm have been banned since 2012 - Japan explained that these were accompanied by certificates from the Philippine government; neither the Japanese Fisheries Agency nor Customs have checked whether these imported live eel fry were legally exported (Fisheries Agency of Japan, pers. comm., 2021).

[22] Reported imports of live eel fry from the *A. japonica* range States exceeded the reported input of *A. japonica* for farming in 2009, 2018 and 2019. In these years, a large amount live eel fry (> 40 t) were imported from China into Hong Kong SAR, which could be a reporting error considering the amount of glass eels harvested in China, and/or a fair amount of live eel fry was imported from Japan to Taiwan Province of China, which is believed to be elvers (larger size of eels farmed in Japan for a short period of time).

Table 24: Imports and exports of live eel to/from Japan, 2018-2020, by weight (kg). Source: Japan's response to CITES Notification 2021/018 & Japan Customs.

Direction of trade	Life stage	Exporter/Destination	2018	2019	2020
Import	Live eel fry (≤ 13g per unit, for aquaculture)	Hong Kong SAR	6,552	11,070	4,380
		Philippines	91	368	1,136
		Taiwan Province of China		646	219
		China			94
		USA			41
		Cuba		30	
		Malaysia	1	11	
		Canada		3	
	Live eel fry total		**6,644**	**12,128**	**5,870**
	Live eel (other than fry)	China	6,423,915	4,867,399	4,195,016
		Taiwan Province of China	2,377,455	1,830,016	994,225
		Egypt			158,570
		Morocco		27,070	88,290
		Australia	5,068	3,990	2,400
		Philippines	6,210	3,720	1,181
		Indonesia		450	780
		South Korea	100		600
		USA		394	
		Malaysia		180	
	Live eel (other than fry) total		**8,812,748**	**6,733,219**	**5,441,062**
	Import of live eel total		**8,819,392**	**6,745,347**	**5,446,932**
Export	Live eels (all size)	Taiwan Province of China	5,924	14,926	36,869
		Singapore		1,430	6,730
		Hong Kong SAR	1,430	1,410	1,200
		USA	90	30	
	Total	**Total**	**7,444**	**17,796**	**44,799**

Note: Japan's export data does not differentiate live eel fry and other live eel.

According to South Korea's Customs data, Hong Kong SAR and the Philippines were the main countries/territories of export of live eel fry during 2018-2020. South Korea also recorded imports of young eel for aquaculture from Morocco and Egypt (*A. anguilla* range States) in 2019, as well as imports of other live eel from Morocco, Egypt, Tunisia and Turkey during 2018-2020. Imports of glass eels (≤0.3 g per unit) from the Philippines (highlighted in grey) may include illegally exported live eel fry due to the export ban for eel ≤15 cm imposed since 2012.

Table 25: Imports and exports of live eel to/from South Korea, 2018-2020, by weight (kg). Source: South Korea's response to CITES Notification 2021/018 & KITA.

Direction of trade	Description	Exporter/Destination	2018	2019	2020
Import	Glass eel (≤0.3g per unit, for aquaculture)	Hong Kong SAR	4,200	1,979	6,473
		Philippines	3,400	2,969	696
		China	1	1	268
		Malaysia		130	70
		Canada	158		
		Taiwan Province of China	10		65
		Singapore	25		
		USA	10		
	Glass eel total		**7,804**	**5,079**	**7,572**
	Young eel (>0.3g and ≤51 g per unit, for aquaculture)	Philippines	14,435	8,820	4,044
		Taiwan Province of China	4,522	2,674	877
		China	2,204	5,687	
		Hong Kong SAR	2,528		1,200
		Morocco		2,860	
		Egypt		240	
		Australia		173	
	Young eel total		**23,689**	**20,454**	**6,121**
	Live eel, other than fry	China	677,211	278,590	2,243,187
		Morocco	190,310	172,187	206,081
		Egypt	50,323	55,812	14,146
		Tunisia	35,421	13,291	35,484
		Turkey	18,095	27,060	23,589
		Australia	25,451	18,519	10,882
		New Zealand	14,753	8,418	2,202
		Indonesia	330		3,642
		USA	10	819	
	Other live eel total		**1,011,904**	**574,696**	**2,539,213**
Import total			**1,043,397**	**600,229**	**2,552,906**
Export	Glass eel (for aquaculture)	USA			4,560
	Live eels, other than fry (*Anguilla* spp.)	Japan	210		
		Singapore		3	600
Export total			**210**	**3**	**5,160**

B.2 Changes in demand, legal and illegal trade in non-CITES listed anguillid eels

Japan noted that the Alliance for Sustainable Eel Aquaculture, an association composed of eel aquaculture farmers in East Asia established under the auspices of the Joint Statement, agreed in October 2020 to allow trade in juveniles within the total input limit among the East Asian countries and territories to facilitate the sustainable use of Japanese eel within the region. Note that Taiwan Province of China banned the export of live eel fry during the fishing season in 2007, which remains in place at the time of writing.

B.3.1 Other national legislation to regulate *Anguilla* international trade

Japan reported having specific legislation regulating international trade in *Anguilla* species (in addition to CITES implementing legislation for *A. anguilla*), as follows:

Since 20 April in 1976, under Article 48, paragraph (3) of Foreign Exchange and Foreign Trade Act and Article 2, paragraph (1) of Export Trade Control Order, export of all live glass eels and elvers (both under 13 grams) must be approved by the Government of Japan (METI: Ministry of Economy, Trade and Industry).

In accordance with the regulations, before the approval, the Fisheries Agency of Japan which is in charge of eel resource management confirms whether the exports of glass eels and elvers meet the conditions listed in (i) to (iv) below and are complied with all international agreements and arrangements that Japan has participated in:

(i) The importing country or region has already established conservation and management measures based on the Informal Consultation on International Cooperation for Conservation and Management of Japanese Eel Stock and Other Relevant Eel Species or equivalent measures and the compliance with the measures can be confirmed;

(ii) All activities related to the export of glass eels and elvers conform to Japanese fisheries law and other domestic regulations;

(iii) Both the origin and distribution channels of the glass eels are identified; and

(iv) The total amount of Japan's initial input of glass eels during the fishing season at the time of the export is more than half of the upper limit of Japan's initial input.

** Glass eels mean eel fry that have never been inputted into an aquaculture farm in Japan*

** Elvers mean eel fry that have been inputted into an aquaculture farm in Japan*

** (i) and (ii) are applied to export of elvers, and (i) to (iv) to export of glass eels*

METI only approves applications on the exports that the Fisheries Agency of Japan deems appropriate.

The approval period of export is specified in the *Regulations on Export Approvals for Live Glass Eels and Elvers* and was amended from "May 1st to November 30th" to "year-around" from February 1st 2021, in conjunction with the above-mentioned scheme introduced by the Fisheries Agency of Japan.

B.3.2 Regulation of domestic use of Anguilla species

Both Japan and South Korea provided information on how domestic use (internal trade/consumption) of *Anguilla* species is regulated in-country through national legislation. In Japan, with the amendment of the Fishery Act in December 2020, trade in illegally caught glass eels will be subject to a penalty of imprisonment of up to three years, or a fine of not more than JPY 30 million (approximately USD 273,448) from December 2023 (when knowingly transporting, storing, acquiring or disposing of poached glass eels)[23]. The fine is presently up to JPY 100,000. In South Korea, the following applies: *Article 13-2 of the Act on the Management and Support of Fishery Product Distribution (Restrictions on the market places for*

[23] Fisheries Agency's measures against poaching: https://www.jfa.maff.go.jp/j/enoki/mitsuryotaisaku.html

fishery products), Article 7-2 of the Implementation Rules for the Act on the Management and Support of Fishery Product Distribution (fishery products subject to market place restrictions). These provisions were enacted on December 2, 2016 and took effect on August 19, 2020. Under these provisions, eels cannot be sold in places other than designated markets, and the violation of these provisions is subject to imprisonment of up to 2 year or criminal fine of up to KRW 20 million (approximately USD 17,348).
See Section 4.2.2 for the information on national legislation on harvesting reported by these Parties.

B.5/D.2 Other information regarding anguillid eel use and trade
According to Japan, '*…since the CITES Appendix II listing of European Eel was adopted, imports of products of European Eels have significantly decreased. One of the reasons for this is that major supermarkets in Japan have been actively working to avoid using the species'*. Of note, recent studies have indicated that *A. anguilla* accounted for 45% of tested samples of eel products in both supermarkets (obtained in 2017-2018) (Richards *et al.,* 2020) and restaurants (obtained in 2020) (Chan, 2021) in Hong Kong SAR.

Japan reported it is involved in processing of eels (e.g. kabayaki).

6.2.3 Americas
i) Americas trade summary

Four responses were received from Parties in this region – Canada, Cuba, Mexico and USA.

East Asian Customs data and other information suggest that Americas have become a major source of live eel fry for farming in East Asia over the last decade. Various sources suggest that *A. rostrata* glass eels from North America have been used for farming in China since the 1990s, but harvesting and imports from the Caribbean have increased significantly in the last few years due to soaring prices of North African glass eels and improved farming technologies for Caribbean glass eels (Liu *et al*., 2018). The specifics of *A. rostrata* trade from the Caribbean, however, are still relatively unknown due to a large number of glass eels harvested in the region being traded via Canada and the USA, and appearing in East Asian Customs data as exports from these countries, instead of re-exports.

According to East Asian Customs data, total imports of live eel fry from *A. rostrata* range States have increased, with fluctuations, from 2 t in 2004 to 47 t in 2013 (young eels accounting for more than 16 t), slightly declining in the following years, before increasing again to ~47 t in 2019 (Table 26). 98% of all live eel fry coming from American eel range States were imported into Hong Kong SAR during 2016-2020, highlighting its role as an important trade hub for *A. rostrata* glass eels.

Table 26: Imports of live eel fry from A. rostrata *range States reported by East Asian Customs, 2011-2020, by weight (t). Source: East Asian Customs.*

Source	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Canada	13.8	14.8	18.6	10.9	7.4	8.2	9.1	23.4	31.9	19.8
USA	5.8	12.2	26.6	12.0	9.7	14.4	12.0	9.2	11.4	15.2
Haiti	N/A	N/A	0.6	1.5	1.7	2.3	1.9	3.3	3.4	2.8
Dominican Republic	N/A	0.4	0.9	0.2	0.1	<0.1	N/A	0.1	0.1	0.2
Cuba	N/A	0.3	0.6	0.1	N/A	N/A	N/A	N/A	<0.1	N/A
Total	**19.6**	**27.6**	**47.4**	**24.8**	**18.9**	**25.0**	**23.0**	**35.9**	**46.9**	**38.0**

Of the live eel fry imported into East Asia from the Americas during 2016-2020, according to East Asian Customs, 92% came from Canada and the USA. However, it is known that a significant quantity of live eel fry caught in the Caribbean region is traded via Canada and the USA, often declared as of Canadian/US origin (Gollock *et al.*, 2018). For example, approximately 1.7 t of glass eels were harvested in Cuba in 2019 (see Section 4.2.3) and although all glass eels were destined for East Asian farms, reported imports into East Asia from Cuba were just 30 kg in the same year. Similarly, imports of live eel fry from Canada and the USA into East Asia are far more than those harvested in these countries. For example, in 2019, 7.4 t was harvested in Canada while 31.9 t of live eel fry was imported into East Asia from this country.

The fishing seasons for glass eels/elvers are different in the Caribbean and North America - with some overlap in March and April - and therefore monthly Hong Kong SAR import data for live eel fry can help to identify the actual source in these cases. **Error! Reference source not found.** presents Hong Kong SAR live e el fry imports from Canada and the USA by month for 2018-2020 and clearly shows a large amount of trade between September and February each year, a period when no glass eel fishing is carried out in these countries. Hong Kong SAR reportedly imported more than 14 t of live eel fry from Canada and the USA from September 2018 to February 2019 and ~20 t from September 2019 to February 2020.

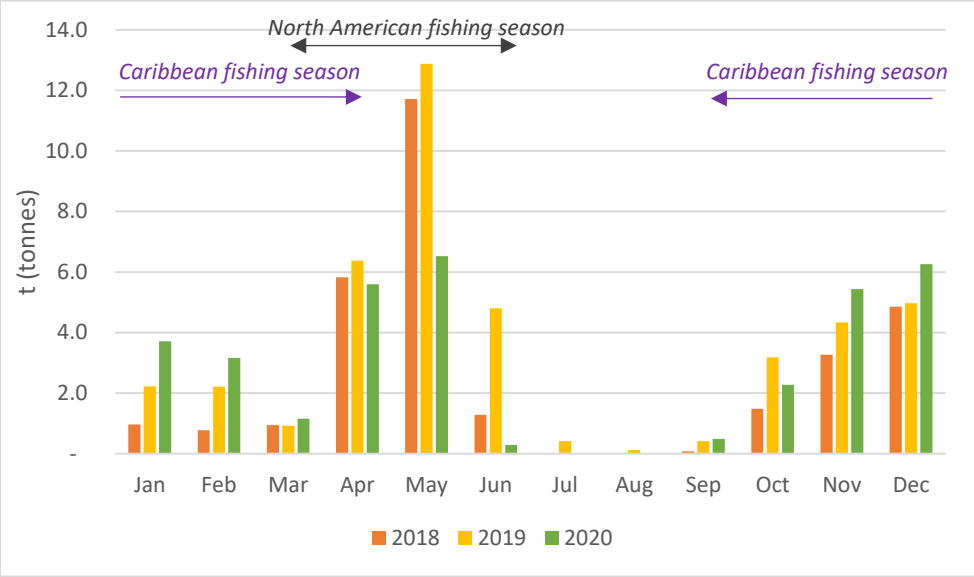


Figure 6: Reported monthly Hong Kong SAR live eel fry imports (by origin) from Canada and the USA, and glass eel fishing seasons in North America and the Caribbean, 2018 - 2020, by weight (t). Source: Hong Kong Trade Development Council.

Reported imports of live *Anguilla* spp. (all lifestages) into Canada and the USA from other *A. rostrata* range States during 2011–2020 (Table 27) show that the majority of trade occurred between these two countries. Imports from other *A. rostrata* range States, mainly Cuba, the Dominican Republic and Haiti, increased from 2013 and exceeded 21 t in 2019. Based on harvest information received from Parties, and prices, imports from these emerging countries are exclusively live eel fry (highlighted in grey in Table 27).

Table 27: Imports of live Anguilla *spp. from* A. rostrata *range States, as reported by Canada and the USA, 2011-2020, by weight (t). Source: UN Comtrade.*

Importer	Source	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Canada	USA	114.6	57.9	23.7	8.7	14.0	13.5			1.2	0.1
	Haiti			2.2	8.6	6.9	2.8	4.6	5.9	12.1	6.1
	Cuba	3.2	13.2	4.8	1.5	2.0	0.1	0.2	1.3	2.0	1.0
	Dominican R.			0.7	1.0	2.9	1.9	2.3	3.2	7.0	5.6
	Dominica				0.0	0.2	0.0			0.2	
	Jamaica						0.1		0.1	0.0	
	Colombia								0.1		
	Canada total	**117.9**	**71.1**	**31.4**	**19.8**	**26.0**	**18.4**	**7.1**	**10.6**	**22.5**	**12.8**
USA	Canada	4.3	15.8	10.9	20.8	35.0	34.8	24.2	23.2	45.1	54.1
	Dominican R.			3.3							11.4
	Haiti			7.9							
	Mexico							0.4			
	Jamaica				0.0						
	USA total	**4.3**	**15.8**	**22.2**	**20.8**	**35.0**	**34.8**	**24.6**	**23.2**	**45.1**	**65.5**

Note: Values of 0.0 refer to unit value of less than 50 kg. Grey cells indicate the average price was over USD250/kg and/or certain range States are known only to catch glass eels, and as such include trade in live eel fry.

Illegal harvesting and trade in glass eels has become a concern for the region although the scale is unknown (see also Section 4.2.3). According to media reports, glass eel exports from the Dominican Republic reached 3.8 t in the 2019-2020 fishing season while the total catch limit in the country is 2.5 t (Tejero Puntes, 2020).

ii) Americas responses

B.1 Export/import of live eels during 2018-2020

Canada, Cuba, and the USA provided information on exports and imports of live eels during 2018-2020. Cuba reported that exports of live *A. rostrata* increased from 1,177 kg in 2018 to 1,651 kg in 2019, then declined to 912 kg in 2020. These were all glass eels (only glass eels are harvested in Cuba), exported to Canada, with their final destination being the Asian market.

Canada reported '*…all elvers imported to Canada are [re-]exported within a few days from Canada mainly to Hong Kong, but also some to South Korea, China, Viet Nam and the EU…'.* As previously stated, these are usually reported as direct exports from Canada, not as re-exports. Imports of glass eels/elvers from Caribbean countries increased from 9.4 t in 2018 to 21.1 t in 2019, and declined to 11.8 t in 2020 (Table

28). Available harvest/export data from Cuba and the Dominican Republic suggest a cumulative annual average glass eel supply of 5 t between 2018 and 2020 therefore the Canadian data suggest a large proportion of the imported glass eels were harvested in Haiti.

Canada added that '*…there are some non-anguillid species incorrectly classified under live eel such as Conger species; imports of these species are usually from South Asian countries such as Bangladesh and Viet Nam'*.

Table 28: Reported exports/imports of live eels from/to Canada, 2018-2020, by weight (kg). Source: Canada's response to CITES Notification 2021/018.

Direction of trade	Commodity	2018	2019	2020	Destination/origin
Export	Live eels (all size)	134,182	284,689	158,442	Destination: Hong Kong SAR, South Korea
Import	Live eels (all size)	90,716	26,721	14,720	Origin: New Zealand, USA (silver, yellow)/Dominican Republic, Haiti, Cuba (elvers)
	Glass eel/elver	9,448	21,116	11,785	Origin: Dominican Republic, Haiti, Cuba

The USA provided information on *Anguilla* spp. imports recorded in the Law Enforcement Management Information System (LEMIS), shown in Table 29. This data suggests that the USA imported at least seven different *Anguilla* species between 2018 and 2020.

Table 29: Commercial imports of Anguilla *spp. in the USA reported to the LEMIS, in weight (kg) and number of pieces (pcs), 2018-2020. Source: US response to CITES Notification 2021/018.*

Species	2018	2019	2020	Country/ies of origin
A. australis	35,206 kg + 46,151 pcs	20,378 kg + 51,804 pcs	6,355 kg + 15,796 pcs	New Zealand
A. bengalensis	5,532 kg + 220,160 pcs	253,805 kg + 243,640 pcs	2,700 kg + 76,410 pcs	Bangladesh, Viet Nam
A. bicolor			78 pcs	Viet Nam
A. japonica	19.25 kg + 471 pcs	17.25 kg + 2,256 pcs	100 pcs	Japan, Canada
A. marmorata		1,013 pcs	518 pcs	Viet Nam
A. mossambica		50 kg		Madagascar
A. rostrata	23,851.82kg	38,307.4kg	88,704.25kg	Canada, Dominican Republic
Anguilla spp.	1 pcs			Indonesia

Note: some imports are reported by weight, others by number of pieces, these are not converted equivalents.

Mexico reported no record of transboundary movements of *Anguilla* species from 2018 to 2020.

B.2 Changes in demand, legal and illegal trade in non-CITES listed anguillid eels

Cuba reported one case of attempted smuggling of glass eels in passenger luggage in 2017. They also noted an increase in legal demand and prices of glass eels over the last few years. According to media reports, glass eel exports from the Dominican Republic reached 3.8 t in the 2019-2020 fishing season while the total catch limit in the country is 2.5 t (Tejero Puntes, 2020).

B.3.1-B.4 Other national legislation to regulate *Anguilla* international trade/domestic use

Canada reported having adopted legislation to regulate international trade (export/import) in *Anguilla* species, in addition CITES implementing legislation for *A. anguilla*. This relates to *A. anguilla* and *A. japonica*, which are both "*considered susceptible species under the Canadian Food Inspection Agency, Health of Animals Regulations, Part XVI-Aquatic Animals, Schedule III. These species require a Zoosanitary Export Certificate issued from the country of origin or export and an Aquatic Animal Health Import Permit issued by the CFIA for the import to Canada.*"

See Section 4.2.3 for information of national legislation related to harvesting reported by Canada, Cuba and the USA. In addition to regulations related to domestic use, the USA also noted monitoring and control of domestic use of *Anguilla* spp. is handled at the state-level. Cuba noted that specific eel legislation is currently being prepared.

B.5 Relevant information regarding anguillid eel use and trade

None of *A. rostrata* range States reported having other relevant information regarding anguillid eel use and trade.

D.2 Other aspects of eel trade/commercial use

Canada reported there are holding facilities for elvers imported from the Caribbean, and harvested domestically, in the provinces of New Brunswick and Nova Scotia. Imported elvers clear Customs, they are then transported to glass eel holding facilities near the airport where the oxygen and ice are replenished and then exported at a later date, usually to Hong Kong SAR. Canada added that exporters are required to indicate the country of origin when they re-export commodities, but there is a high error rate, and some exporters are still reporting Canada, usually Ontario, as both country/area of export and origin for elvers.

6.2.4 Southeast/South Asia

i) Southeast/South Asia trade summary

Three responses were received from Parties in this region – India, Malaysia and Singapore.

As there are several *Anguilla* species distributed in Southeast/South Asia including *A. bicolor, A. marmorata* and *A. bengalensis*, catch and exports/imports from these countries may contain more than one. However, it is generally accepted that *A. bicolor* is the species most in demand due to its likeness to Northern temperate anguillids when consumed (Gollock *et al*., 2018). According to recent UN Comtrade data, major global exporters of live eels include some of the Southeast/Southern Asian countries such as the Philippines, Myanmar and Indonesia. However, non-*Anguilla* species are known to be traded under HS codes for *Anguilla* eels from the region (Gollock *et al*., 2018), and the responses to the notification from India and Malaysia confirmed that trade of eels such as *Monopterus albus* (Swamp eels), moray eels (Muraenidae spp.) and pike conger eels (Muraenesocidae spp.) is reported together under the code for 'eels'. The baseline survey conducted by SEAFDEC also confirmed that harvest of swamp eels and snake eels (Ophichthidae spp.) are reported to national databases along with *Anguilla* spp. in Indonesia, Myanmar and the Philippines (SEAFDEC, 2019). Therefore, exports of *Anguilla* spp. from Southeast and South Asia may be far less than that reported to UN Comtrade.

With that in mind, according to UN Comtrade, live eel exports from Southeast and South Asia increased from ~4,600 t in 2011 to ~27,500 t in 2014, after which they declined considerably to ~9,200 t in 2020 (**Error! Reference source not found.**7). Recent declines were mainly due to reduction in reported exports f rom the Philippines.

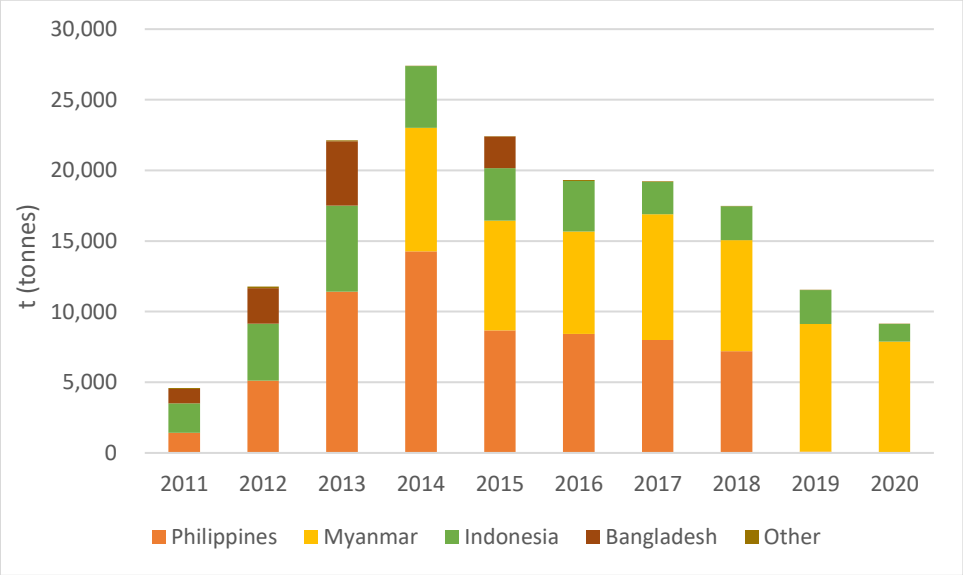


Figure 7: Live eel exports from Southeast/South Asian countries, 2011-2020 by weight (t). Source: UN Comtrade.

The report on anguillid eel use in Southeast Asia (SEAFDEC, 2019) highlighted that there are discrepancies between exporting and importing countries in Southeast Asia. It also pointed out the discrepancies between trade data (UN Comtrade) and baseline surveys conducted as part of the project in 2017-2019 (Table 30).

Table 30: Discrepancies between UN Comtrade and SEAFDEC baseline survey data. Source: SEAFDEC (2019) and UN Comtrade.

Party	Exports of live eel based on UN Comtrade in 2020 (kg)				Information from the baseline survey
	2017	2018	2019	2020	
Cambodia	N/A	N/A	N/A	N/A	No capture fishery in the country
Indonesia	2,296	2,399	2,407	1,263	Harvest and farming data is not available
Myanmar	8,900	7,849	9,039	7,818	• Annual harvest of yellow eel: 12,000 kg (2017) (source: local government and a consolidator & farmer in Mandalay) • Annual export volume: 22,000 kg (2017) (source: a farmer in Mandalay) • No glass eel fishery exists and yellow eels are bycatch.
Philippines	8,001	7,212	79	N/A	• Annual harvest of glass eels: 2,000 kg in Luzon, 10,000 kg in Mindanao (2017) (source: survey and official data) • Annual harvest of elvers/yellow eel: 300 kg in Luzon, >300 kg in Mindanao (source: official data) • Export volume is under survey.
Thailand	0.2	0.6	0.2	0.3	• No glass eel fishery exists and yellow eels are bycatch of other fisheries • No export (source: a trader)
Viet Nam	0.0	1.7	3.5	N/A	• Catch of glass eels: 600-750 kg/year (source: the largest eel farm in Khanh Hoa province) • Farming production volume of anguillid eels in Ca Mau Province: 4,500,000 kg (2018)

					(source: provincial government in Ca Mau)

Information and data on exports of live eel fry from the region is scarce, partially because exports of glass eels from some Southeast Asian countries are not permitted. For example, since 2012, for *Anguilla* spp., the Philippines has banned exports eels ≤15 cm and Indonesia has banned exports of eels ≤150 g. According to a recent media report, the Philippine government aims to increase exports of young eel for further grow-out elsewhere by farming live eel fry until they reach at least 15 cm (Gonzalez, 2021).

ii) Southeast/South Asia responses

B.1 Export/import of live eels during 2018-2020

Malaysia (Sabah only) reported eels are exported mainly to China (accounting for 54%) and Hong Kong SAR (36%), and to a lesser extent to other parts of Malaysia (7%) and Japan (1%). Eel export and import data covering 2018-2020 provided by Malaysia is shown in Table 31.

Table 31: Total exports and imports of eels from/to Malaysia, 2018-2020, by weight (kg). Source: Malaysia's response to CITES Notification 2021/018.

Direction of trade	Commodity	Trade term code	2018	2019	2020	Destination/Origin
Export	Live eels	0301920000	8,808	19,111	17,950	Hong Kong SAR, Peninsular Malaysia, Singapore
	Fresh or chilled eels	0302740000	578	28,929	39,403	Hong Kong SAR, Peninsular Malaysia, Sarawak
	Frozen eels	0303260000	505,106	588,398	369,440	China, Hong Kong SAR, Japan, Peninsular Malaysia, Viet Nam
Export Total			**514,491**	**636,439**	**426,792**	
Import	Live eels	0301920000	160			USA
	Frozen eels	0303260000	6,602	13,236	1,233	Brunei, China, Hong Kong SAR, Japan, Peninsular Malaysia
Import Total			**6,762**	**13,236**	**1,233**	

As previously stated, Malaysia noted that although these commodities are all classified as *Anguilla* spp. based on the Custom declaration, this data did not match well with the landing statistics, of which *Anguilla* spp. is insignificant compared to other types of eels. Species such as pike conger, moray and swamp eel represented 99% of the total landing of 'MALONG' (general eel) group, while *Anguilla* spp. was only 1%. Additionally, there are no official export records for other types of eels, which are caught in abundance in Sabah and known to be exported, suggesting all are currently grouped under 'eels (*Anguilla* spp.)' in the Custom declaration system.

Singapore also reported imports and (re-)exports of eels into/from the country in 2018-2020. Unusually, between 2018 and 2020, in addition to imports of 25 kg and 13 kg of *A. anguilla* from China for consumption, Singapore reported import and/or (re-)export over 169,000 pieces of various anguillid eel species for 'ornamental' purposes from/to Indonesia, South Korea, Saudi Arabia, Cyprus, Israel, Italy, Lebanon, Russia, the UAE and the UK.

India reported the available data is reported under the general term, 'eels' and no separate information on exports of anguillids is available.

Singapore, which reported no international trade in live eels in 2018-2020, noted that international trade in *Anguilla* spp. is regulated by:

- *Wholesome Meat and Fish Act* (https://sso.agc.gov.sg/Act/WMFA1999), as well as other fish and fish products;
- *Animals and Birds Act* (https://sso.agc.gov.sg/Act/ABA1965) and *the Animals and Birds (Live Fish) Rules* (https://sso.agc.gov.sg/SL/ABA1965-S27-2011) as all ornamental fish species.

Domestic use of *Anguilla* spp. is also regulated by

- *Sales of Food Act* (https://sso.agc.gov.sg/Act/SFA1973);
- *Animals and Birds Act* (https://sso.agc.gov.sg/Act/ABA1965), and *the Animals And Birds (Pet Shop and Exhibition) Rules* (https://sso.agc.gov.sg/SL/ABA1965-R2?DocDate=20040930).

6.2.5 Oceania

i) Oceania trade summary

Two responses were received from Parties in this region – Australia and New Zealand.

According to data reported to UN Comtrade, exports of live eels from Oceania (including *A. australis*, *A. reinhardtii* and *A. dieffenbachii*) were reported by New Zealand and Australia during 2011–2020. Live eel exports from these countries declined considerably over the years, from 834 t in 2011 to 61 t in 2020, with New Zealand accounting for 56% during this period.

ii) Oceania responses

B.1 Export/import of live eels during 2018-2020

Australia and New Zealand both provided information on eel trade. Australia reported '*…no export data to species level is available for 2018-2019*, and *the only species harvested in Australia are* A. australis *(southern shortfin eel), and* A. reinhardtii *(longfin eels), which are not CITES listed and are on the List of Exempt Native Specimens, a list of native specimens that are exempt from export regulations, made under the* Environment Protection and Biodiversity Conservation Act 1999*.'* Australia added '*…most eels harvested in Australia are exported to Asia (primarily Hong Kong, China and Taiwan Province of China) and Europe; while most stock exported to Asia is live, most stock exported to Europe is frozen*.'

The export data for live eels reported by New Zealand are shown in Table 32. The data shows that exports of live eels from New Zealand declined considerably over the last three years, from ~144 t in 2018 to 41 t in 2020; the majority of exports were destined for the USA. New Zealand noted there are no imports of live eels as *'…all imports of eels must be pre-cooked by regulation…'*, and most imports of eel products are considered to *'…be sourced by Asian supermarkets and chains* as *New Zealand processing companies do not import eels*.'

*Table 32: Reported live eel exports (*A.australis *yellow eels) from New Zealand, 2018-2020, by weight (kg). Source: New Zealand's response to CITES Notification 2021/018.*

Destination	2018	2019	2020	Total
USA	67,082	54,013	17,440	138,535
China	34,881	22,192	19,802	76,875
South Korea	15,549	11,303	N/A	26,852
Belgium	13,910	3,120	2,250	19,280
Canada	12,439	4,989	1,510	18,938
Total	**143,861**	**95,617**	**41,002**	**280,480**

B.2 Changes in demand, legal and illegal trade in non-CITES listed anguillid eels
New Zealand reported that'*…international trade was, and still is, affected by Covid-19 restrictions since the beginning of 2020…'* while Australia noted that '*…one Australian eel fishery stated that they had noted a decrease in exports since 2016, but did not have the data to reflect this*.'

B.3.1 –B.4 Other national legislation to regulate *Anguilla* international trade/domestic use
In relation to adopting additional legislation to regulate international trade (export/import) in *Anguilla* species (in addition to CITES implementing legislation for *A. anguilla)*, New Zealand noted that '*…there are regulations relating to food safety, etc., but the most important regulations related to the sustainability of eel populations are to control domestic harvest, not to determine whether or not domestic catches are exported. The main legislation covering imports is that all eels imported to New Zealand must be pre-cooked*.' Australia reported that '*…the Federal Department of the Agriculture, Water and the Environment assesses the sustainability of export fisheries that harvest anguillid eels against the Guidelines referred to in the Environment Protection and Biodiversity Conservation Act 1999*.'

6.2.6 East/Southern Africa

i) East/Southern Africa trade summary

No notification responses were submitted by East/Southern Africa countries.

There are several *Anguilla* species distributed in East/Southern Africa including *A. mossambica* and *A. marmorata* (and *A. bicolor* and *A. bengalensis* depending on the country), therefore catch and exports/imports from these countries may contain several *Anguilla* species. According to UN Comtrade, Madagascar and South Africa exported live *Anguilla* eels from 2011 to 2020, with 99% of exports reported by the former. At the time of writing, Madagascar has not submitted data for 2020. Live eel exports from Madagascar increased from 17 t in 2011 to 26 t in 2015, after which these declined to ~4 t in 2019.

7. Implementation of the CITES-listing of European eel

7.1 Summary - implementation of the CITES listing of European eel

The responses to the notification and other sources suggest that illegal trade in European eels continues, as well as associated challenges with regards to implementation of the CITES listing. Parties report having overcome some of the enforcement challenges described in the report for AC30 (Musing *et al*., 2018), by strengthening inter-agency and/or international cooperation and/or improving species identification techniques. However, some Parties have highlighted concerns over illegal exports and imports of processed eels farmed in non-range States as an emerging issue since 2018.

It has been previously reported that *A. anguilla* glass eels have been illegally exported to Asia, particularly China and Hong Kong SAR. The UNODC report (2020) indicated that China was the major destination of seized shipments of European eels between 2011 and 2018 (63.2% of seizures with known destinations by volume). In recent years, however, Southeast Asian countries have been named as an emerging destination. A report submitted to SC70[24] in 2018 indicated that Viet Nam was the destination - likely a transit country - for a number of seizures of European eel, both in cargo shipments and personal baggage. In support of this, the UNODC report (2020) indicated that 19% of European eel seizures with known destinations were *en route* to Thailand and 5.6% to Viet Nam, suggesting that *A. anguilla* glass eels are increasingly being shipped illegally through Southeast Asia.

The responses to the notification also indicated that initiatives taken by Parties varied considerably; some (including non-range States) have actively participated in international operations and/or carried out random inspection of CITES and non-CITES listed eel shipments, while in others, enforcement measures still appear to be lacking.

7.2 Implementation of the CITES-listing of European eel by region

7.2.1 Europe/North Africa (*A. anguilla* range States)

i) Europe/North Africa summary

Seventeen responses were received from Parties in this region - Algeria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Morocco, Netherlands, Norway, Slovakia, Spain, Sweden, Tunisia, and the UK.

Responses to the Notification from the range States of European eel indicate that exports are limited in terms of countries (only Morocco, Tunisia and the UK reported having exported European eels since January 2018), sizes (live eels exported from Morocco and Tunisia being larger than 12 cm or 30 cm respectively) and/or purposes (exports from the UK for scientific purposes). The UK was the only European eel range State which referenced a publicly available NDF for trade in European eels.

In relation to the Appendix II listing of the European eel, at AC29 (Geneva, 2017)[25], Tunisia, Algeria and Morocco were identified as range States of *A. anguilla* to be progressed to Stage 2 of the Review of Significant Trade (RST), as a result of analysis carried out by UNEP-WCMC. The CITES RST procedure (defined in Resolution Conf. 12.8 (Rev. CoP17)[26]) was designed to identify species that may be subject to unsustainable levels of international trade, and associated challenges and solutions concerning effective

[24] https://cites.org/sites/default/files/eng/com/sc/70/E-SC70-45.pdf
[25] AC29 Com.5 (Rev. by Sec.) https://cites.org/sites/default/files/eng/com/ac/29/com/E-AC29-Com-05-R.pdf
[26] https://cites.org/sites/default/files/document/E-Res-12-08-R17.pdf

implementation of the Convention. As a consequence, measures were recommended at AC30 to these three Parties, including export quotas[27] (see Section 6.2.1).

Many Parties reported having encountered illegal trade in European eel during 2018-2020. Reported illegal trade mainly related to glass eel export or transit, but also (re-)imports of eel products. Enforcement challenges were shared by some Parties, as well as how they overcome these. These included difficulties in identification of *Anguilla* spp. (necessity of DNA analysis for both live glass eels and prepared products), traceability of glass eels, handling of seized specimens, and the absence of a specific tariff code for European eels. Some Parties reported that training of personnel, collaborative investigations among different authorities within each country, and international operations have helped.

ii) Europe/North Africa responses

E.1.1 Exports of European eels since January 2018

Three Parties reported having exported European eels since January 2018 (Morocco, Tunisia, and the UK). These Parties provide details such as which life-stages, live and/or processed, destinations and how they determined that the specimens were exported in accordance with the provisions of the Convention (Table 33).

Table 33: Details about exports of European eels since January 2018 from A. anguilla *range States. Source: Responses to CITES Notification 2021/018.*

Party	Details about exports of European Eels
Morocco	• The exports were live specimens from grow-out that are larger than 12 cm. • There are also quantities of frozen specimens. • All exports were accompanied by CITES permits issued by the CITES Management Authority. • Importing countries are generally Asian countries (South Korea, China, Japan, Viet Nam).
Tunisia	• Eels larger than 30 cm are exported as live, chilled and frozen products.
UK	• *The UK has issued permits for a very limited number of exports to the US (2019 – 3 bodies) and Japan (2019 – 1 body) for scientific research purposes. No export permits have been issued for commercial movements of eels during this reporting period.*

Sweden reported no legal exports with CITES permits have taken place, but noted there were some seizures and a complicated case where 18 kg of frozen eels may have been illegally exported to Norway (see E.1.3).

E.1.2 Making of NDFs for trade in European eels

Only the UK reported having carried out an NDF for trade in European eels. The UK reported that various information sources such as a species-species stock assessment, fisheries dependent data, ecosystem modelling, and fisheries models were used for making an NDF, which was carried out at a local/sub-national level. In 2021, the UK submitted the NDF to the Animals Committee for their review and advice under the provisions of Decision 18.197 a). In follow-up communications to the notification response it was stated: *The UK NDF demonstrates that regulated trade from two specified fisheries - glass eels from Southwest Britain and yellow and silver eels from Lough Neagh - is not only sustainable but also provides a conservation benefit by increasing production and associated escapement of silver eels above that which would have occurred without fishery-related interventions. Evidence provided in the NDF also*

[27] https://cites.org/sites/default/files/eng/com/ac/30/com/E-AC30-Com-11-R.pdf

demonstrates that an NDF can be made at smaller spatial scales than at the level of the full stock. This document does not support international trade from other UK eel fisheries and trade in live glass eels will not be permitted to parts of the world where illegal activity is of particular concern. Pending the outcome of the Animals Committee review, and any revisions required, the UK has indicated that they will aim to make a revised version available to SC74 for information.

Most Parties who have not carried out a NDF for the European eel provided information as to why this was the case (Table 34).

Table 34: Justifications of A. anguilla *range States for not having carried out an NDF. Source: Response to CITES Notification 2021/018.*

Party	Justification for not having carried out a NDF
Algeria	Data on international and national trade are limited due to the lack of appropriate information systems.
Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Netherlands, Slovakia, Spain, Sweden	*European eels are included in Annex B of Council Regulation (EC) No 338/97, which implements the CITES provisions in the EU. As for any Annex B species, one of the conditions for issuance of an export permit by the relevant EU Member State is that the applicant for the export permit provides "documentary evidence that the specimens have been obtained in accordance with the legislation in force on the protection of the species in question" (cf. Article 5(4) and 5(2)(b)). Exports from the EU of European eels have been suspended since December 2010, as the scientific authorities of the EU Member States have concluded that a "non-detriment finding" for the species could not be performed. This assessment has been confirmed again for 2021 by the competent EU expert Group, the Scientific Review Group, in December 2020.*
Croatia	*At the moment there is no sufficient data on eel stock/population size to conduct proper NDF. Based on ICES recommendation from 2015, IUCN criteria for population assessment should be applied to sexually mature individuals (silver eels) since they represent maximum stock biomass. Recently, review of the IUCN assessment for Croatia was done, and species was categorized as "Data Deficient" on national level. Historical data on distribution and population size of European eel in Croatia are very scarce and doesn't differentiate between different life stages of eels (glass, yellow or silver). More recent and available data refers mostly to glass and yellow eel, however these data are not sufficient to provide for the NDF or assessment on recent stock. There are strong implications however, that there are serious population decline in all natural habitats. Lack of recent, as well as historical data on population size and life stages are main reason why there is no stock assessment or NDF for eels in Croatia.*
Morocco	Studies are underway for the development of a NDF.
Norway	*A general NDF has not been made due to the lack of exports from Norway*.
Tunisia	The eel export quota was set in 2010 on the basis of a statistical series of catches of this species carried out over years and in consultation between the institution of fisheries research in Tunisia (INSTM) and the administration (DGPA). The overall analysis of national catches shows an average of 191 t/year fluctuating between a minimum of 123 t in 2009 and a maximum of 317 t in 2008 during the period (2000-2009). It is noted that these catches are for eels of 30 cm or more in accordance with regulations in force. Tunisia

	obtained a quota of 135 t in consultation with the EU, in line with the level of production adopted.

E.1.3 Incidents of illegal exports and/or transit of European eels since January 2018

Nine Parties reported having encountered incidents of illegal exports and/or transit of European eels since January 2018 (Croatia, Czech Republic, Denmark, France, Greece, Morocco, Spain, Sweden, and the UK). Information on illegal trade provided by the Parties is shown in Table 35.

Table 35: Incidents of illegal exports and/or transit of European eels in Europe/North Africa since January 2018. Source: Responses to CITES Notification 2021/018.

Party	Incidents of illegal exports and/or transit of European eels
Croatia	• *There was one seizure of A. anguilla in Croatia on 6 February 2019 at the Border Customs Office Airport and Post, when custom officers stopped two South Korean citizens from smuggling 72 kg (ca. 252,000 specimens) European live glass eels (fingerlings); country of origin was unknown: https://www.jutarnji.hr/vijesti/crna-kronika/sverceri-zasticenih-jegulja-osudeni-na-uvjetnu-kaznu-zatvora-optuznica-protiv-gospodina-hana-vracena-uskok-u-na-doradu-8947316*
Czech Republic	• *In January 2019, 70,000 specimens of live glass eels of* A. anguilla*, estimated to be worth EUR 81,000, were detected in the personal baggage of an air passenger at Prague Airport, on their way to Viet Nam.*
Denmark	• 5 September 2018 – 4.42 kg of *A. anguilla* smoked eel – export from Denmark to Greenland - illegal trade as no CITES export permits had been issued. • 16 May 2018 - 70 kg of *A. anguilla* frozen smoked eel – export from Denmark to Singapore - illegal trade as no CITES export permits had been issued.
France	• *Several judicial investigations have been, and are being, conducted into glass eel trafficking. These involve specialised customs, gendarmerie and OFB (French Biodiversity Agency) services under the authority of prosecutors and, more recently, under the direction of criminal courts specialised in major trafficking-related crime. Several prison sentences were handed down, as well as the confiscation of material and financial assets.* *[In 2018]* • *The OFB seized a total of 2,354 kg of A. anguilla, France as country of origin:* ○ *1 seizure of 123 kg by road* ○ *17 seizures by river (including one of 80 kg)* ○ *13 other seizures for which modus operandi is unknown (including one of 2,000 kg).* • *Customs services seized a total of 4,312.08 kg of A. anguilla:* ○ *1 seizure of 247 kg by road to Spain* ○ *2 seizures of 3 kg each bound for China at Roissy CDG airport* ○ *3 other seizures of 123.08 kg destined for Spain, 3,901 kg destined for Singapore and 35 kg (destination unknown)*

	• *The Gendarmerie services (Oclaesp), made ten seizures for which the country of destination was not specified.* ○ *6 seizures for a total of 8.6 kg by river* ○ *4 seizures of 13.5 kg, 14.4 kg, 2.7 kg and 2.3 kg withunknown modus operandi.* *[In 2019]* • *Customs services seized:* ○ *Seven seizures totalling 503.87 kg of A. anguilla during controls at French airports. Origin was France or EU countries and destination was Asia (China, Hong Kong SAR, Malaysia, Viet Nam or unknown).* ○ *Five seizures totalling 998.22 kg of A. anguilla were seized by road.One large seizure (897 kg) had Spain as its country of origin and the final destination was Bulgaria.* • *Oclaesp seized 100 kg of A. anguilla by road, destined for China.* *[in 2020]* • *Customs services seized glass eels by road in western France (origin France, destination unknown). Three cases involved the following quantities: 4.43 kg, 160.8 kg and 160.8 kg. Another seizure was made on a France-Malaysia flight involving 20.72 kg of glass eels.* • *Currently, there is a significant mobilisation of law enforcement agencies in France (and the rest of the EU) in relation to eel poaching and illegal trade, supported by the public prosecutor's office. However, the French Biodiversity Office (OFB) has observed that it is currently difficult to export illegal glass eels outside Europe, particularly due to the halting of air transport (due to Coronavirus) and the purchase price of glass eels decreases by 70% when the demands of the Spanish Christmas market and the French restocking market come to an end; which means that poaching has fallen sharply (too much risk and not enough gain).*
Greece	• *In January 2020 Greece confiscated a cargo of live* A. anguilla *eels weighing 245 kg. A Greek company was trying to export these illegally to Malaysia.*
Morocco	• Several seizures have been made by Moroccan customs at Casablanca airport since 2018, including an attempted export of eels in plastic bags to Asia (with transit in Dubai) without an export permit.
Spain	• 2018/19 season: 796.3 kg of live eels destined for Viet Nam (778.8 kg) and Malaysia (175 kg). • Season 2019/20: 258.7 kg of live eels destined for Viet Nam. • Season 2020/21: 65 kg of live eels destined for Malaysia. • *Modus operandi*: in checked bags or by air cargo with false declaration.
Sweden	• The Swedish Customs seized three of a possible five illegal exports (6 kg of "smoked fish" and 12 kg of smoked eels to Hong Kong SAR from the same sender in 2018, and two seizures of a total of < 1kg of smoked eels to Norway). Another 18 kg of frozen eel may have been illegally exported to Norway in 2021, however (as for the other cases) the species involved was unknown and may not have been *A. anguilla* (and therefore not illegal).

UK	• *A seizure was made in 2019 of glass eels believed to be for illegal export, however no prosecutions were made in this case. NB: in March 2020 a case involving illegal eel trade between 2015-7 concluded with a successful prosecution and sentence of 24 months imprisonment (however, the illegal activity itself occurred outside the period covered by this report).*

E.3.2 Incidents of illegal (re-)imports of European eels since January 2018

The Netherlands, Norway, Sweden, and the UK reported having encountered incidents of illegal (re-)imports of European eels since January 2018 (Table 36). France noted the Customs services (DGDDI) made two intra-EU seizures in 2019 (177.6 kg from Portugal by road, and 126 kg from Spain *en route* to France.

Table 36: Incidents of illegal (re-)imports of European eels since January 2018 in Europe/North Africa. Source: Responses to CITES Notification 2021/018.

Party	Incidents of illegal (re-)imports of European eels since January 2018
Netherlands	• *On 22 September 2020 the Netherlands Food and Consumer Product Safety Authority took 15 DNA samples from a batch of 9000 Kg of frozen American Eel (*Anguilla rostrata*) Kabayaki (eel fillets). This batch was sent by a Chinese exporter and destined for a Dutch importer. After analysis by the Dutch Customs Laboratory one of these samples was found to contain a minimum quantity of European Eel.. It is not known if the Dutch importer was aware that European Eel was mixed into this batch. A warning letter was sent to the importer stating that in case of a second transgression punitive action will be taken.*
Norway	• *Three companies imported a total of 4,690 kg of processed* A. anguilla *from Denmark in the period 2016-2018, despite lack of CITES documentation. The companies were reported to Norwegian police authorities and fined.*
Sweden	• In 2019, there is an import of 14 kg of fresh eel from Norway, which possibly consisted of *Anguilla anguilla*.
UK	• *In March 2019, there were two positive tests results identifying eel meat imported directly from China into the UK as* A. anguilla*.*

E.4 Enforcement challenges with regard to implementing the CITES listing

Seven Parties (Czech Republic, Denmark, France, the Netherlands, Spain, Sweden, and the UK) reported having experienced enforcement challenges with regard to implementing the CITES listing. Details of these and how they were overcome are provided in Section 9.

7.2.2 East Asia

i) East Asia summary

East Asia has historically played an important role in the trade of European eel. In recent years, according to CITES trade data South Korea has been the main importer of *A. anguilla* live eels, Japan the main importer of *A. anguilla* eel meat, and China the main re-exporter of *A. anguilla* eel meat.

The responses provided by Japan and South Korea both stated not having encountered illegal trade in European eels or having experienced enforcement challenges with regards to implementing the CITES listing. Japan noted that its CITES Management Authority issued import/re-export permits based on CITES

permits issued by the countries of export or last re-export which indicate that the eels it (re-)imported are originally exported in accordance with the provisions of the Convention.

7.2.3 Americas

i) Americas summary

Canada and the USA reported having encountered several incidents of illegal trade in European eels since January 2018, all of which were re-exported eel meat. Canada and the USA also shared enforcement challenges with regard to implementing the CITES listing. Canada highlighted species identification issues and difficulties in storing large amounts of frozen eel fillets for trials. These were resolved by taking fewer samples and developing a new PCR screening process which takes less time than DNA testing. The USA also reported issues with identification and lack of species-specific tariff codes; participation in international operations and cooperation with relevant Parties has overcome some of these issues.

ii) Americas responses

E.1.3 Incidents of illegal exports and/or transit of European eels since January 2018

Only Canada reported having encountered incidents of illegal exports and/or transit of European eels since January 2018. Canada reported having '*…four instances of illegal exports of European eel meat that occurred in the Pacific region in 2018; these are two prosecutions against Pacific Gateway Holdings Inc. for which two penalties of a total of CAD 163,776 were attributed.'* Canada added *'...there are also investigations underway in Ontario into at least three different companies for the import of European eel meat into Canada. Data on the number of seizures is as follows'* (Table 37).

Table 37: Number of seizures related to A. anguilla reported in Canada since January 2018. Source: Canada's response to CITES Notification 2021/018.

Alleged Violations	*12*
No Violations Found	*108*
Pending	*4*
Grand Total	***124***

E.2 Re-exports of European eels since 2018

Canada was the only Party to report having re-exported European eels since 2018: '*…there has only been one instance of a re-export in 2018 of scientific samples for DNA analysis. These samples were sent as part of an ongoing legal investigation in Canada by law enforcement officials. A CITES re-export permit was acquired to send six fillets (1.6 kg total weight) to the USA for DNA analysis*.'

E.3.1 (Re-)imports of European eels since January 2018

The USA reported there was one legal import of *A. anguilla* since January 2018, which contained three antique taxidermy specimens accompanied by a valid CITES Pre-Convention Certificate.

E.3.2 Incidents of illegal (re-)imports of European eels since January 2018

Canada and the USA reported having encountered illegal (re-)imports of European eels since January 2018 (Table 38).

Table 38: Incidents of illegal (re-)imports of European eels into Canada and the USA since January 2018. Source: Responses to CITES Notification 2021/018.

Party	Incidents of illegal (re-)imports of European eels since January 2018
Canada	*We are aware of one company that operates in Ontario that has been importing European eels using re-export CITES permits from China. Canadian enforcement officers have been involved in the investigation and the enforcement measures.*
USA	*During 2018, the U.S. Fish and Wildlife Service and Customs and Border Protection participated in an international enforcement operation focused on the lucrative global eel trade. The U.S. documented nine illegal imports of* A. anguilla*, all shipments were exported from China and contained meat originating from either China (2 shipments, MEA 33,080 kg), or an unknown country (7 shipments, MEA 60,550 kg, 50 no).*

E.4 Enforcement challenges with regard to implementing the CITES listing

Details of the challenges faced by Canada and the US with regards to implementing the CITES listing, and how they have tried to overcome these challenges, are provided in Section 9.

7.2.4 Southeast/South Asia

i) Southeast/South Asia summary

As mentioned above (Section 7.1), Southeast Asian countries are increasingly named as emerging destinations of illegally exported *A. anguilla* glass eels. According to the responses to the notification from *A. anguilla* range States, over the last three glass eel fishing seasons, all Customs seizures reported by Spain, and some by France, were of shipments *en route* to Viet Nam and Malaysia (see Table 35).

According to the three responses from India, Malaysia and Singapore, Southeast Asian countries have rarely encountered legal or illegal trade in European eels since January 2018, however, Singapore provided relevant information. It noted no illegal exports/transits had been detected since January 2018 although there was an import consignment in 2018 that was detected carring *A. anguilla* without CITES permits during regular surveillance. Local traders were engaged to raise awareness of the CITES permit requirements for the species.

Singapore also reported having (re-)imported European eels since 2018, and provided details on how to determine whether the specimens being re-exported were exported in accordance with the provisions of the Convention:

a) *Verifying the authenticity of the CITES permit issued by the country of origin (e.g. Morocco)/ country of last re-export (e.g. China).*
b) *Having the country of last re-export (China) briefly explain on the processing of the live eels when imported from the country of origin (Morocco), to be processed and packaged for re-export to Singapore.*
c) *Conducting random inspections of CITES and non-CITES listed eel import shipments, and sending representative samples to our laboratory to ascertain its species.*

7.2.5 Oceania

i) Oceania summary

According to the responses from Australia and New Zealand, countries in Oceania rarely encounter legal or illegal trade in European eels. Consequently neither reported having experienced enforcement challenges with regard to implementing the CITES listing.

7.2.6 East/Southern Africa

No responses were submitted by the East/Southern Africa countries.

8. Traceability

Traceability of eels in trade both nationally and internationally has been identified as a key issue for *Anguilla* spp. (Gollock *et al.,* 2018; Musing *et al.,* 2018). Response from some Parties indicated that progress had been made, but that were still challenges with regards to traceability. It is clear that the extent to which sub-national, national and international mechanisms are linked to form a single chain of custody is very variable, which undoubtedly has bearing on the issues raised relating to illegal activities. This section summarises relevant questionnaire responses provided by Parties under section **C.1.4 "Mechanisms for ensuring national traceability"** (e.g. transport permits, certification schemes, mobile apps and farm input records, and how these are coordinated) and any other mentions of traceabilty included elsewhere in the report. It is important to note that under C.1.4 several Parties repeated information provided in other sections of the questionnaire, such as details of their catch reporting and permit issuing mechanisms and associated regulations; these are not repeated here. While these undeniably play a vital role in facilitating traceability of products in trade, they do not describe how this is achieved along the entire supply chain.

8.1 Europe/North Africa

Fourteen Parties (Algeria, Croatia, Czech Republic, Denmark, Estonia, France, Greece, Morocco, Norway, Slovakia, Spain, Sweden, Tunisia and the UK) provided information on mechanisms and legislation for ensuring traceability; see Annex 10.

The *EU Fisheries Control Regulation*[28] requires many fisheries and aquaculture products to be traceable at all stages of production, processing and distribution, from harvesting to retail (Article 58). Sweden, for example, has implemented a central digital traceability system (SwAM) for fisheries control purposes in order to comply with this Article. Fishers and fish farmers must present traceability information to the first buyer in order to connect the chain to the catch, and retail suppliers must present traceability information to operators at the retail stage. Operators in the supply chain from the first buyers to the retail suppliers must be registered and share traceability information with business partners through the digital system and use standardised physical labelling of products. It is noted that these requirements exclude imported products from outside the EU, inland water products (both caught and farmed) and products not covered by Chapter 03 or Chapter 12 of the Combined Nomenclature.

Also in relation to EU Member States, Article 5 of *Council Directive 2006/88/EC of 24 October 2006 on animal health requirements for aquaculture animals and products thereof, and on the prevention and control of certain diseases in aquatic animals* sets out authorisation conditions for aquaculture production businesses. To be authorised, the business operator must fulfil certain requirements including those set out in Article 8 of that Directive, concerning traceability. This Directive has applied since 2008 and will have been transposed into national law by EU Member States. On 21 April 2021 this was replaced by *Regulation (EU) 2016/429* (the Animal Health Law) and its supplementing Regulations. Requirements concerning record keeping and traceability are set out in Articles 186 to 188 of that Regulation and in Title III of Part II *Regulation (EU) 2020/691*.

[28] Council Regulation (EC) No 1224/2009 of 20 November 2009 establishing a Community control system for ensuring compliance with the rules of the common fisheries policy, amending Regulations (EC) No 847/96, (EC) No 2371/2002, (EC) No 811/2004, (EC) No 768/2005, (EC) No 2115/2005, (EC) No 2166/2005, (EC) No 388/2006, (EC) No 509/2007, (EC) No 676/2007, (EC) No 1098/2007, (EC) No 1300/2008, (EC) No 1342/2008 and repealing Regulations (EEC) No 2847/93, (EC) No 1627/94 and (EC) No 1966/2006 (https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32009R1224)

Morocco reported that the traceability procedure introduced in 2012 enables eel harvest and trade to be accurately tracked. An on-site agent produces a 'transport permit' including weight and location of catch. In Morocco, two companies, which have permits for farming eels from the Department of Water and Forestry, pay glass eel fishers directly, so that there are no buyers and consolidators, and supply chains are short. Currently, digitisation of the traceability system is underway, which is expected to be completed in 2021.

8.2 East Asia

Japan provided the following information: *The national government requires each eel farmer to report the amount of glass eel input and eel production based on the Inland Water Fishery Promotion Act. As for adult eels, almost 100% traceability is being implemented by industry voluntary measures.* In addition to this, according to media reports, the Fisheries Agency of Japan added *A. japonica* glass eels (not other life stages) to the Specified Class I Aquatic Animals and Plants of the *Act on Ensuring the Proper Domestic Distribution and Importation of Specified Aquatic Animals and Plants*, in which fishers and traders will be under stricter regulation to ensure traceability and prevent illegal products entering the supply chain. The regulation will enter into force in December 2025 and specific elements relating to traceability have still to be defined (Anon, 2021c).

8.3 Americas

Canada, Cuba and the USA provided information on national traceability mechanisms. Canada stated:

- *The Government and Licence holders have been working together to enhance the traceability of elvers caught in the Maritimes Region. Under licence conditions, a paper trail must be maintained from the river until the point of sale. Logbooks are used to document catches at the river, and track transport of elvers from the river to the holding facility. The logbooks also record running totals of elvers kept at holding facilities, as well as information on sales. Dockside Monitoring Companies independently maintain hail-out and hail-in records, monitor some instances of elvers arriving from the rivers to the holding facility to be weighed, and monitor all elver sales. A summary of reporting and monitoring procedures for the elver fishery in 2017 are in Appendix 4 of the Elver Integrated Fisheries Management Plan.*
- *Fisheries and Oceans Canada, stakeholders, the Provinces of Nova Scotia and New Brunswick, and the Canadian Food Inspection Agency have been working together to develop stricter traceability protocols from the point of sale onwards. Sales made in Canada should be reported to the Provinces through regular Buyer Reports. Improving and streamlining reporting procedures from the river to the ultimate destination in eel farms will be an ongoing priority for fisheries stakeholders.*

Cuba noted that, at present, all eel fisheries and export are state-run and there are no private companies involved, despite considerable interest by foreign investors. All the companies currently fishing for glass eels are part of a business group under the "Ministry of Food Industry" (Grupo Empresarial de la Industria Alimentaria (GEIA) del Ministerio de la Industria Alimentaria). Therefore, the supply chain can be easily monitored.

The USA indicated that traceability was managed at the state level - '*ASMFC does not have a region-wide traceability system. States have their own mechanisms for harvester/dealer reporting (including some with mobile apps) but this varies state by state and pertains more to landings.'*

9. Challenges

As had been highlighted in the previous two reports relating to anguillid eels and CITES (Gollock *et al*, 2018; Musing *et al*., 2018, see Section 3 / Annex 1), there are a range of challenges relating to the use and trade of these species. A number of Parties outlined such challenges in their responses to the questionnaire relating to the present report. Some of these are captured in previous Sections, but for the most part, these are outlined below by theme rather than region, recognising that many of these challenges are inter-linked and there is natural overlap between those relating to harvest, traceability, legislation and implementation, and enforcement of trade.

9.1 Harvest

Challenges relating to harvest were reported by three European eel range States (Estonia, the Netherlands and the UK), two American eel range States (Canada and the USA) and Japan. The Netherlands highlighted that while prohibited gears can be located, it is often difficult to catch the perpetrators. Estonia added that even if perpetrators were caught, proving guilt in fisheries-related legal cases is sometimes difficult. The UK indicated that illegal harvest of all life stages, but predominantly glass eels, was known to be occurring, in addition to non-declaration of catches.

Challenges communicated by Canada, Japan and the USA are outlined in Table 39.

Table 39: Challenges relating to harvest of non-CITES listed anguillid eels. Source: Responses to CITES Notification 2021/018.

Party	Challenges relating to eel harvest
Canada	• *Incidences of fishing outside what is permitted in the Elver Integrated Fisheries Management Plan in the Maritimes Region has increased between 2018 and 2020. The 2020 elver fishing season also saw a number of harvesters fishing glass eels outside the commercial fishery, which included Indigenous fishing for food, social, and ceremonial (FSC) purposes. Indigenous communities in Canada fish for FSC purposes under communal licences issued to each community. In the Maritimes Region, communities that had access to American Eel did not have restrictions in their communal licence conditions that would prevent the harvest of elvers for FSC purposes. Sale of fish caught under the authority of FSC licences is prohibited by Canadian Legislation.* • *The combination of the above noted activities presented conservation concerns. In summer 2020, the elver fishery in the Maritime fisheries management region was closed by Fisheries and Oceans Canada (DFO) due to unauthorized participation in the fishery. The Government of Canada issued a* Fisheries Management Order on April 27, 2020, *prohibiting any person from fishing an eel less than 10 cm in the inland and tidal waters of New Brunswick and Nova Scotia for 45 days. On July 11, the Order was extended a further 45 days, to the end of the elver fishing season. There have also been recent prosecutions against individuals who were attempting to sell illegal elvers to undercover enforcement officers.* • *The Government of Canada has a legal duty to consult with Indigenous communities on any changes to the FSC licences. To mitigate the conservation concerns observed since 2018, the Government consulted with Indigenous communities and has since introduced a 10 cm size limit in FSC licences that took effect on February 1, 2021 in advance of the glass eel migration into Canadian waters. DFO's enforcement branch, has developed enforcement plans in response to the rise in illegal activity.*

	• *Due to the lucrative nature of the fishery, Indigenous Communities in Eastern Canada (New Brunswick and Nova Scotia), commercial eel (equal or greater than 35 cm) licence holders, and members of the public have shown significant interest in gaining access to the elver fishery. DFO has maintained a limited entry licensing policy for the fishery, which has capped the number of commercial elver licences at nine licences with a Total Allowable Catch of 9,960 kgs wet weight in the elver fishery.*
Japan	• *Enforcement of glass eel catch regulations is not easy, since;* - *catching of glass eels requires only a small net and an electric light. Anyone can easily start glass eel fishing;* - *fishing activities are usually conducted during night, especially during the time of a new moon in estuarine areas of many rivers; and,* - *the size of glass eels is very small, about 6 cm in length and 0.2 gram in weight, and can be easily conveyed by hand in a small amount of water.* • *Also, since the amount of glass eels caught by one fishery person is very small, a buyer usually collects glass eels from many fishery people and co-mingle them when selling to a secondary buyer or a farm. This practice makes the traceability of glass eels extremely difficult, however, the government has decided to tackle with improvement of the traceability of glass eels.* • *In order to overcome those challenges, the government decided to control input of glass eels into farms since all glass eels are eventually put into farming ponds. By strictly controlling input amounts of glass eels into farming ponds, a total catch of glass eels can be accurately monitored. At the same time, every effort has been made to improve enforcement of regulations on glass eel fishery.* • *In accordance with the amendment of the Fishery Act in December 2020, the government of Japan considerably strengthened the penal provisions in order to effectively give disadvantage to offenders and prevent poaching. After December 2023, the penalty for catching glass eels without a fishing permit will be imprisonment of up to 3 years or a fine of not more than JPY 30 million.*
USA	• Based on news reporting, the price of glass eel per pound dropped in Maine in 2020 due to trade restrictions imposed through COVID-19. • The ASMFC's American Eel Advisory Panel (AP) members have provided feedback that the market demand for adult *A. rostrata* (yellow eel stage) for export to Europe has diminished in recent years.

9.2 Traceability

France reported a number of challenges relating to traceability:

- *Fishing records are often imperfect and without proper control, a fishing record can be used several times to justify many trips. This opens up opportunities for trafficking and it is difficult to guarantee the precise origin of glass eels at the end of the supply chain.*
- *There are still under-declarations or non-declarations of catch and many errors in the wording of fishing records. In addition, the glass eel market is complex, as there are different purchase prices over the same period depending on the use of the glass eels - consumption, domestic restocking or restocking elsewhere in the EU. When a batch of glass eels is purchased from the fisherman by the wholesaler, the weight is divided between these three prices which greatly complicates traceability.*

- *The many authorised landing and collection points, as well as the impossibility of cross-checking the declarations recorded in the databases in real time, complicate control operations and requires a large number of control officers.*
- *Control officers do not have access to TRACE certificates for restocking glass eels. Similarly, they do not have access to purchase declarations from other EU countries, which makes it very difficult to carry out any controls, and weakens the procedures in place.*
- *For the 2019-2020 fishing season, there were 13,011 declarations of glass eel purchases by French fish traders over six months of fishing. 42,794 kg of glass eel were purchased and declared by fish traders and other buyers, but 41,654 kg declared by the fishermen. This is a difference of more than 1 t. Most controls are carried out at night to try and combat poaching, mobilising a large number of agents from all departments. As a result, legal catch registration check rates are very low, estimated at a few percent of the official catch, and unfortunately non-compliance is observed.*

Spain indicated that there were difficulties in identifying the final destination of eels caught due to the variety of possible destinations in the EU.

9.3 Legislation and implementation

Thirteen Parties (Croatia, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, the Netherland, Norway, Spain, Sweden and the UK) reported having experienced challenges with regard to implementing legislation. Most responding EU Member States (Croatia, Czech Republic, Denmark, Estonia, France, Greece, Ireland, the Netherlands, and Sweden) mentioned the review of the implementation of the EU Eel Regulation (*Council Regulation (EC) No 1100/2007*), which concluded:

- *The Eel Regulation remains an important instrument in helping the European eel stock to recover. It ensures the management of eel in all its life stages and addresses both fisheries and non-fisheries related human impact.*
- *Despite noteworthy progress in reducing fishing efforts and a concerted attempt to develop a pan-EU management framework, the status of the European eel remains critical.*
- *The silver eel escapement is still well below the target of 40% biomass that would have existed if no human influence had impacted the stock.*
- *Whilst restocking works in some Member States, not all have achieved their restocking targets.*
- *Member States' annual reporting on glass eel prices is incomplete. Many countries fund glass eel stocking through the European Maritime and Fisheries Fund (EMFF).*
- *Non-fisheries related mortality has not declined significantly over the last decade. This has received insufficient focus in the EMPs and related actions.*
- *Although the Eel Regulation offers the necessary framework to help restore the stock, its recovery is still far from certain. It is widely recognised that the recovery of the European eel will take many decades, given the long life-span of the species.*

More details can be found here: https://op.europa.eu/en/publication-detail/-/publication/afe6ca55-5f58-11ea-b735-01aa75ed71a1

Other challenges relating to legislation and implementation were reported Greece, the Netherlands, Spain and the UK. These often related to the EU Eel Regulation targets. The Netherlands indicated that even though measures had led to a substantial decrease in anthropogenic mortality from 2009 onwards, this had not yet resulted in a substantial increase in escapement. The UK noted it was challenging to get

sufficiently robust data to both implement and evaluate effective management measures in line with the legislation. Both Parties highlighted that actions will require a number of years before any potential benefit can be identified. This was also recognised in the evaluation of the EU Eel Regulation. Spain stated that some proposed activities relating to implementation have not been carried out due to budgetary constraints. Greece reported that aquaculture faces difficulties due to the EU trade ban.

The UK also stated that it had been challenging to make an NDF for eels (see Section 7.2.1), especially when taken at a smaller spatial scale than the entire stock level. It can also be difficult to get sufficient engagement from other trading Parties in order to make the necessary assessments under the UK CITES implementing legislation for import/export applications.

9.4 Enforcement of trade

Challenges relating to enforcement covered a broad range of aspects of *Anguilla* use – the majority focused on the implementation of the CITES listing of the European eel.

Challenges relating to enforcement were reported by eight European eel range States (Czech Republic, Denmark, France, Netherlands, Norway, Spain, Sweden and the UK) and four non-European eel range States (Canada, the USA, Malaysia and Singapore).

With regard to the European eel range States, challenges are outlined in Table 40; in some cases, possible solutions to these are also presented.

Table 40: Enforcement challenges in Europe. Source: Responses to CITES Notification 2021/018.

Party	Enforcement challenges
Czech Republic	• Challenge**:** *Placement of seized glass eels, not suitable facility in the Czech Republic.* • Solution**:** *The seized glass eels were placed in farms in Slovakia to grow to sufficient length and then released back into the rivers in the Czech Republic.*
Denmark	• Challenges: *Determining the species of eel traded and finding a suitable lab for testing which is accredited according to correct standards has proven difficult and expensive.* • Solution**:** *We found a lab in Germany which is accredited, however, the cost is quite high.*
France	• Customs have not encountered any specific difficulties in implementing CITES listings. However, possible challenges during control activities include DNA analysis of prepared eel products on import (sometimes technically impossible) and the management of live glass eels during seizures by customs staff (difficulties linked to the nature of the species seized). Solutions (to combatting illegal harvest and trade): • OCLAESP (Gendarmerie) suggest that best way is to train personnel (detection of CITES fraud) and to collaborate with other services in order to improve complementarity during controls (customs, maritime affairs, specialised gendarmerie, OFB and maritime prefecture). • Operation Lake, implemented annually under the aegis of Europol, is aimed precisely at setting up such controls and encouraging collaboration between authoirties, e.g. implementation in the North Atlantic Channel West zone of France:

	http://www.dirm.nord-atlantique-manche-ouest.developpement-durable.gouv.fr/IMG/pdf/cp_lake-5_cle093b21.pdf (2020)
Netherlands	• *Determining the species of eel in processed food is only possible by DNA analysis.* • *Traceability in the trade chain of glass eel.*
Spain	• The absence of a specific Customs tariff code for the CITES listed species makes it extremely difficult to control trade, especially for small shipments.
Sweden	• The control of eel trade is challenging due to the fact that non-*A. anguilla* anguillids can be traded as smoked fish. • *Customs face huge flows of products with many different, and sometimes severe, restrictions and prohibitions, and eels only make up a very small part.* • *Eel is also found in many different product codes, several of which include many other species; exporters can easily declare wrongly or not at all.* • *During product inspection DNA analysis is required to determine the species. Although in certain circumstances a detailed invoice can provide sufficient evidence to seize a shipment.*
UK	• *Illegal export to non-EU destinations.* ○ *These exports are often described in generic terms, e.g."chilled fish" or "chilled fish products" which presents identification challenges and as these are perishable there is a quick movement of these goods through ports.* ○ *Such exports are often concealed, which raises suspicions of their legality.* • *Identification of anguillid eel species can be difficult, e.g. between* A. rostrata *and* A. anguilla *and genetic testing is needed.* • *Enforcement patrols and riverside inspections are carried out by LNFCS/DAERA in Northern Ireland, Environment Agency in England and Natural Resources Wales to prevent illegal activity, these are effective but there are capacity difficulties due to area to be covered (and fishing activity typically occurring at night time).* • *There are a number of enforcement agencies involved in the UK, e.g. Environment Agency for river bank enforcement in England, police forces for domestic enforcement and UK Border Force for enforcement at the UK border, however there is co-ordination amongst UK enforcement agencies and shared involvement in Operations targeting the illegal trade of eels.* • *There also exists difficulties regarding the subsequent handling of seizures. Live specimens from abroad are not typically released into UK waters and often require to be returned to their country of origin.*

Responses from Canada and the USA are presented in Table 41.

Table 41: Enforcement challenges reported by Canada and the USA. Source: Responses to CITES Notification 2021/018.

Party	Enforcement challenges
Canada	• Challenges: *In the past, there have been a number of shipments of European eel meat with CITES permits issued by Morocco to Hong Kong or China. China has been issuing CITES permits, which states that the eel meat comes from those original Morocco permits. These shipments declared as European Eel have not been DNA tested and therefore we do not know if there are other* Anguilla *species contained in the shipments. Canada has also experienced difficulty storing large amounts of frozen eel fillets for the length of trials. Another issue Canada has encountered was the length of time it would take for DNA testing of fillets and the volume of samples necessary for testing to ensure the results were representative of the entire shipment.* • Solutions: *Take fewer samples and the laboratory developed a new PCR screening process that could be done before the lengthy DNA testing was performed.*
USA	• Challenges: *The U.S. exempts the declaration of shellfish and fishery products imported or exported for purposes of immediate human/animal consumption, which may at times provide confusion to the trader on what is regulated. Otherwise, similarity of appearance is the main identification challenge for eel meat and other products much like for other CITES-listed species. In addition, the Harmonized Tariff Codes for food products do not break out species, or in many cases lump together multiple fish species. Invoices may only identify eel and with multiple countries involved in the leather trade, for example, importers are unsure of origin or species. Trade invoices for leather goods identify eel while this is most often hagfish, and importers declare all kinds of "eels" such as moray eel, conger eel, or various species of Anguillidae.* • Solutions: *We have participated in international operations and provided outreach to the import/export community.*

Malaysia and Singapore also shared enforcement challenges with regards to implementing the CITES listing of European eels. Malaysia noted that mixed shipments hampered thorough inspection, which was resolved by imposing a regulation and ensuring different commodities need to be packed separately, by type. The importance of training was also noted by Malaysia to improve species identification skills amongst enforcement personnel. Singapore reported that their Centre for Wildlife Forensics has developed molecular diagnostic techniques (DNA analysis) to assist with the identification of processed and cooked products.

10. Discussion

The two previous studies carried out under the auspices of CITES (Gollock *et al.,* 2018; Musing *et al.,* 2018) presented a range of findings and associated recommendations. Overall, in light of the present report, available data indicates there have not been any significant regional changes in legal and illegal eel trade dynamics over the past three years. Europe/North Africa, East Asia, the Americas, and to a lesser extent Southeast Asia and Oceania, continue to play key roles in the trade of live eel and eel products as major harvesters, exporters, importers and/or farmers of anguillid eels. However, there have been some developments in certain harvest/export/transit countries that merit further examination, and in particular, a continued increasing trend in glass eel imports into East Asia from *A. rostrata* range States has been identified.

Although the responses to the notification from Japan and South Korea provided up to date information on the harvest, trade and farming in these countries, the continued absence of information from China means there is still limited understanding of the scale and dynamics of the eel industry in the region. For example, a clear picture of the ongoing use of, and demand for, European eel in East Asian farms, and consequent illegal trade in the species, is still not available. Europol (2018) estimated that around 100 t of live eel fry were smuggled from the EU to China in the 2017-2018 fishing season and UNODC (2020) noted that the large scale of China's current eel farm production could only be explained by the fact that they were still acquiring some illegally sourced *A. anguilla* glass eels. Recent studies have indicated that European eel is found in products in both supermarkets (Richards *et al.,* 2020) and restaurants (Chan, 2021) in Hong Kong SAR despite the lack of declared imports of European eels to CITES. Current available information and data - including the notification responses from Japan and South Korea, East Asian Customs data and Annex 1 to the Joint Press Release by Japan, South Korea and Taiwan Province of China - reveal scarcely any use of *A. anguilla* for farming in the region. It will be impossible to obtain a complete picture, let alone ensure the sustainability and legality of harvests and trade of *Anguilla* spp., without increased co-operation from relevant authorities, with China being the principal global *Anguilla* farming producer and Hong Kong SAR the main trade hub for live eel fry entering East Asia.

With regards to implementation of the European eel CITES Appendix II listing, Musing *et al.* (2018) raised disparities between exporter and importer data, as well as non-reporting and errors in the use of codes, terms and units as issues. Over the past three years, there appears to have been some improvement in CITES reporting. Some of these issues have been discussed at AC and SC meetings, which have helped to highlight where improvements could be made and the three North African Parties presently in the RST process (Algeria, Morocco and Tunisia) have now provided greater clarity and transparency relating to exports. Data suggests that Egypt and Turkey are also exporting European eel, however, in the absence of responses from these range States to the questionnaire, knowledge gaps still exist. At present, available information indicates that under national laws, no European glass eels can be legally exported for farming outside of range States. However, import data (see Figure 3) suggests that East Asia is still receiving juvenile European eel for farming; it is not known if these include larger juvenile European eels (> 12 cm) legally exported from the range States or illegally sourced/exported glass eels.

Traceability was also highlighted as a significant issue with regard to implementation of the listing in the previous reports – indeed, improving traceability of eels in trade is also encouraged in CITES Decisions 18.197 and 18.198. Notification responses suggested that progress has been made by some Parties since 2018, as mechanisms for ensuring national traceability of anguillid eels and/or online reporting systems have been established. However, it is not clear whether these changes have resulted in effective national

and/or international traceability systems. For example, even though the EU Eel Regulation sets out a clear framework for Member States' obligations concerning traceability of *A. anguilla* trade within the EU, there is no EU-wide system. France reported a number of challenges relating to traceability of glass eels, some of which are shared by other Parties, such as Japan.

Many Parties raised similar enforcement challenges in their responses to the previous and current notification, such as holding seized glass eels, confirming species identification (in particular for processed products) and a lack of specific Customs codes to species and/or lifestage levels; and, as noted above, illegal trade in *A. anguilla* is an ongoing concern. UNODC (2020) analysed information stored in the World WISE database which showed an increase in the number of *A. anguilla* seizures from two in 2011 to 111 in 2017. These seizures occurred primarily in Spain, France and Portugal and it is estimated that over 50% of these shipments were *en route* to China (UNODC, 2020).

Parties have overcome some of these challenges by increased co-operation and new technologies. Some more recent data indicate that illegal trade in *A. anguilla* glass eels has declined in the last few years due to successful law enforcement efforts (Europol, 2021). In addition, in 2019 there was an international operation to combat illegal trade in live eel fry and eel meat, with the participation of 18 countries, which led to the detection of illegal products containing European eel in Australia, Canada, and the USA (Walsh-Thomas and Landry, 2019). Some CITES Parties also appear to have developed specific systems to help determine whether the *A. anguilla* specimens being imported were originally exported in accordance with the provisions of the Convention. Singapore reported having a three step process which involves verifying the authenticity of the CITES permit issued by the country of origin/ country of last re-export, requesting that the country of last re-export explain the process/supply chain and conducting random inspections and DNA testing of CITES and non-CITES listed eel import shipments.

With regards to trade in non-CITES listed species, the Americas and Southeast Asia remain important sources of juvenile eels for farming in East Asia, with higher imports of non-*A. japonica* species in years of low *A. japonica* recruitment. It is likely that this pattern will continue in the future to fulfil demand, and receiving early warning/realtime information on *A. japonica* recruitment patterns could be very useful for harvest management and pre-empting illegal activity in other *Anguilla* range States.

American eel glass eel/elver fishing is currently known to occur in North America (Canada and the USA) and the Caribbean (Cuba, the Dominican Republic, Haiti and Jamaica), and according to national catch, export data and media sources, total annual legal harvest in the region averaged 20 t in 2015-2020. East Asian Customs data, however, show that imports of live eel fry into the region from *A. rostrata* range States have been higher than the reported harvest in these countries. Reported imports averaged 30 t over the same period, and increased over the last five years from 19 t in 2015 to 47 t in 2019; there was a drop in 2020 to 38 t. A glass eel harvesting "boom" appears to be underway in Caribbean countries, in particular in Haiti, and although a recent workshop report (Sargasso Sea Commission, 2021) provided some insights into the current situation, there are still many knowledge gaps; only Cuba submitted a questionnaire response in relation to the present study. It is important to highlight that most eels coming from the Caribbean are traded via the USA or Canada.

The harvest and trade in juvenile eel from Southeast Asia – likely mainly *A. bicolor* – is still poorly understood. In the previous reports, the Philippines were identified as a key exporter of *Anguilla* live eel fry, with trade reaching a peak in 2012-2013. No questionnaire responses were received from them, but Customs data indicates that the Philippines remains a source of juvenile eels for farming in South Korea

and Japan. Both the Philippines and Indonesia have legislation in place that bans the export of juvenile eels up to a certain size and live eel fry imported into East Asia may include some illegal exports.

Finally, it should be noted that harvest and trade of *Anguilla* spp. is likely to have been influenced by the COVID-19 pandemic. Some Parties reported reductions in harvest, demand and/or prices due to travel and trade restrictions, and Europol (2021) noted that criminal networks have found new ways to smuggle glass eels from Europe to Asia, e.g. concealing them in mixed commodity air cargo shipments, as with most flights halted, smuggling in passenger luggage was no longer possible.

All the aforementioned issues and ongoing concerns over potentially unsustainable and/or illegal *Anguilla* harvesting and trade in Europe/North Africa, East Asia, the Americas and Southeast Asia reinforce the previous reports' recommendations relating to the importance of improved international collaboration and co-ordination with regards to trade in CITES and non-CITES listed *Anguilla* species. The recommendations below focus on ongoing knowledge gaps, Customs/Tariff codes and trade reporting requirements, illegal harvest/trade and enforcement challenges, and traceability.

11. Recommendations

The following recommendations, informed by the present study, for further discussion and consideration by CITES Parties, the CITES Secretariat and other stakeholders, focus on ongoing knowledge gaps, Customs/Tariff codes and trade reporting requirements, illegal harvest/trade and enforcement challenges, and traceability. They are relevant to *A. anguilla* and/or the genus as a whole, noting the irrefutable links between the demand for, and availability of, these species. It is also important to recognise that many of the recommendations proposed in previous reports are still applicable (see Annex 1).

a) Knowledge gaps in the status of *Anguilla* use and trade still exist, and where these are significant and/or ongoing, it is recommended that relevant Parties are approached and provide further information, in particular:

- East Asia: China is the largest farm producer of anguillids in the world, Taiwan Province of China is also a major eel farmer and Hong Kong SAR the principal entry/transit point for glass eels coming into the region; a lack of information from these important players makes it very challenging to put responses from other Parties into context. Trade data, the Joint Statement, Joint Press Release, UNODC report (2020) and grey literature have been used in an attempt to fill this large information gap, but direct input from relevant authorities is vital. In addition, although a response was submitted by South Korea, it was not possible to carry out a follow-up interview to clarify certain important details on the status of farming and trade, and further information would be beneficial.
- Americas: Caribbean range States, in particular, Haiti and the Dominican Republic, have become key exporters of *A. rostrata* glass eels in recent years, and it would be helpful to understand more on their harvest and export, and any conservation concerns and associated regulations/management in place/being considered.
- North Africa: According to data reported to CITES, ICES and FAO, Egypt and Turkey have harvested and exported notable quantities of European eel in recent years; further clarity on use and trade in these countries would be useful.

b) Customs/Tariff codes and other trade reporting requirements for *Anguilla*, in many cases, appear to still be too generic for accurate trade monitoring in these species. Countries are urged to modify their relevant national trade regulations to take into consideration:

- As a minimum, all Parties involved in harvesting, farming and/or trade of live anguillid eel should modify their national Customs code system to disaggregate juvenile and larger size live *Anguilla* eels - and where possible/relevant refine these further to the species level. At AC30 Inf. Doc. 06 was produced to help American eel range States harmonise the process across the region, however the guidance is relevant to any country looking to incorporate more detailed codes for live *Anguilla* eels in their national Customs system (see Annex 11).
- It would be beneficial if all major eel transit/re-exporting countries/territories, especially for live glass eels, were to require traders to include the species name and country of origin (and any other previous transit points) on (re-)export declarations and provide details of any holding facilities where shipments were kept whilst in transit.

c) Illegal harvest/trade and enforcement challenges are still major concerns for many Parties, and the following are recommended in order to continue improving fisheries management and controls of trade permit applications and shipments:

- It is important that national fisheries management is aligned with the opportunities to legally fulfil demand, whether this is farming, restocking or consumption. It is apparent that the availability of *A. japonica* juveniles for farm input has, to date, been a major driver of the scale of harvest and export of glass eels of other species, currently *A. rostrata* and *A. bicolor.* As such the monitoring of *A. japonica* catch and co-ordination with range States of other species could help to pre-empt the possibility of illegal/unsustainable harvest and/or export.
- Furthermore, in some instances, national legislation appears to be creating situations where harvest might be legal, but export is not. In order to help ensure importing countries are aware of exporting country legislation and *vice versa*, an information portal on national legislation could be established, to allow Parties to easily cross-check exports.
- To build on the successes of enforcement operations and seizures, it is important to maintain, extend and further strengthen sub-national, bilateral and multi-lateral cooperation within/between countries involved in eel trade, in particular to control imports of *A. anguilla* glass eels from countries/territories that have restrictions in place. This could also involve capacity building in countries that require support.
- It would be hugely valuable if Parties were to further share best practices in relation to overcoming management and enforcement challenges specific to eel harvest and trade. A number of practical solutions provided by Parties are included in this report, such as limiting mixed commodity shipments to facilitate declaration checks (Malaysia), use of rapid molecular screening to identify species and be able to make enforcement decisions more quickly (Canada; e.g. Cardeñosa *et al.,* 2019) and a three-step process to help verify the legality of specimens during permit applications (Singapore). These may also help in other areas, e.g. species identification would be very useful in the context of traceability.

d) Traceability of anguillids, particularly glass eel, along their often very complex supply chains remains a major issue for Parties; and it is recommended that the following options be considered to strengthen their approaches:

- Parties would benefit from sharing experiences on traceability challenges and solutions, particularly relating to the international eel supply chain, possibly in the form of a workshop/webinar;
- Examine the traceability mechanisms currently in use/being developed for other species/fisheries, that could potentially be tested and/or modified for eel (for example, SharkTrace);
- Countries where national traceability frameworks/legislation are already in place, but not yet applied to *Anguilla* spp., could consider amending these - for example, include *Anguilla* species in the species groups covered by the US Seafood Import Monitoring Program.

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Annexes

Annex 1: Recommendations from previous reports to CITES on *Anguilla* spp.

The conclusions made throughout the document are collated below:

Musing *et al.,* (2018)

Reporting of CITES trade data

- The reporting of as complete information as possible by CITES Parties in their annual reports (without omitting key information, such as term and country of import) would strengthen data sets;
- In the context of reporting trade in *A. anguilla*, formulating guidance would help CITES Parties with their reporting, avoid incorrect uses of source codes (especially 'C' and 'F') and strengthen data sets;
- Agreement on the consistent use of descriptive terms ("LIV" vs "FIG", "BOD" vs. "MEA" for frozen eels) and the related preferred unit of reporting (e.g. currently number of specimens for "LIV") would greatly facilitate trade data analyses, yielding more meaningful findings;
- The definition for fingerlings may warrant adjustment to make it applicable to eel species (see also Customs data);
- As live glass eels are transported in water, it would be of use to clarify whether reporting of trade quantities by weight (kg) should include the water in which they are transported, taking into account consistency with information required in Customs declarations;
- As the *A. anguilla* fishing season for glass eels crosses calendar years, (in Europe the season generally lasts from October to April), complementing CITES trade data analyses with Customs data (available by month) would help to capture trends typical of a fishing season;
- A lesson learnt from the early years of the CITES listing is that there should be agreement and clarity among Parties on how to report re-exports of pre-Convention specimens (i.e. these should not be recorded as exports from non-range States even if the country of origin is unknown), which may be useful to consider for future listing of other species.

Customs data

- Standardised or comparable definitions/codes for the different eel life stages would facilitate trade data analyses;
- Coordinating any future changes to Customs codes to ensure this is applicable across all *Anguilla* range States would facilitate trade data analyses. This is also relevant to fisheries/other management measures, such as limits on export set by length or weight;
- Customs and farming data is useful for cross-checking trade reported under CITES to help identify discrepancies, and where follow-up and clarification by relevant Parties is needed;

- Customs data is a useful resource for monitoring possible impacts of the CITES listing of *A. anguilla* on other eel species;
- Sharing of relevant information by Parties that use *A. anguilla* for farming on their operations and supporting information for issuing re-export certificates (e.g. farming output, traceability and origin of live eel fry) with both range States, and Parties involved in international trade of the species, would be very useful in understanding trade dynamics.

Implementation issues

Non-Detriment Findings

- Collaboration of range States on a stock-wide NDF and/or considering the harmonisation of how NDFs are made would be useful considering the life history of the species.

European Union

- Further harmonisation of EU Member States' Eel Management Plans, particularly in relation to regional regulations on internal fishing would reduce the opportunity for traders to mis-declare specimens; i.e. as having been fished in a region that allows commercial activity, with the intention to re-export the specimens out of the EU or trade them within the EU). The ongoing review of Council Regulation (EC) 1100/2007 may provide opportunity for this;
- The development of national/intra-EU strategies by EU Member States to combat illegal fishing and regulate trade is required;
- Developing the requirement of internal certificates to accompany commercial *A. anguilla* shipments within the EU would help with implementation of the listing (also applicable to traceability below).

Traceability along the eel supply chain

- Tracking requirements should be in place for glass eels reported as dead for consumption.

International and inter-agency co-operation

- Information sharing and communication among different competent authorities at the national, regional (EU) and international level – including importing Parties – could be strengthened.
- Information on North African *A. anguilla* range State management measures and fishing regulations would be of use, especially to other range States and trading partners;

Illegal trade and enforcement

International and inter-agency co-operation

- The regular sharing of enforcement (Customs and seizure) information from Trading Parties, especially importers and re-exporters, with *A. anguilla* range States could help with combatting illegal trade.

Enforcement challenges

- Improved training of enforcement officers handling and inspecting shipments of live *A. anguilla* would be useful as the specimens may be damaged if handled by an inexperienced individual.

Species identification

- In order to address identification issues concerning *Anguilla* species in trade, the consideration of potential challenges and benefits of available techniques and mechanisms would be useful.

Gollock *et al.* (2018)

- Increasing the understanding of the basic biology of these species, across their full range would hugely improve our ability to manage them.
- Similarly, the establishment of abundance monitoring programmes for the different life stages of these species would inform both management and the assessment of their status. For some of the tropical species with generation lengths of less than 10 years, this could be achieved relatively easily and at low cost.
- Understanding the dynamics of multi-species aquatic systems is essential for management in some range States. Both Indonesia and the Philippines are believed to have seven species of anguillid in their continental waters, some of which particularly *A. bicolor*, have increased in trade over the past 10 years. This increase in exploitation has the potential to impact other species.
- Encouraging cooperation among range States to understand the biology of these species across their ranges, conduct joint programmes of work and share knowledge, and manage *Anguilla* resources based on scientific evidence is essential to conserve these shared resources.
- Using standardised or comparable definitions/codes for reporting trade in the different *Anguilla* eel life stages, and coordinating any future changes to Customs codes to ensure this is applicable across all *Anguilla* range States, would facilitate trade data analyses. This is also relevant to fisheries/other management measures, such as limits on export set by length or weight.
- It is important that that Customs codes for *Anguilla* spp. are only used to report trade in *Anguilla* species and not other eel-like species (non-*Anguilla,* i.e. look-alikes). A guide to these other eel-like species in trade, with common names and photos, may help to raise awareness, and ensure accurate reporting.
- Further research on consumption especially in emerging and/or lesser-known markets such as China, South Korea and Russia, would help to identify changes in the potential drivers of the global *Anguilla* trade. Strengthening multi-lateral and bilateral cooperation between exporting and importing countries is vital, in particular between enforcement agencies to control imports of glass eels from countries/territories which have fishing/export restrictions are in place.
- Improved traceability of all anguillid eels in trade is essential in evaluating the true impact of exploitation on these species and preventing illegal fishing and trade.

Annex 2: Questionnaire (Annex 3) that accompanied Notification 018/2021 that informed the present study

Notification to the Parties No. 2021/018
Annex 3

Questionnaire on the use and trade of anguillid eels (*Anguilla* spp.)

To be completed by source, transit and destination Parties trading in anguillid eels

The term 'specimen' as used in this questionnaire is as defined in Article I, paragraph b) i) and ii) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora[29]

A. BACKGROUND

Please provide as much information as possible in answer to the questions below – the information should cover at least the last five years unless otherwise stated[30]

Country	
Function of agency completing this questionnaire (CITES Management Authority, CITES Scientific Authority, Wildlife Authority, Police, Customs, Other)	
Contact details of agency/agencies completing this questionnaire	
Contact person(s) for possible follow up questions: (please indicate name, email, job title, function):	
NOTE: We recognise that some of the information requested below may be similar to that submitted in response to Notification No. 2018/018. However, having this data in the context of the new Decision and this report will be extremely valuable and ensure the report meets the needs of all Parties.	

[29] *(a) "Specimen" means:*
(i) any animal or plant, whether alive or dead;
(ii) in the case of an animal: for species included in Appendices I and II, any readily recognizable part or derivative thereof; and for species included in Appendix III, any readily recognizable part or derivative thereof specified in Appendix III in relation to the species

[30] Please use additional sheets for any question, if needed.

A.1	Is your country a range State of anguillid eels?	Yes ☐ No ☐ Don't know ☐ If 'Yes', please indicate which species[31] occur in your country.

Species	
Anguilla anguilla	Yes ☐ No ☐
Anguilla australis	Yes ☐ No ☐
Anguilla bengalensis	Yes ☐ No ☐
Anguilla bicolor	Yes ☐ No ☐
Anguilla borneensis	Yes ☐ No ☐
Anguilla celebesensis	Yes ☐ No ☐
Anguilla dieffenbachii	Yes ☐ No ☐
Anguilla interioris	Yes ☐ No ☐
Anguilla japonica	Yes ☐ No ☐
Anguilla luzonensis	Yes ☐ No ☐
Anguilla marmorata	Yes ☐ No ☐
Anguilla megastoma	Yes ☐ No ☐
Anguilla mossambica	Yes ☐ No ☐
Anguilla obscura	Yes ☐ No ☐
Anguilla reinhardtii	Yes ☐ No ☐
Anguilla rostrata	Yes ☐ No ☐

31 *Three additional species names are occasionally used in relation to freshwater eels* – Anguilla labiata, Anguilla malgumora *and* Anguilla nebulosa. A. labiata *is sub-population of* A. bengalensis, *primarily found in Africa and should be referred to as the latter.* A. malgumora *is a synonym for* A. borneensis *and should be referred to as the latter.* A. nebulosa *is a synonym for* A. bengalensis *and should be referred to as the latter.*

B. EEL TRADE AND RELEVANT LEGISLATION

B.1 Using any relevant customs commodity codes, please detail exports/imports of any live eels during 2018-2020, specifying the *Anguilla* species and/or life-stage if this level of detail is available.

2018

Species / Life-stage	Trade term code	Total Volume (kg)	Import / Export / Re-export	Destination/Origins(s)	Use(s)

2019

Species / Life-stage	Trade term code	Total Volume (kg)	Import / Export / Re-export	Destination/Origins(s)	Use(s)

2020

Species / Life-stage	Trade tem code	Total Volume (kg)	Import / Export / Re-export	Destination/Origins(s)	Use(s)

B.2	Have any changes in demand, legal and illegal trade in non-CITES listed species been identified since 2018 – please provide details, references and links to any relevant media releases.
B.3.1	Other than CITES implementing legislation for *Anguilla anguilla*, has your country adopted national legislation to regulate international trade (export/import) in *Anguilla* species? Yes ☐ No ☐ If 'Yes' please provide information on how international trade of *Anguilla* species is regulated and what is permitted or forbidden in your country.

Species	Title, date of enactment, and relevant provisions of national legislation

B.3.2	Other than CITES implementing legislation for *Anguilla anguilla*, is domestic use (harvesting, farming and/or internal trade/consumption) of *Anguilla* species regulated in your country through national legislation? Yes ☐ No ☐ If 'Yes' please provide information on how domestic use of *Anguilla* species is regulated and what forms of use are permitted or forbidden in your country.

Species	Title, date of enactment, and relevant provisions of national legislation

	If 'No', are there any initiatives to monitor and/or control domestic use of *Anguilla* spp., such as co-operative/community monitoring programmes or other private sector initiatives, please provide details:
B.4	Has your country experienced any challenges with regard to implementing any of the legislation and/or initiatives described in section B.3? Yes ☐ No ☐ If 'Yes', please provide details.
B.5	If you have any other relevant information regarding anguillid eel use and trade that has changed over the past five years and/or as a consequence of the CITES listing and that has not yet been captured by responses to the questionnaire, please use this section to elaborate.

C. EEL HARVEST

C.1.1 Are *Anguilla* species harvested in your country?

a) Glass eel / elver fishery:

Yes ☐ No ☐

b) Other life stage fishery:

Yes ☐ No ☐

If 'No' to both of these, please go to Section D.

C.1.2 If 'Yes', please provide information on total harvest (kg) and an approximate percentage end use(s) for each species of harvested eel in the boxes below – please indicate the source(s) of information your answer is based on and whether the percentages are estimates based on actual figures or expert opinion/knowledge.

Species name:

	Catch (kg)					
Life stage	2015	2016	2017	2018	2019	2020
Glass eel						
Yellow eel						
Silver eel						

Proportional use (%)

	2015	2016	2017	2018	2019	2020
Glass eels						
Direct domestic consumption						
For grow-out in domestic farms						

National stocking							
Export for direct consumption							
Export for grow-out in farms							
Export for stocking							
Other uses (please describe)							
Yellow eels							
Direct domestic consumption							
Export for direct consumption							
Other uses (please describe)							
Silver eels							
Direct domestic consumption							
Export for direct consumption							
Other uses (please describe)							

If eels are exported, please provide information on export destinations:

Please define the season for each fishery (glass, yellow, silver) and how this is reported e.g. is catch reported by calendar year or by the period over which the fishing occurs, which may straddle years?

Please indicate if any other fisheries management measures are utilised e.g. gear limitations, quotas, etc.

C.1.3	Please provide information on reporting mechanisms – logbooks, catch returns, swipe cards, mobile apps etc. - for collecting catch data for glass eel/elver and other fisheries listed above, and where appropriate, how this is coordinated nationally: Where possible, please provide further details of these sources, including any private sector initiatives and online links to these.
C.1.4	Please provide information on mechanisms for ensuring national traceability – transport permits, certification schemes, mobile apps, farm input records – for each fishery listed above, and where appropriate, how this is coordinated: Where possible, please provide further details of these sources, including any private sector initiatives and online links to these.
C.1.5	Has your country implemented any changes to eel harvest management since 2018 and/or experienced any challenges, with regard to fisheries, reporting and traceability (including any possible illegal activity)? Yes ☐ No ☐ If 'Yes', please provide details.

D. EEL FARMING

D.1.1 Are anguillid eels farmed in your country?

Yes ☐ No ☐

If No, please go to D.2.

D.1.2 If 'Yes', please provide total annual eel input into farms, and if more than one species is farmed in your country, an approximate percentage for each species being used in the boxes below – please indicate the source(s) of information your answer is based on and whether the percentages are estimates based on actual figures or expert opinion/knowledge.

Total farm input (kg)

Species	2015	2016	2017	2018	2019	2020

Proportion of total farm input (%)

Species	2015	2016	2017	2018	2019	2020

D.1.3

Please provide an approximate percentage of where seed stock for each species farmed is obtained e.g. domestically or imported in the boxes below – please indicate the source(s) of information your answer is based on and whether the percentages are estimates based on actual figures or expert opinion/knowledge.

Please copy and paste the text below if extra sections are needed for multiple species:

Species name:

Proportional origin (%)

	2015	2016	2017	2018	2019	2020
Domestic harvest						
Imported (wild-caught)						
Imported (farmed)						
Other (please describe)						

If eels are imported, please provide information on source countries.

D.1.4

Please provide online sources/links to publicly available departments/stakeholders/information related to eel farming in your country.

D.1.5

Please provide total output produced from farming and approximate percentages of the end use of any farmed *Anguilla* spp. in the boxes below – please indicate the source(s) of information your answer is based on and whether the percentages are estimates based on actual figures or expert opinion/knowledge.

Please copy and paste the text below if extra sections are needed for multiple species:

Species name:

	2015	2016	2017	2018	2019	2020
Total output produced from farming (kg)						

Proportional use (%)

	2015	2016	2017	2018	2019	2020
Direct domestic consumption						
For grow-out in domestic farms						
National stocking						
Export for direct consumption						
Export for grow-out in farms						
Export for stocking						
Other uses (please describe)						

If farmed eels are exported, please provide information on export destinations.

D.1.6 Please provide details of mechanisms and/or regulations relating to the registration and reporting of eel farms in your country.

Where possible, please provide further details of these sources including online link(s).

D.1.7 Please provide details of the following over the past 10 years:

A) Number of eel farms and how the numbers have changed up to the present day.

B) Cumulative eel farm capacity and how this has changed up to the present day,

C) Average turnover rate – i.e. time from input to market-size - and how this has changed up to the present day

Where appropriate, please indicate if any of the above have been influenced by seed species availability, changes in legislation, demand and other relevant factors.

	Please outline any significant challenges that have been encountered, including concerns over traceability and legal sourcing of eels.
D.2	Is your country involved in any other aspects of eel trade/commercial use, such as processing eel or providing holding facilities for imported juvenile life stages for farming? Yes ☐ No ☐ If 'Yes', please provide link(s), reference(s) or additional information, for each species.

E. IMPLEMENTATION OF THE CITES-LISTING OF EUROPEAN EEL

E.1.1	Has your country exported European eels since January 2018? **Note: Information on re-exports is requested in E.2.** Yes ☐ No ☐ If 'Yes', please provide brief details on which life-stages, whether the exports are live and/or processed, to which import countr(ies) and how you determined that the specimens were exported in accordance with the provisions of the Convention.
E.1.2	Have you made a non-detriment finding for trade in European eels? Yes ☐ No ☐ If 'No', please explain why this is the case: If 'Yes', a) what information source(s) was used? Species-specific stock assessment ☐ Customs / Trade data analysis ☐ Fisheries dependent data ☐ Fisheries independent data ☐ Ecosystem modelling ☐ Fisheries models ☐ Other (please describe) ☐ If possible, please provide NDFs and any relevant reports, links and/or analyses related to sources and uses for the NDF. b) Was the NDF carried out at a local, national or regional level (i.e. together with other range States, therefore incorporating a large proportion of, or the entire population)? Local / Sub-national ☐ National ☐ Regional / Multi-national ☐

E.1.3	Has your country encountered incidents of illegal exports and/or transit of European eels since January 2018? Yes ☐ No ☐ If 'Yes', please provide data and/or information on illegal trade, including the number and size of seizures and trade routes/modus operandi involved.
E.2	Has your country re-exported European eels since 2018? Yes ☐ No ☐ If 'Yes', please provide brief details on how you determined that the specimens being re-exported were originally exported in accordance with the provisions of the Convention, in particular in cases where such specimens were exported as eel seeds for farming (e.g. glass eels, elvers) and re-exported as live adult eel or eel products.
E.3.1	Has your country (re-)imported European eels since January 2018? Yes ☐ No ☐ If 'Yes', please provide brief details on which (re-)export countr(ies) and how you determined that the specimens being imported were (re-)exported in accordance with the provisions of the Convention.
E.3.2	Has your country encountered incidents of illegal (re-)imports of European eels since January 2018? Yes ☐ No ☐ If 'Yes', please provide data and/or information on illegal trade, including the number and size of seizures and trade routes/*modus operandi* involved.

E.4	In relation to any of the previous questions in Section E, have you experienced any enforcement challenges with regard to implementing the CITES listing? Yes ☐ No ☐ If 'Yes', please provide details of these challenges and if possible, provide some examples: How have you overcome these challenges? Please provide some examples of best practices:

Annex 3: Eel fishery seasons and associated reporting requirements in *A. anguilla* range states.

Party	Eel fishery seasons and reporting mechanisms in *A. anguilla* range States
Algeria	• Eel fishery periods in the continental environment: - "Anguillette" (small yellow eel): all year - Glass eels: 1 December to 30 April; - "Anguille" (large yellow and silver eels): 1 October to 30 April. • Catches are reported monthly. • A national system for collecting statistical data collection online (SSPAL) has been set up by the Directorate of Statistics, Information Systems and Prospective Studies of the Ministry of Fisheries and Fisheries Production.
Croatia	• Catch is reported on a monthly basis. • In Croatia, all catches are reported via logbooks or catch reports. Logbooks are obligatory for vessels above 10m, and catch reports for smaller vessels. Regardless of their length, vessels are obliged to fill in e-logbooks if an authorisation is required. All data on catches (reported via logbooks and catch reports) are entered into the electronic data base.
Czech Republic	• Catch records are collected throughout the year for specimens >50 cm (smaller specimens must be released) • See "Data collection systems and methodologies for the inland fisheries of Europe": http://www.fao.org/3/ca7993en/CA7993EN.pdf
Denmark	• Yellow eel: April - November, peaks in August. • Silver eel: August - November/December, peaks in October. • Data provided in the Notification response originates from the Danish Fisheries Agency' sales note register. If a buyer is registered at the Danish Fisheries Agency, they are obliged to send in a sales note at first sale within two days. If the buyer is a private person, the fisherman must have a permit for direct sales and send in a sales note within two days.
Estonia	• Eel in coastal waters is fished mainly in summer months, in inland waterbodies from April to November. • Commercial fishermen are required to report their catches monthly. • Recreational fishermen must report their eel catches if these were on the basis of a fishing card (mainly using longlines but also in case of fishing with harpoon or harpoon gun in some lakes). Catches must be reported within 5 days of the card expiration or monthly in case the fishing card is valid for over one month. • Data can be reported through the same Internet portal that was used to buy the fishing card (Pilet.ee). This portal links to a database (TEHA) where all the data is stored and can be obtained for scientific or management purposes. Almost all recreational fishermen use the online option, but from time to time a few people hand in their catch reports to the Environment Board on paper or call an officer at the Environment Board or the Ministry of the Environment and then their catch numbers are inserted directly to the database for them. Since fishing cards are issued only by person and are hence connected to unique social security numbers we have established a rule that a new fishing card cannot be bought by those persons that have not turned in their catch report.

Party	Eel fishery seasons and reporting mechanisms in *A. anguilla* range States
Finland	• There is no specific yellow or silver eel fishery - both life stages are mainly caught as bycatch during the ice free period from May to September. • Marine professional landing data are reported in annual logbooks and, until 2016, freshwater professional and semi-professional landing data via questionnaires every two years. A new logbook based registry was implemented from 2016 onwards and the number of freshwater fishermen increased. Recreational fisheries landing data are collected via questionnaires every two years, using a postal survey by household.
France	[Glass eel stage] • Fishing period: five months between 1 November to 25 May. Specific dates are set by *l'arrêté du 28 octobre 2013 relatif aux dates de pêche de l'anguille européenne (*Anguilla anguilla*) de moins de 12 centimètres* (the order of 28 October 2013 on the fishing dates for European eels (*Anguilla anguilla*) under 12 cm). • Declaration: all fishermen must record catches in their logbooks as soon as they are landed and before transport, within 24 hours in marine areas and 48 hours in rivers. In river areas, declarations must be made by electronic means (online declaration). [Yellow and silver eel stage] • Fishing period: set by *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* (the order of 5 February 2016 on the fishing periods for the European eel *(Anguilla anguilla*) yellow eel and silver eel stages). • Declaration: Freshwater fishermen declare catches at least once a month and at latest on the 5th of the following month. In marine areas, they must declare within 48 hours. The Fishing Datasheets (*Les Fiches de Pêche*) make it possible to identify the primary producer of eels. Professional freshwater and marine fishermen must complete this form as soon as they are landed and before transport. This information is required by *Article 58 of Council Regulation (EC) No 1224/2009 of 20 November 2009* establishing a Community control system for ensuring compliance with the rules of the common fisheries policy. • For freshwater catches: only professional fishers are allowed to fish glass eels in freshwater, and all legal catches are reported through the online declaration system (Cesmia), within 24 hours of fishing. It is a priority for glass eels and more generally for eels. This tool is accessible to agents specialising in fisheries control. Online declaration has been compulsory since 2020. • For the marine catches: there is no computerised tool available yet, but some professional organisations have developed their own online declaration tool. Fishermen and fishmongers, and more generally the buyer, must declare transactions. Files compiled are only accessible to agents at the end of the week or on request. Another tool is the TRACE application of the veterinary services, which tracks the movements of restocking glass eels abroad. It is not accessible to fisheries control officers.
Greece	• Main season for silver eel harvest: Autumn-Winter.

Party	Eel fishery seasons and reporting mechanisms in *A. anguilla* range States
	• Mandatory annual submission of the "Eel Production Report (EPR)": reporting obligations include catches and aquaculture production data per fishing period, which starts 1st March and finishes the last day of February of the following year. (*Ministerial Decision for the implementation of Hellenic Eel Management Plan (HEMP) in the framework of Regulation (EC) No 1100/2007, Presidential Decree 420/1970, A 27*). • ERP Submission target all eel farming companies, fishing cooperatives and fishers, *(Ministerial Decision 643/39462/2013, B' 883*). Data are archived in EXCEL (xls).
Morocco	• Glass eel fishing period: 1 January - 30 June; • Silver eel fishing period: 1 April - 30 June and 1 September - 31 December. • Fishing periods are set annually by fishing decree, by a fisheries committee and advisory body, established by the Dahir of 11 April 1922 on fishing in continental waters and which meets annually. This committee, composed of representatives from research institutions, is called upon to give its opinion on the regulation of fishing in continental waters. • In order to track fish caught and reared in aquaculture, companies with fishing rights must keep records to ensure a comprehensive accounting of inputs and outputs of all eel products reared or caught. • Traceability is a provision included in contracts given to those permitted to fish for eels.
Netherlands	• All waters in the Netherlands, with the exception of those in the province of Friesland, are closed for eel fishing in the months of September to November. For lake IJsselmeer there is an additional closed season for some fishing gears targeting eels. The eel fishery in this lake is between 12th April and 1st September. • The minimum landing size of eel in the Netherlands is 28 cm. • Inland eel fisheries are reported weekly. Catch data are reported via an electronic form, including fishing area, quantity in kg per type of fishing gear. Registration and validation of catch data is carried out by the Netherlands Enterprise Agency (RVO.nl). In the Province of Friesland, where there is decentralized eel management, fishing is by quota. Catches are entered in the catch recording system using a smartphone application. This is a private sector initiative, as the fishermen involved also send their catch data via the compulsory government electronic form. • Marine catches are reported in logbooks and all landings are reported in the landing declaration according to the requirements of the *Control Regulation (no.1224/2009)*. Fields include catch and landing date, fishing vessel, FAO fish species, FAO area, type of fishing gear and mesh, quantity in kg and harbour. • Eel catch (marine and inland) inspections take place regularly and are carried out by the Netherlands Food and Consumer Product Safety Authority (NVWA).
Norway	• Fishing period: 17th July to 31st October – this is a scientific fishery. • As part of the research program log books must be kept. • The co-operation controlling landings according to quotas also controls trade and marking/packing. Every year, a standard form is sent to the fishers, which they must fill out after each fishing trip. It includes data on the number and weight of catch of small (under 300 g) and large eels, number of fyke nets and "soak" time per fishing trip (for co-operation, see *Norges Råfisklag* (www.rafisklag.no)).

Party	Eel fishery seasons and reporting mechanisms in *A. anguilla* range States
Slovakia	• Fishing season and catch is reported by calendar year (1 January to 31 December). • A user of a fishing area is obliged to keep a record of catches and fishing area attendance and to submit this to the Ministry of Environment by 15th of January for the previous calendar year. • The minimum 'catch size' for eel was 45 cm (for 2015–2018) and 50 cm (2019–2020), which would mean that the fishery was effectively only catching females, as males have not been found to grow over 45 cm.
Spain	• Each community (*Comunidad Autonoma, CA*) has its own authorised fishing seasons specific within CA fishing plans. • The glass eel season generally runs from October to February (until March in the Mediterranean basin). • Other eel fishing runs from February to October in the Atlantic basin and varies between CAs. A minimum three month closed season for both basins applies, as established by EU regulations. • Catches are reported according to ICES Eel Working Group (ICES WGEEL) criteria. • Control of catches, landings and first sale is carried out by the CAs in designated fish markets or fishermen's associations. For the bi-national Minho River, catches and logbooks are controlled by the Naval Command of Minho in Tuy on the Spanish side; first sale in the market is controlled by the CA.
Sweden	• Yellow and silver eels are caught in inland and coastal waters from May to December. Fishermen must report catches every month to the Swedish Agency for Marine and Water Management. Most eels are caught between August and November, but catches vary between regions. • As per national legislation, reports must contain: name, social security number and signature, code of where the fishing took place, year and calendar month, number of days at sea, information on fishing gear and depth, catch in kg live weight for each life stage and gear and species code. The Swedish Agency for Marine and Water Management manually registers the information provided in paper reports and data are stored in a database. • In some of the largest inland waters, private power plant companies voluntarily finance catches and "trap and transport" of silver and yellow eels downstream from the hydropower plants nearest to the sea. Data is reported yearly to the Swedish Agency for Marine and Water Management. • The Swedish Agency for Marine and Water Management has contracted the Swedish University of Agriculture Sciences to collect data from non-fishery sources, such as mark-recapture data, traps in inland waters, which are used in evaluations of the national eel population, eel management plan and additional measures.
Tunisia	• The period of targeted fishing for eels (mainly silver eels) in fixed fisheries (capes, fyke nets, weirs) in lagoons is set following meetings of a multi-party committee and generally runs from November to March of the following year. • Fishing (including eels) in dams, rivers and freshwater areas is prohibited: ○ From sunset to sunrise, ○ From 1 March to 30 April each year.

Party	Eel fishery seasons and reporting mechanisms in *A. anguilla* range States
	• According to *Article 18 of Law 94-13 of 31 January 1994 on fishing*, fishermen and operators of fishing units or fixed fisheries units must provide the competent authority with any statistical or technical information it requests. • Fisheries guards (from the competent authorities) countersign production sheets (official documents containing the name and registration number of the boat, fishing area, date of capture, gear used and quantity landed) after checking quantities and the size of the eels caught, which must comply with the regulatory size (30 cm).
UK	• Catch is reported by calendar year and the fishing seasons are: Glass eels: [England only] mid-February/March – May Yellow eel: [Northern Ireland] 1st May – 8th January (though fishing usually stops around the end of October/November) [England] 1st April – 10 December [Scotland] no licensed eel fisheries. Silver eel: [Northern Ireland] 1st June – 31st January (though fishing usually stops around end of December). [England] 1st April – 10 December. [Scotland] no licensed eel fisheries. • In Northern Ireland, all Lough Neagh eels are sold through one registered dealer (the Lough Neagh Fishermens Co-operative Society as the fishery owner) and full details of catches are kept for inspection by DAERA (Department of Agriculture, Environment and Rural Affairs) staff. Fish sales are recorded and accompanied by an invoice to identify the source of the consignment. • In England, all fishermen must declare their catch to Environment Agency. Any glass eel traders must keep records of all eels (<12cm) purchased, and provide records of all exports.

Annex 4: National legislation and fisheries management measures for harvest/domestic use in *A. anguilla* range states.

Party	National legislation/management measures for *A. anguilla* harvest/domestic use
Algeria	• *Executive Decree No. 03-280 23 August 2003* defining the mode of delivery and establishment of the state concession for exploitation of Lake Oubeira and Mellah. • *Executive Decree No. 06-372 October 19 2006* setting standard specifications for the exploitation of eels. The granting of concession is: • Personal and non-transferable, reserved exclusively for the exploitation of eels and cannot be sub-let; • Allocated to a single operator for each site; • Allocated for a renewable period of five years. The capture of glass eels is prohibited for commercial purposes. It is tolerated for breeding purposes but subject to prior authorization from the fisheries authority. The gears authorized for the exploitation of eels (capechades, trabaques, pods, fyke nets and longlines) are specified in the regulations, including *Executive Order No. 03-481 13 December 2003* setting out the conditions and modalities of fisheries; Article 5 specifically relating to the exploitation of eels. The longline length is limited to 100m and the number of hooks per longline is fixed at 200. The number and technical characteristics of the boats are also defined in the legislation: the number of boats authorized for eel fishing is fixed at three boats per site, with a length of 3 to 6 metres and a power of less than 25 hp. There is a fixed exploitation quota for both sites: • Lake Oubeira: 150 t per year of all species combined; • Lake Mellah: 80 t per year of all species combined. Algeria is subject to an annual export quota for eels provisionally set at 8 t for 2020.
Croatia	Domestic use of *Anguilla* species is regulated by: 1) *Ordinances on commercial fishing with gillnets, pots, hook and line gears spears and particular fishing techniques* (OG 84/15, 94/15, 107/15, 62/17 and 64/17) 2) *Ordinance on fishing in protected areas, special habitats and areas with particular management regimes* (OG 125/20) 3) *Ordinance on eel closure season* (adopted annually, for 2020 OG 64/20). There are limitations on the number of pots and specific fishing grounds for eel traps.
Czech Republic	*Fisheries Act No. 99/2004* and the *Decree No. 197/2004* implementing the Fisheries Act. For recreational fishing it is necessary to have permission from the Fishery Association, a maximum of two rods are permitted, all catches are monitored, minimum harvest length is 50 cm, maximum allowed weight is 7 kg, and period of protection is 1/9 - 30/11.
Denmark	The eel fishery is regulated according to the Danish Eel Management Plan and Denmark follows the yearly Council Regulation and implements any required legislation, e.g. closure of fishery in specific months. Eel fishery licences in a given calendar year presupposes that the fisherman the year before has landed eel and registered the landings with the Danish Fisheries Agency. This national rule ensures that only active fishermen hold a license to fish for eel. The eel fishery license gives the fisherman permission to use a limited number and type of fishing gear.

Party	National legislation/management measures for *A. anguilla* harvest/domestic use
Estonia	• *Fishing rules* (regularly amended according to need; there have always been some special paragraphs for eel). Eel-specific rules currently in force are: 1) Fishing for eel in coastal waters is forbidden 1st November – 31st January; 2) When fishing for eel with longlines in Peipsi, Lämmijärv and Pihkva lake, bycatch of undersized eel must not exceed 5% of the whole catch of eels over the minimum size limit; 3) When fishing with longlines or trap nets in Lake Võrtsjärv, bycatch of undersized eel must not exceed 2% of the whole catch of eels over the minimum size limit; 4) When fishing for eel with longlines in other inland waters, bycatch of undersized eel must not exceed 10% of the whole catch of eels over the minimum size limit; 5) Minimum size limit for eel in coastal waters is 35 cm, 55 cm in river Emajõgi and in lakes Võrtsjärv, Peipsi, Lämmijärv and Pihkva. In other inland waterbodies the minimum size is 50 cm. • *Fishing opportunities and fishing fees for commercial fisheries.* Opportunities are set based on scientific advice, fees calculated separately for every calendar year, and calculations are based on rules stipulated in the *Environmental Charges Act* (fees for commercial eel fishing is considerably higher than for other fisheries). • *Fishing opportunities for recreational fisheries.* As for commercial fisheries, fishing with longlines or harpoons is allowed only with a fishing card, which is more expensive than obtaining the usual fishing right. Fishing cards can be bought only for certain water bodies and card numbers are limited. Fishing with harpoon guns or harpoons in a few lakes where eel restocking takes place and the water transparency is good also requires a fishing card. • According to the **Fishing law** (latest version in force since 2015, latest amendment 1st January 2021), if the Environment Board has detected a violation of the fishing rules, the Board calculates the damage done to fish stocks (quantified monetarily) through a procedural act if appropriate. That sum must then be compensated. The rate for eel in these calculations is considerably higher than for almost all other fish species (equal to that of trout and superseded only by salmon). Compensation rates and methods are stipulated in the *Rates of Compensation for Damage to Fish Stocks Regulation* (latest revision in force since 2015).
France	• *Arrêté du 18 mars 2015* on reporting obligations in marine fishing [not specific to eels] • *Arrêté du 21 octobre 2019* on measures to control professional eel (*Anguilla anguilla*) fishing in marine waters (reviewed annually) • *Arrêté du 18 décembre 2013* setting obligations applicable to professional freshwater fishermen concerning the keeping of fishing logbooks and the declaration of catches for European eels (*Anguilla anguilla*) • *Arrêté du 28 octobre 2013* on fishing dates for European eels (*Anguilla anguilla*) under 12 centimetres [glass eels, in freshwater] • *Arrêté du 5 février 2016* on fishing periods for European eels (*Anguilla anguilla*) in the yellow eel and silver eel stages. • An order is published each year to set the fishing quotas for glass eels.

Party	National legislation/management measures for *A. anguilla* harvest/domestic use
	[Glass eel stage] • Harvests are subject to a prior fishing licence (professional marine and freshwater fishermen). They are governed by a system of catch quotas defined each year for the coming fishing season. Catch quotas are set for the following three categories: 1) fishing sectors, 2) category of fishermen (professional marine or freshwater fishermen), 3) purpose of the catch (consumption or restocking). • The regulations stipulate that the process of publishing fishing closure orders can be initiated when 80% of the quota has been reached. Orders are published for each season (e.g. *Arrêté du 16 octobre 2020 portant définition, répartition et modalités de gestion du quota d'anguille européenne (Anguilla anguilla) de moins de 12 centimètres pour la campagne de pêche 2020-2021* [Order of 16 October 2020 defining, allocating and managing the quota for European eel (Anguilla anguilla) under 12 centimetres for the 2020-2021 fishing year]). The introduction of a digital system for reporting freshwater catches has enabled more accurate and rapid monitoring of quota consumption. • Removal of glass eels is prohibited on the Mediterranean coast (*Article R.922-48 of the Rural and Maritime Fishing Code*). • 60% of glass eel removals must be reserved for restocking operations within the framework of the Eel Management Plans imposed by *Regulation (EC) No 1100/2007*. Some of these restocking glass eels are discharged directly into rivers, others are sent to fish farms for grow-out. • Authorised landing points have also been designated by Decree. These are usually the points where each fisherman lands. The same applies to collection points. [Yellow and silver eel stages] • Removal of yellow and silver eels is regulated (by fishing season). • The taking of silver eel is prohibited on the Atlantic coast, in the Channel and in the North Sea.
Greece	• The *Royal Degree 142/1971* banned the fishing of small eel <30 cm for commercial exploitation and determined the authorized fishing gear and season for other eel fishing (1 November each year until the last day of February of the following year). • *Ministerial Decision 643/39462/1-04-2013, A΄883* for the establishment of measures for the implementation of Hellenic Eel Management Plan (HEMP) in the framework of *Regulation (EC) No 1100/2007*. This Decision established an obligatory document accompanying catch to first sale. The "Attestation of Legal Production", issued by the Regional Fisheries Authorities, for the intra-community movement and trade of eel between Member States, states that the quantity *Anguilla anguilla* for intra-Community movement between Member States, has been fished or produced from farming in accordance with national and Community legislation and in accordance with the approved National Eel Management Plan (HEMP). • The *Ministerial Decision 643/39462/2013, B' 883 (md)* covers various aspects including the: Prohibition of "volkos" in lagoons (fyke net, the main traditional eel fishing gear), the authorization for professional eel Fishing (yellow and silver eel in lakes, rivers, lagoons, and the Prohibition of Eel recreational fishery in Greece.

Party	National legislation/management measures for *A. anguilla* harvest/domestic use
Ireland	• *Conservation of Eel Fishing Bye-Law No. C.S. 319, 2015* • *Conservation of Eel Fishing (Prohibition on Issue of Licences) By-law No. 858, 2009*
Morocco	• *Law No. 130-12* amending and supplementing the *dahir of 12 chaabane 1340* (11 April 1922) on fishing and aquaculture in continental waters published on 20/08/2015: eel fishing can only be authorised by a fishing right "lease", and in the case of glass eels, they must be used for farming (trade in glass eels is strictly prohibited for other purposes, whether alive or dead). • Fishing quotas for glass and other eels are set in the annual order regulating fishing for each fishing season. • Depending on the quotas available, the fishing right leases are governed by specific rules, in particular fishing conditions, traceability and the obligation to restock waterways. Eel fisheries management measures include: **a.** Fishing for eel is only allowed for six months of the year; **b.** Only sieves and large dip nets attached to boats or operated by hand are allowed for glass eel fishing. Sieve dimensions should be less than 1.50 m in diameter if they are circular, and 2 m in length and 1 m in width if they are rectangular. For the net, the diameter must be less than 0.60 m; **a.** Prohibition of trade and export of glass eels <12 cm. All glass eels caught must be used exclusively for grow-out in a national rearing facility; **b.** Prohibition of the possession, trade, transport and export of dead eels except after authorization by the Department of Waters and Forestry; **c.** Fishing ban for one day per week, set by the ordinance establishing fishing in continental waters and fixing fishing reserves during each season; **d.** Leaseholder must register their boats, keep a record of entries and exits and make weekly declarations of the fisheries carried out; **e.** Leaseholder must submit a list of fishermen employed, indicating their identities and residence, fishing grounds and planned addresses for storage and breeding, before obtaining the exploitation license.
Netherlands	• The minimum landing size of eel in the Netherlands is 28 centimetres *(Article 5.b of the Uitvoeringsregeling visserij)* • There are several year round closed areas to eel fisheries (*Art. 23b, Art 28b and Annex 15 and 16* of the *Uitvoeringsregeling visserij*; fishing for eels is prohibited in these due to high concentrations of dioxins and polychlorinated biphenyls (PCBs). • All waters in the Netherlands, with the exception of those in the province of Friesland, are closed for eel fishing in the months of September to November, (*Art. 32a* of the *Uitvoeringsregeling visserij*), see fishing seasons above. • In the *Uitvoeringsregeling visserij* there are several articles (*7,8 and 10a*) regarding an administrative duty for commercial eel fishers (including reporting weekly catches), fish auctions and eel trade companies. • Fishing gear restrictions in inland waters in the national *Reglement voor de binnenvisserij 1985* include: - minimal size of rings in traps (for escapement of juvenile eel); - minimal span of traps.

Party	National legislation/management measures for *A. anguilla* harvest/domestic use
	• In the province of Friesland, eel fishing in inland waters is managed through a decentralized local eel management system. A detailed description of the management system can be found in the updated eel management plan of the Netherlands as approved by the European Commission.
Norway	• There is a current ban in place on all eel catching (including private/leisure/tourism fishing) and on keeping of live eels for grow out: https://lovdata.no/dokument/SF/forskrift/2011-12-20-1463?q=%C3%A5l • Only professional and registered fishermen can apply for a quota within the scientific research program; quota per vessel is 700 kgs/year.
Slovakia	• *Decree of the Ministry of the Environment of the Slovak Republic No 381/2018,* which implements *Act No. 216/2018 Coll. on Fisheries* as amended*,* enacted 1.1.2019. The species is not protected (can be caught during the whole year) in one day a fisherman can catch only two eels. • *Decree of the Ministry of the Environment of the Slovak Republic No 185/2006,* which implements *Act no. 139/2002 Coll. on Fisheries, as amended, enacted from 15.04.2006 to 31.12.2018,* species protected from 1 September to 30 November.
Spain	• Spain has a national European eel management plan and 12 Community-specific plans. Each community (CA) has specific regulations for measures included in their management plans covering licenses, catches (some have maximum quotas or minimum sizes), fishing methods, authorized areas, temporary bans, and control measures and sanctions: https://www.mapa.gob.es/es/pesca/temas/planes-de-gestion-y-recuperacion-de-especies/planes-gestion-anguila-europea/default.aspx • The Management Plan for the international stretch of Rio Minho was approved by EC Decision of 21 May 2012, and annual edicts regulate specific measures for each fishing year.
Sweden	• Total commercial eel landings have decreased by ~80 % compared to average landings in 2004-2006 (before the EU eel-regulation) due to national measures in line with the national eel management plan. The number of fishermen has decreased by more than 60 % over same period. • Since 2007, there is a total eel fishing ban in Sweden, with some exemptions. Only commercial fishermen with special permits are allowed to fish for eel (approx. 200 licences in 2020). • The eel fishery on the Swedish west coast has been closed since 2012. The Swedish Agency for Water and Marine Management has made a statement not to give new fishermen licences to fish eel until the stock has recovered. Furthermore, the recreational fishery for eel is banned in line with the general ban stated in 2007. Fishing is allowed in some inland lakes and rivers, where eels have no or very low possibilities for up- and downstream migration to/from those waters. • The eel fishery in the Baltic Sea and inland waters also has restrictions, in the number of fishing days (90 and 120 days respectively), gross landings and minimum landing sizes.
Party	**National legislation/management measures for *A. anguilla* harvest/domestic use**

Tunisia	• *Law No. 94-13 of 31 January 1994*, *relating to fishing activities* ○ Art. 14.: It is forbidden to transport, sell, store, process or use as bait aquatic species whose fishing is prohibited. • The *Decree of 28 September 1995 relating to the regulation of fishing*: ○ Article 9: protection of aquatic species by setting minimum sizes for capture of more than 40 species; minimum market size of eel in Tunisia is 30 cm. ○ Article 20: setting a minimum mesh size and characteristics of fishing gear intended for eel fishing. ○ Articles 57, 58 and 59: organisation of eel fishing in the Ghar El Melh lagoon • The *Decree of 20 September 1994* relating to fishing in dams, rivers and other freshwater bodies: ○ Article 1: the minimum distances to be respected in relation to the intake of the dam. ○ Article 2: the times and periods during which fishing is prohibited. ○ Article 5: the mesh size of nets used in dams, rivers and freshwater bodies must be at least 40 mm per side for the smallest mesh. ○ Articles 4 and 6: the number of nets per boat and the length of each, the number of fishermen per boat, the maximum size of the boat, etc. Fishing regulations are currently being amended to bring them in line with the various regional and international recommendations ratified by Tunisia and take into account the current state and prospects of fisheries in Tunisia. The committee sets the fishing period, number of authorised fisheries, geographical limits (including minimum distances from the coast allowing free migration of part of the stock towards the sea), maximum number of nets, minimum mesh size, authorized boats etc.
UK	• *Regulation (EC) No 1100/2007* establishing measures for the recovery of the stock of European eel (as retained EU law in Great Britain from Jan 2021) • Traditional hand netting techniques are used in the glass eel fishery. In Northern Ireland, long lines and draft nets are used for catching yellow eels, and silver eels are caught at 2 fixed weirs defined in Regulations. Other conservation measures are in place for minimum landing size, hook sizes etc. All fishermen must be licenced and regular inspections of gear and catches are carried out by DAERA Inspectorate staff. • Up to the end of 2020, the UK issued a zero export quota for eels (for movements outside of the EU). • Some yellow/silver eel fisheries are monitored to ensure the 40% escapement target is met and catch level/ restocking adjusted accordingly.

Annex 5: National legislation and fisheries management measures for harvest/domestic use of *Anguilla* spp. in East Asia.

Party	National legislation/management measures for *Anguilla* harvest/domestic use in East Asia
Japan	• Glass eel catch is subject to fishing permits issued by prefectural governments, and the duration of fishing season is from December to April, in accordance with relevant regulations under *Fishery Act* (1949). • Adult eel catch using certain fishing gears is subject to fishing permits issued by prefectural governments, and is not allowed from October to March in accordance with relevant regulations under *Fishery Act* (1949). • In June 2015, the licensing system was introduced for eel aquaculture, under the *Inland Water Fishery Promotion Act*. The amount of initial input of glass eels is restricted per eel species and allocated for each individual eel farmer. • In accordance with the amendment of the *Fishery Act* in December 2020, the government of Japan considerably strengthened the penal provisions to effectively disadvantage offenders and prevent poaching. After December 2023, the penalty for catching glass eels without a fishing permit will be imprisonment of up to 3 years or a fine of not more than JPY 30 million. • Each prefecture is implementing various additional measures such as gear restriction, upper harvest limits for individuals and closures, considering the unique situations in each prefecture. Recently, the prohibition of catching silver eels contributing to spawn has been introduced in almost all prefectures where wild adult eels are distributed.
South Korea	• *Article 21-2 of the Inland Fisheries Act* (Prohibition of capture and harvest) and *Article 17 of the Implementation Regulation of the Inland Fisheries Act* (Prohibition of capture and harvest). These provisions were enacted on January 10, 2017 and took effect on July 1, 2017. Under these provisions, capturing or harvesting eel during their spawning migration season (October 1 to March 31) are prohibited, and only eels between 15cm to 45cm can be captured at other times. • See *Fisheries Information Portal of the Ministry of Oceans and Fisheries (www.fips.go.kr)*

Annex 6: Eel fishery seasons and associated reporting requirements in *A. rostrata* range states.

Party	Eel fishery seasons and reporting mechanisms in *A. rostrata* range States
Canada	• Seasonal openings and closures are managed on a fishery by fishery basis across multiple regions in Canada. Fishing typically occurs in the spring, summer and fall. A small number of fisheries occur over the winter months. Water temperatures factor into when fishing seasons open and close. Refer to *the Elver Integrated Fisheries Management Plan* for further information. • Licence conditions dictate how catch is reported. Requirements vary from region to region and fishery by fishery. In general, commercial licences require catch reporting through the submission of log books. For example, the commercial elver fishery in the Maritimes requires daily hail-in and hail-out, 100% mandatory weigh-out, daily landing reports to a Dockside Monitoring Company and logbook reports.
Cuba	• Glass eel fisheries are conducted from 22 September to 20 March. • Reporting is coordinated at the national level: daily glass eel capture reports, weekly and monthly consolidated reports for each company and catch site, annual reports at the end of the season.
USA	• The glass eel fishing season in Maine in 2020 was from 22 March to 7 June in Maine; the most recent state regulations for the American eel can be found here - http://www.asmfc.org/uploads/file/60774037AmericanEelFMPReview2019.pdf • To increase accuracy of reporting, the Atlantic States Marine Fisheries Commission (ASMFC) requires states and jurisdictions to collect trip level reports for both dealers and harvesters. Each state has their own reporting mechanism, e.g. Maine tracks glass eel landings to ensure the state does not exceed it glass eel quota (https://www.maine.gov/dmr/laws-regulations/regulations/documents/Chapter32_08262020.pdf).
Other range States	*Information from alternative sources (not from Notification responses).* Glass eel fishing seasons: • Dominican Republic: 1 November to 31 March. • Haiti: 2 September to 15 April. • Jamaica: October to March.

Annex 7: National legislation and fisheries management measures to regulate harvest/domestic use in *A. rostrata* range States.

Party	National legislation/management measures for *A. rostrata* harvest/domestic use
Canada	• Eel fisheries are regulated under the national *Fisheries Act* and other regional/provincial acts depending on where the species is harvested and the type of fishery: *Ontario Fisheries Regulation*; (Province of Ontario) *Endangered Species Act*, 2007; *Quebec Fisheries Regulations* (Province of Quebec); *Maritime Provinces Fishery Regulations*; *Aboriginal Communal Fishing Licences Regulations*; *Fisheries General Regulations* (FGR's); *Newfoundland and Labrador Fisheries Regulation*. • Restrictions on gear, quotas, season openings and closures, river-by-river catch restrictions and size limits apply. Restrictions are outlined in licence conditions and vary from region to region. Refer to the Elver Integrated Fisheries Management Plan for further information. • Fisheries and Oceans Canada has implemented new quotas at the fishing location (river, brook, stream) level, known as river catch limits, in the elver fishery in advance of the 2021 fishing season. River catch limits are now scaled to the watershed area (km2). There are 108 authorized fishing locations in New Brunswick and Nova Scotia, Canada. The overall Total Allowable Catch for the fishery (9,960 kgs) has remained at historical levels, however this change in management resulted in the reduction of the river catch limit in 64 (59%) of 108 fishing locations. For consistency, previously set precautionary levels were increased in 15 (14%) of 108 locations. Increases in seven of 15 locations resulted increases that were 8 kgs or less. • A minimum size of 11cm was implemented for Indigenous food, social and ceremonial licences in the Maritimes region of Canada (parts of Nova Scotia and New Brunswick) in 2021.
Cuba	• *Decree No. 1 Regulation of Law 129 "Fisheries Law" 24 December 2019* places *Anguilla rostrata* under special protection and determines penalties for non-compliance. • A commission established that *A. rostrata* is to be fished exclusively for commercial purposes, and requires a fishing license issued by MINAL (Ministry of Food Industry). The Fisheries Research Centre will continue to study the species to enable implementation of appropriate management measures. • Currently regulations have set a closed season (April to August), in which rivers glass eels can be fished and which companies are pemitted to fish (no individuals have permits); legislation also prevents nets to be stretched across the full width of rivers, always permitting some eels to pass through.
USA	• American eel commercial and recreational fisheries are managed at the state-level in state jurisdictional waters. Regional coordination of fishing regulations between states along the U.S. Atlantic coast occurs through the Atlantic States Marine Fisheries Commission (ASMFC). Commercial landings, permitting and reporting are administered by the states and information collated by ACCSP (Atlantic Coastal Cooperative Statistics Program). Aquaculture facilities are subject to state and federal laws where applicable. U.S. Federal agencies such as the National Marine Fisheries Service at NOAA (National Oceanic and Atmospheric Administration) and

	U.S. Fish and Wildlife service participate in the ASMFC process and are provided updates on landings, changes in regulations, and emerging management issues through the annual FMP Review. • See Regional Level Guidance: http://www.asmfc.org/uploads/file/5e1636f1AmEelAddendumV_Aug2018_updated.pdf
Other range States	*Information from alternative sources (not from Notification responses).* ● Dominican Republic: o Fishers need to be a member of a fisheries association and need a permit from Consejo Dominicano de Pesca y Acuicultura (CODOPESCA). o Ban on fishing and trade in *A. rostrata* (all life stages) from 1 April to 31 October each year. o Each company has a maximum exploitation and export quota of 150 kg. o A maximum quota of 2,500 kg of exploitation per fishing season (*Resolution No. 02-18*) ● Haiti: o There is no catch quota, fisheries management or enforcement. o Each exporter has a quota of 6,400kg. ● Jamaica: o Glass eel fisheries started in 2013 with an exploratory/scientific licence. Catches are currently minimal.

Annex 8: National legislation, management measures and reporting mechanisms for *Anguilla* harvest/domestic use in Oceania.

Party	National legislation, management measures and reporting mechanisms for *Anguilla* harvest/domestic use in Oceania
Australia	• Anguillid management is undertaken by state fisheries management agencies, who control harvest through limits on fishing gear, the number of fishers allowed to commercially fish eels, temporal and spatial eel fishing closures and strict rules about which life history can be taken in particular areas and times of year; all regulated through state legislation. See: - Queensland: https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/fisheries-profiles/eel-fishery \ - New South Wales: https://www.dpi.nsw.gov.au/fishing/aquaculture/publications/species-freshwater/eels-aquaculture-prospects - Victoria: https://vfa.vic.gov.au/commercial-fishing/eels - Tasmania: https://www.ifs.tas.gov.au/publications/annual-reports • Logbooks are the primary reporting mechanisms used by state management agencies. Annual reports are made public in some jurisdictions, others have mandatory monthly reporting including catch data via catch and effort reports. Reporting mechanisms for each fishery can be found in the assessment reports for eel fisheries on the Department's website: - Queensland: http://www.environment.gov.au/marine/fisheries/qld/eel-fishery - New South Wales: http://www.environment.gov.au/marine/fisheries/nsw/estuary - Victoria: http://www.environment.gov.au/marine/fisheries/vic/eel - Tasmania: http://www.environment.gov.au/marine/fisheries/tas/freshwater-eel
New Zealand	• As with most commercial fisheries in New Zealand, both shortfin and longfin eel fisheries are managed under an Individual Transferable Quota (ITQ) system. The New Zealand Fisheries Act 1996 requires that Total Allowable Commercial Catches (TACCs) and Total Allowable Catches (TACs, which include the TACC along with allowances for recreational and customary catches and other sources of mortality) are set to provide for utilisation while ensuring sustainability. Eels smaller than 220 grams may not be kept, nor eels larger than 4 kg. Recreational use is also regulated with a bag limit of 6 eels per day. Māori customary use is regulated by Māori guardians and is only for local consumption. Farming does not occur due to these restrictions. • The same monitoring programmes are used for all Quota Management System fish stocks. These involve compulsory commercial logbook programmes, electronic reporting, and requirements for processing firms (all of which must be licensed fish receivers) to provide data on vessel and area-specific effort and landings by species, as well as destinations of all processed fish. • Other forms of monitoring that assist with assessments of stock status (as well as the assessments of stock status) are detailed in the Freshwater eels section of the following link: https://www.mpi.govt.nz/dmsdocument/40781

Annex 9: Regulations and/or mechanisms related to the registration and reporting of eel farms in Europe/North Africa.

Party	Regulations and/or mechanisms relating to the registration and reporting of eel farms
Algeria	• *Executive Decree No. 07-208 of 30 June 2007* sets out the conditions for farming activity, different types of establishments, their creation and rules of operation related to *A. anguilla*.
Denmark	• All eel farms need a permit (authorization) issued by local authorities and to be registered in the national livestock register for veterinary purposes. • Aquaculture businesses have to keep records when buying and selling fish and participate in monitoring programmes for animal health and drug residues. • They have to make a yearly report on input, output, and production capacity to the Danish Fisheries Agency for statistical purposes, and on production, discharge and use of fodder and additives (i.e. medicine) to local authorities for administrative purposes.
Estonia	• General aquaculture regulations and rules (covering all species) apply to eel farming; there are no special mechanisms specific to eel farms in Estonia.
Greece	• It is mandatory for eel farms to submit an "Eel Production Report (EPR)" annually (*Ministerial Decision 643/39462/2013, B' 883*)
Morocco	• Aquaculture farms are authorised by the Department of Water and Forestry via an open call for tenders and availability of quotas. Farm conditions and obligations are then set according to specifications. • The list of companies authorized to farm eels is published in the annual fishing ordinance:http://www.eauxetforets.gov.ma/ChassePeche/Pisciculture/Pages/Pisciculture.aspx
Netherlands	• National aquaculture regulations apply to eels, including permit conditions: *art. 2.1.5 of the national Regeling aquacultuur*: https://www.nvwa.nl/onderwerpen/aquacultuur/vergunning-aanvragen-aquacultuurproductiebedrijven
Slovakia	• Eel farms do not need to be registered, but they can get a voluntary aquaculture certificate issued by the Ministry of Agriculture. Details are published on the Ministry website according to *Article 19a of the Act No 194/1998 Coll. on the breeding and breeding of livestock*: https://www.mpsr.sk/?navID=2&navID2=2&sID=40&sID2=28&id=598 • Eel farms are not obliged to submit data to any authority, unless a request/ inspection is made by the Slovak Environmental Inspectorate or relevant District Office.
Sweden	• Based on fisheries legislation, a permit is required to run eel farms. Permit applications are made to the county administrative board in the county where the farm is to be located. All eel farms are registered with the Swedish Board of Agriculture: https://etjanst.sjv.se/asken/faces/cvrw/visaVattenbruk.jsp.

Annex 10: Mechanisms for ensuring national traceability of eels in *A. anguilla* range states.

Party	Mechanisms for ensuring national traceability of eels
Algeria	• The capture of glass eels and eels for farming is subject to an authorisation issued by the fisheries administration, in accordance with the provisions of *Executive Decree No. 04-188 of 7 July 2004* setting out the modalities of capture, transport, marketing and introduction into the aquatic environments of spawners, larvae, fry and spats, as well as the methods of capture, transport, storage, import and marketing of fishery and aquaculture products that have not reached the minimum regulatory size for breeding, cultivation or scientific research. • Export authorizations of the European eel are subject to an approval derogation issued by the competent veterinary services as well as a certificate of origin, required by the Customs Administration. • A sanitary certificate is issued after a sanitary control in accordance with the provisions of *Executive Decree No. 95-363* setting out the modalities for veterinary inspection of live animals and animal or animal products intended for consumption, the provisions of *Executive Decree No. 04-82 of 18 March 2004* setting out the conditions and procedures for sanitary accreditation of the infrastructures whose activity is linked to animals, animal products and animal origin as well as their transport, and finally, the provisions of *Executive Decree No. 04-189 of 7 July 2004* setting out hygiene and safety measures for fish and aquaculture products.
France	• Fishermen declare their catches and landings. A transport document accompanies the catches between landing and first sale. First buyers declare their sales notes. Labelling of products is compulsory and allows their origin to be traced.
Morocco	The traceability procedure introduced in 2012 enables eel harvest and trade to be accurately tracked. An on-site agent produces a 'transport permit' including weight and location of catch. In Morocco, two companies, which have permits for farming eels from the Department of Water and Forestry, pay glass eel fishers directly, so that there are no buyers and consolidators, and supply chains are short. Currently, a digitalization project for the traceability system is underway, which is expected to be completed in 2021. • Analysis of the eel production chain identified certain critical phases in the development of a traceability system. These include: ▪ Fishing the glass eel/eel at the river ; ▪ Accumulating catches at a collection point; ▪ Transporting catches to rearing sites (selling permit issued by the forestry officer); ▪ Quarantine of wild fish at rearing sites; ▪ Grow-out of and packaging of the eels (product accounting register); ▪ Restocking operations required by the leaseholder (restocking sheet); • Marketing of aquaculture products (Certificate of origin drawn up by the Provincial Directorate of Waters and Forests).

Spain	• Eel markets/auctions report sales in every Community to the General Secretariat of Fisheries through TRAZAPES (national traceability programme for fisheries products, under *Regulation (EC) 1224/2009*).
Sweden	• In January 2019, Sweden implemented a central digital traceability system for fisheries control purposes in order to comply with Article 58 of *Regulation (EG) No 1224/2009* (Fisheries control regulation). The system is managed by SwAM. Operators in the supply chain from first buyers to retail suppliers (pure retailers excluded) must be registered and share traceability information with business partners through the digital system and standardised physical labelling of lots. Fishers and fish farmers must present traceability information to the first buyer in order to connect the chain to the catch and harvest events, and the retail suppliers must present traceability information to operators at retail stage (any method). Lots are formed at first sale (at the latest) and given a unique identity. The lots are followed in detail along the supply chain when sold, split, merged, terminated and bought. • The fisheries control traceability requirements exclude imported products from outside the EU, inland water products (caught and farmed) and products not covered by Chapter 03 or Chapter 12 of the Combined Nomenclature. However, the traceability provisions according to food legislation still cover such exempted products.
Tunisia	• The CITES Management Authority of Tunisia (General Directorate of Forestry; DGF issues export permits only if export applications are accompanied by original production sheets signed by agents of the competent authority whose role is to verify the veracity of the information mentioned and to check the size of the eels caught, which must comply with the size set by the regulations in force.
UK	• England – mechanisms provided by the Eels (England & Wales) Regulations 2009

Annex 11: Guidance for the Development of More Detailed National/Regional Customs Codes for Live *Anguilla* Eel in American Eel Range States

Globally, there are several six-digit Harmonized Systems (HS) Customs codes designated specifically for reporting trade in *Anguilla* eels:

- **Live eels (*Anguilla* spp.) (HS 0301.92)**;
- Fresh or chilled eels (*Anguilla* spp.) (HS 0302.74);
- Frozen eels (*Anguilla* spp.) (HS 0303.26); and
- Prepared/ or preserved eels (HS 1604.17)[32].

These codes do not differentiate between the various life stages or species. **Some countries/territories have more detailed national Customs codes for live eels, which enables users to differentiate between live eel fry** (juveniles such as glass eels and elvers used for farming) **and other larger live eels** (for consumption). This **enables more accurate monitoring and analysis of trade**, including the identification of changing trade dynamics and the demand for different *Anguilla* species for farming.

Countries are generally able to modify their national Customs codes more regularly and easily (as part of yearly updates) than is possible under the HS system. National Customs codes include additional numbers (in addition to the 6 digit HS code) and can be made up of 8, 9, 10, 11 or 12 digit codes, which can be used to record more detailed commodities in trade.

American Eel (*Anguilla rostrata*) is increasingly in demand for farming in East Asia and elsewhere and **it has been recommended at this workshop that all American Eel Range States modify their national Customs codes for live *Anguilla* eel to differentiate between live eel fry and other live eel.** More detailed codes are already being used by members of the Central American Customs Union[33], and it is recommended that the code numbers already in use, together with equivalent descriptions, be applied across the region for consistency. In addition, it is recommended that "*Anguilla* spp." be referred to in the description of these more detailed codes, in case the higher level titles are not published or searchable in national systems (currently the case in a number of the Central American countries).

The recommended format and descriptions in English, Spanish and French for the two more detailed live *Anguilla* eel Customs codes are outlined in the table below. For countries using more than 8 digits in their national systems, it is recommended they follow the system below, adding additional zeros ("0"). Where possible, it is recommended that countries use existing Customs agreements/arrangements to make these changes regionally, such as through the Central American Customs Union and the Caribbean Community[34], further ensuring harmonization across the region and the inclusion of all *A. rostrata* Range States, even if at present these are not involved in live *Anguilla* trade.

Finally, there have been reported cases of *Anguilla* Customs codes being used incorrectly to **report trade in other eel-like species (non-*Anguilla*)** in the Americas, such as for Red Pike Conger (*Cynoponticus coniceps),* Marbled Swamp Eel (*Synbranchus marmoratus*[35]) and Snake Eel (*Ophichthus remiger*). The HS

[32] HS Nomenclature 2017 edition: http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools/hs-nomenclature-2017-edition/hs-nomenclature-2017-edition.aspx

[33] https://www.centralamericadata.com/en/search?q1=content_en_le:%22Central+American+Customs+Union%22

[34] https://www.caricom.org/

[35] http://museohn.unmsm.edu.pe/docs/pub_ictio/235.pdf, http://www.trinidadexpress.com/commentaries/Of_zangies_and_eels-115384264.html

code that should be used to report trade in live specimens of these species (or, if available, a more detailed national code based on this) is: **0301.99 ("Other" Live fish).**

6-digit HS codes and suggested more detailed codes for national Customs systems for live *Anguilla* eels, in English, Spanish and French

English	**Code**	**Description**
	0301.92	Live eels (*Anguilla* spp.)
	0301.92.10	Live eel fry for farming (*Anguilla* spp.)
	0301.92.90	Live eels, other than fry (*Anguilla* spp.)
Español	**Codigo**	**Designación**
	0301.92	Anguilas vivas *(Anguilla* spp.)
	0301.92.10	Angulas/larvas para cría industrial (*Anguilla* spp.)
	0301.92.90	Otras anguilas (*Anguilla* spp.)
Français	**Code**	**Désignation**
	0301.92	Anguilles vivants *(Anguilla* spp.)
	0301.92.10	Civelles pour fermes d'engraissement (*Anguilla* spp.)
	0301.92.90	Autres anguilles (*Anguilla* spp.)

Note: If national Customs systems use more than 8 digits, add additional zeros to the above 8-digit format.