

**Royal Botanic Gardens Kew, London, UK
18-20 April 2018**

International technical workshop on eels (*Anguilla* spp.)

Workshop Report



May 2018

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Executive Summary

On 18-20 March 2017, more than 45 experts from over 15 countries met in the beautiful and sunny surroundings of Kew Gardens in London for an international workshop on the conservation, management, fisheries and trade in eels (*Anguilla* spp.). The meeting was convened by the CITES Secretariat and participants included eel range States, trading countries, the Food and Agriculture Organization of the United Nations (FAO), the Convention on Migratory Species (CMS), the IUCN Anguillid Eel Specialist Group, the ICES/GFCM/EIFAAC Working Group on Eel, eel farmers and other eel and fisheries experts.

The workshop was convened in fulfilment of paragraph d) of Decision 17.186 on eels (*Anguilla* spp.) and provided participants with an opportunity to discuss the challenges and lessons learnt from the implementation of the Appendix II listing of European eel (*Anguilla anguilla*), to share their knowledge and experience on managing and trading in other eel species, as well as to reflect on the impact that the listing and subsequent ban on trade in European eel may have had on other *Anguilla* species.

This report contains background information and sets out the objectives of the workshop. It summarizes the workshop discussions and outlines a set of recommendations and next steps that were identified by workshop participants.

This report will be presented for consideration at the 30th meeting of the Animals Committee (AC30, Geneva, July 2018) and the 70th meeting of the Standing Committee (SC70, Sochi, October 2018).

Section 1: Workshop Overview

1.1 Date and venue

The 3-day workshop was held at the Royal Botanic Gardens Kew, London (UK) from the 18th to the 20th of April 2018.

1.2 Organisers and acknowledgements

The workshop was convened by the CITES Secretariat and was made possible by financial support from the European Union as well as logistical and other support from the Royal Botanic Gardens Kew and the UN Environment-World Conservation Monitoring Centre (UNEP-WCMC).

1.3 Background

European eel (*Anguilla anguilla*) was listed on CITES Appendix II at the 14th meeting of the Conference of the Parties (CoP14, The Hague, 2007) and the listing officially came into force in March 2009. In December 2010, the European Union (EU), which represents a number of European eel range States, imposed a ban on all imports and exports of European eel to and from the EU on the grounds that it was not in a position to make a non-detriment finding (NDF). Trade in European eel from non-EU range States to non-EU countries continued legally after this action. Trade in a number of other species of anguillid eels also occurs, though this trade is not regulated by CITES.

At its 17th meeting (CoP17, Johannesburg, 2016), the Conference of the Parties adopted the interrelated Decisions 17.186 to 17.189 on Eels (*Anguilla* spp.) as follows:

Directed to the Secretariat

17.186 The Secretariat shall, subject to external funding:

- 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);
- c) make the reports from the studies above available to the 29th meeting of the Animals Committee (AC29) for their consideration; and
- d) organize, where appropriate, international technical workshops, inviting cooperation with and participation by the relevant range States, trading countries, the Food and Agriculture Organization of the United Nations (FAO), the IUCN Anguillid Eel Specialist Group, the ICES/GFCM/EIFAAC Working Group Eel, industry and other experts appointed by Parties as appropriate. Such workshops should in particular cover the topics identified by the reports described in subparagraphs a) and b) of this Decision and could focus on challenges specific to the various eel species, such as
 - i) in relation to European eel, the realization of and guidance available for non-detriment findings, as well as enforcement of the Appendix II listing including identification challenges; and
 - ii) in relation to the other eel species, to enable a better understanding of the effects of international trade, including trade in their various life stages, and possible measures to ensure sustainable trade in such species;
- e) make any workshop report available to the 30th meeting of the Animals Committee (AC30) for their consideration; and

- f) make available to the Standing Committee relevant information on illegal trade in European eels gathered from the study and the workshop report mentioned in paragraphs a) and e).

Directed to range States and Parties involved in trade in *Anguilla* spp.

- 17.187 Range States and Parties involved in trade in *Anguilla* species, in collaboration with the Secretariat and FAO, are encouraged to:
- a) promote international or regional cooperation on a species-by-species basis, including the convening of regional meetings to discuss how to fill the information gaps and ensure long-term sustainability in the face of increasing demand from international trade;
 - b) provide the Secretariat and their consultants with specific information needed for the purposes of completing Decision 17.186 a) and b) as well as the results of the regional meetings; and
 - c) participate, where appropriate, in the technical workshops and share expertise and knowledge on the priority topics identified [examples provided under in Decision 17.186 paragraph d)].

Directed to the Animals Committee

- 17.188 The Animals Committee shall:
- a) consider, at its 29th and 30th meetings, the reports produced under Decision 17.186, as well as the information submitted by European Eel range States and other eel range States pursuant to Decision 17.187, and any other relevant information on conservation of and trade in *Anguilla* species; and
 - b) provide recommendations to ensure the sustainable trade in *Anguilla* species, to Parties for consideration at the 18th meeting of the Conference of the Parties.

Directed to the Standing Committee

- 17.189 The Standing Committee shall consider information relating to illegal trade in European eel at its 69th and 70th meetings and adopt recommendations as appropriate.

1.4 Workshop objectives

The workshop was convened in fulfilment of paragraph d) of Decision 17.186 on eels (*Anguilla* spp.) and provided participants with an opportunity to discuss the challenges and lessons learnt from the implementation of the Appendix II listing of European eel (*Anguilla anguilla*), to share their knowledge and experience on managing and trading in other eel species, as well as to reflect on the impact that the listing and subsequent ban on trade in European eel has had on other *Anguilla* species. Participants also had an opportunity to review the preliminary findings of the studies referred to in paragraphs a) and b) of Decision 17.186. The final versions of these studies will be presented for consideration at the 30th meeting of the CITES Animals Committee (Geneva, July 2018).

1.5 Agenda

The workshop draft agenda is included in Appendix A.

1.6 Participants

A list of all workshop participants and the organisations they represent is included in Appendix B.

Section 2: Workshop structure and working group reports

2.1 Opening plenary session

The workshop opened with a welcome address from the CITES Secretariat and an introduction to Mr Vin Fleming (JNCC, UK Scientific Authority and Chair of Animals Committee intersessional working group on eels) who would act as the moderator for the workshop. Ms Karen Gaynor from the CITES Secretariat set the scene with an introductory presentation to explain and establish the objectives of the workshop. Participants then heard about other ongoing work and initiatives on European eel from the European Commission (DG Maré) and the Convention on Migratory Species (CMS). Ms. Katarzyna Janiak informed participants that the European Commission has developed a roadmap for a formal re-evaluation of the eel Regulation (1100/2007) that it was planned to complete in the first quarter of 2019. The EU was also working closely with Tunisia and plan put forward recommendations under GFCM on the development of a management plan for eel and also liaising with Russia on the Baltic Sea (Joint Baltic Sea Fisheries Committee). Ms Melanie Virtue outlined the role of CMS, explained the links to the work of CITES, outlined the actions that have been taken on European eel within CMS and announced that the second meeting of European eel range States would take place in Malmo, Sweden (15-16 May 2018).

Participants were then presented with a progress report from Dr Matthew Gollock of the Zoological Society of London (ZSL) representing the consultants that are conducting the study on European eel referred to in Decision 17.186 a) (referred to as Study 1). Participants had an opportunity to provide initial feedback and suggest any additional topics they would like to see included in the mandate of the working group on the implementation of the current listing of European eel on CITES Appendix II that would be established at the workshop.

Following the break participants were treated to presentations from Ms Katalin Kecse-Nagy (TRAFFIC) on the preliminary results on the study on illegal trade section of Study 1 followed by Mr José-Antonio Alfaro-Moreno (EUROPOL) who outlined the role of EUROPOL in tackling environmental crime and the challenges faced. This presentation was nicely complemented by a presentation from Mr Guy Clarke (UK Border Force) who provided the perspective of the enforcement officers in the field when dealing with CITES, with a focus on glass eel trafficking. Operation Lake was highlighted as an example of the sort of successes that can be achieved when countries coordinate their efforts and work together. These presentations were followed by an open discussion and an opportunity for participants to develop the mandate of the working group that would be formed to look at illegal trade and enforcement.

After lunch the focus switched to non-CITES listed species with interesting presentations from Mr Somboon Siriraksophon (SEAFDEC) who provided participants with a description and progress report of SEAFDEC's ongoing study on tropical Anguillid eels in SE Asia, Mr. Nelson Garcia Marcano (Dominican Republic) who gave an update on outcome of the recent workshop on American eel held in the Dominican Republic as well as the Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea, which the Dominican Republic had just signed up to. Finally, Mr Hirohide Matsushima from the Japanese fisheries

agency gave a presentation on Japanese eel (*Anguilla japonica*), highlighting the strong regional cooperation that occurs and the various management measures that have been put in place to ensure that the fisheries is sustainable (including the establishment of quotas, fishing restrictions, habitat protection and promoting research activity).

These speakers set the scene for the presentation of the preliminary results of the study on non-CITES listed *Anguilla* species called for in Decision 17.186 b) which was again delivered by Dr Matthew Gollock. Participants had an opportunity to give initial feedback and develop the mandate of the working group that would be formed to work on the sustainable management of other *Anguilla* species.

2.2 Working group discussions

Three working groups were formed to consider (1) the implementation of the current listing of European eel (*Anguilla anguilla*) on CITES Appendix II (2) illegal trade in *A. anguilla* and (3) the conservation and sustainable management of non-CITES listed *Anguilla* species.

2.2.1 WORKING GROUP 1 - implementation of the current listing of European eel (*Anguilla anguilla*) on CITES Appendix II



2.2.1.1 Participants

Vin Fleming	Head JNCC (UK SA) – Chair
Antonio Galiliea	Spanish CITES MA
Yazuki Yokouchi	Research Centre for Fisheries Management, National research Institute of Fisheries Science, Japan Fisheries Research and Education Agency
Jeremie Souben	French National Committees on Fisheries (CNPMEM/ CONAPPED)
Katarzyna Janiak	DG Mare (European Commission)
Dagmar Zikova	DG Environment (European Commission), role coordinating EU SAs
Vuong Tien Manh	Viet Nam CITES MA
Wen Zhanqiang	Chinese CITES MA
Zheng Si	China Eel Association
Kris Blake	UK MA
Matthew Gollock	ZSL, Chair IUCN Anguillid Eel Specialist Group

Alan Walker	CEFAS, UK fisheries agency, Chair of Working Group on the Eel
Kim Friedman	FAO
Melanie Virtue	CMS
Claire McLardy	UNEP-WCMC
Will Chadwick	UNEP-WCMC
Karen Gaynor	CITES Secretariat

2.2.1.2 Mandate

The working group were asked to consider and, as appropriate, make recommendations on the following issues:

- a) challenges and lessons learned from the listing of European eel in Appendix II – including relevant lessons learned from the listing of other species;
- b) the effectiveness and impact of the listing – and how effectiveness can be measured recognising the impacts of other pressures – and any impacts of related measures (notably the EU trade ban) undertaken;
- c) reporting (for CITES and Customs) and how this can be improved, standardised and harmonised (codes and terms and definitions);
- d) non-detriment findings – what are the challenges in undertaking NDF assessments; at what scale should NDFs be undertaken - at entire stock level or at smaller scales; what are key knowledge gaps; how do you take illegal take or trade into account when making an NDF; consider the draft NDF from Norway and provide initial feedback;
- e) national, regional and international cooperation – what is needed?

2.2.1.3 Discussions

The group began by addressing how **reporting** might be improved.

As a generic point, the group felt it was important to encourage more accurate and timely reporting of eel specimens in trade but recognised that this is a generic issue across CITES.

More specifically, it was considered essential to be able to distinguish between live glass eels/elvers and other live eels, if we are to be able to understand fully eel trade dynamics. Currently two different specimen codes can be used for eel: FIG (which is generally reported in kgs) and LIV (which is more commonly used and is generally reported in number). The group felt that making this distinction between glass and other live eels in trade could be achieved by amending the descriptions for specimen codes in the CITES [Guidelines for the Preparation and Submission of CITES Annual Reports](#) (January 2017) to make it clear that glass eels will be recorded as FIG. To achieve this, the group recommended the following amendments (new text in **bold**, deleted text in ~~strike through~~).

- i. **Amend description for FIG** (fingerlings) to read:
'~~live juvenile fish of one or two years of age for the aquarium trade, aquaculture, hatcheries, consumption or for release operations, including live eels (Anguilla spp.) <12cm~~'. The group noted that this size limit works for *A. Anguilla* but might need re-consideration if other *Anguilla* spp. were listed in future.
- ii. **Amend definition for LIV** (live specimens) to read:
'live animals and plants, **excluding live fingerling fish – see FIG**'

- iii. Both specimen types were better reported in kilos (kg) rather than in numbers

The group also discussed the use of the specimen codes BOD (bodies) & MEA (meat) because trade in dead eels for human consumption was reported using both codes and there is an overlap in the definitions as both refer to processed fish. The description for BOD referred to the inclusion of processed fish and not just substantially whole dead bodies. In plenary, to the group recommended that the code for meat (MEA) should be used in preference for trade in eels for human consumption and that such trade should be reported in kilos (indeed reporting in kilos was more important than the code used). Amending the explanatory text was desirable to indicate that fillets of fish should be reported under MEA and the code for BOD could be amended to remove reference to processed fish, as follows:

- iv. BOD - *substantially whole dead animals, including ~~fresh or processed~~ **entire** fish, stuffed turtles, preserved butterflies, reptiles in alcohol, whole stuffed hunting trophies, etc*

Source codes were also considered, noting that all eels in trade are currently of wild origin, but that there are different types of production systems for the species. A range of source codes have also been used for eels in trade – some (such as C & F) incorrectly (because there is no captive breeding for eels outside some experimental approaches). All specimens in trade are ultimately of wild origin but the production system used in eel aquaculture (raising glass eels in controlled environments until marketable size) is similar to the definition of the term “ranching” in CITES, namely: *specimens of animals reared in a controlled environment, taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood.*

The group concluded there was scope to use source code R (ranching) to help distinguish specimens derived from aquaculture from those derived from direct wild capture (taking glass eels was a potentially less detrimental form of harvest – see later). However, there was no recommendation on this issue and the group felt it was better to **refer this issue to AC for their consideration** – some guidance might be desirable. FAO noted the term ‘*capture-based aquaculture*’ was used in fisheries to describe the same approach for a range of other species, e.g. humphead wrasse, blue fin tuna, etc.

On customs codes, the group thought it would be ideal to have a single Customs code for European eel harmonised across countries. However, they accepted that this was an unrealistic aspiration and it may be more pragmatic to aim for a single Customs code across the species’ range, Europe or, more likely, the EU. One option might be to have separate codes for ‘CITES-listed’ specimens and ‘non-CITES listed’ which would give flexibility if any other *Anguilla* species were listed. China noted they use separate species-specific codes for species which are protected (nationally or by CITES). A guidance document for harmonisation of Custom codes for American eel (*A. rostrata*) in trade was also being prepared following the workshop on American eel held in the Dominican Republic on 4-6 April 2018.

Concerning **challenges, effectiveness and lessons learned** the group felt it was helpful to have a framework to assess effectiveness of listings – to understand where we are now, where we want to get to and how do we go about getting there. Lessons could usefully be learned from other listings and analysis of their effectiveness such as a recent example on sharks¹.

¹ Friedman, K. et al. 2018. Examining the impact of CITES listing of sharks and rays in Southeast Asian fisheries. Fish and Fisheries, 1-15.

The CITES three pillars of '*sustainable / legal / traceable*' trade might be useful to frame assessments of the effectiveness of the CITES listing of European eel but it is difficult to assess "effectiveness" when it is not clear what the best metrics to use are – and the listing has only been in place for a relatively short period and the mean generation time for European eel is estimated to be 15 years. It is also difficult to distinguish the effects of the listing from the effects of the EU trade ban – the latter probably having had a greater impact (but one potentially being dependent on the other). However, some positive and negative impacts could be identified under each of the three pillars to see how far along the road we have progressed.

On the positive side, the CITES listing (in combination with a range of other initiatives) has increased the awareness and profile of the European eel and brought a range of sectors together (including marine and freshwater fisheries managers) to work for its conservation, recovery and sustainable use. Political will has been mobilised and the species is a useful flagship species.

By contrast, the listing (and EU trade ban) has also pushed trade onto other less well species, some less well understood, and pushed the trade underground with a corresponding increase in illegal trade. There have also been impacts on legitimate fishermen and traders (who face financial losses and feel physically threatened by poachers) and the purchase of glass eels for re-stocking has been priced out of the market. The listing has shifted the focus onto harvest and subsequent trade as a driver of eel decline, but there are other wider considerations (barriers to migration etc) that the listing cannot address. It was noted that three of the non-EU Range States that are still exporting are now in the Review of Significant Trade process (RST) to be considered at the 30th Animals Committee in July 2018. In this respect, it was noted that since the selection of those three range States for the RST, exports of European eel from Turkey had increased significantly and the Animals Committee may want to look at these levels of trade.

The group reflected that listing a species is not an achievement in its own right – implementation is critical. In the case of European eel, there had been an opportunity to use the delay period before the listing came into force more constructively and put more measures in place in advance. Delayed listings (the 18 month preparation period) could be used more constructively in future to drive change in support for management and (legal) trade practices, as follows:

- to identify the key preparatory tasks - as well-defined steps - needed for successful implementation when the listing comes into force;
- to identify key funding needs for each of the steps to deal with implementation, especially for developing countries;
- to encourage donors to extend their interest beyond support for listing species, to assist countries in dealing with CITES provisions so legal, sustainable and traceable trade can be conducted

The listing of European eel had resulted in a growth in illegal fishing and trade but it was not clear there has been any change in the overall harvest, i.e. if the size of the current (legal and illegal) catch had changed since before the listing. A trade ban alone cannot address illegal trade - demand needs to be addressed also. While much of the focus has been on range States, the listing has created enforcement and compliance challenges for destination countries, who noted significant challenges. For example, species such as European eel are not recognised as a priority relative to issues like ivory or rhino horn and dealing with confiscated specimens was also challenging. Traceability is a further difficulty. However, the Chinese CITES MA have undertaken a study on the traceability of European eel passing between with China and HK, and concluded that it is possible.

Concerning **Non-detriment findings (NDF)** the group discussed how the species raised significant challenges in undertaking assessments of non-detriment. Key amongst these are the single panmictic population – its conservation therefore needs collaboration between range States because actions in one country potentially affect others.

Positive elements are that the EU coordinates 28 Member States and has a unified approach to the recovery of European eels; ICES is also a vital resource in drawing together data across the range of the species even if the data are currently biased towards NW Europe. No equivalent body exists for other species.

The group discussed the need for different approaches when making NDFs for harvests of different life stages (harvesting glass eels versus wild harvests targeting later life stages). The group also considered the scale at which NDFs are made and whether these had to be made at single stock level or whether these could be done at single country level. In particular, the group considered whether a catchment by catchment approach might work using age-structured modelling to identify when management intervention was needed (and trade could or could not be permitted). Further consideration of these issues is needed.

In undertaking NDFs, the group noted the need to factor in illegal take (and other forms of mortality) into NDF assessments – it was suggested that a similar approach to that taken for other fisheries could be used (with an example provided from salmon fisheries, where a multiplier is added to legal harvest to account for illegal trade). Some countries noted significant levels of illegal take that might significantly exceed legal and declared harvests².

The group considered the draft NDF submitted by Norway. A range of queries were identified which largely focused on insufficient detail being provided as to the rationale for a range of figures or trends provided. These comments will be forwarded to Norway for their consideration.

The group noted that some good examples of **international cooperation** on European eel already exist, such as enforcement operations through Operation Lake.

Recent workshops (on American eel, for example) also recognised the need for international cooperation to manage shared stocks. There is a need to consider what form this cooperation could take. There is scope for something equivalent to an IPOA (International Plan of Action), such as those coordinated by FAO for sharks and seabirds etc, or a body acting in a way similar to an RFMO (Regional Fisheries Management Organisation) for a shared stock. Such a plan could be coordinated under the auspices of a range of bodies, individually or in collaboration – such as FAO / CITES / CMS / SSC (Sargasso Sea Commission). The group noted that CMS will be hosting a 2nd Meeting of Range States for European Eels in Malmo, Sweden in May 2018 when these issues might be discussed further.

However, any such mechanism or plan should involve all stakeholders – including those outside range States (i.e. destination countries) and market interests. The mechanism could help to improve information exchange between countries & sectors – such as on enforcement (need to disrupt crime networks) and sharing scientific techniques to get greater comparability of approaches (e.g. recruitment indices) – including on non-CITES listed species.

² Briand, C., Bonhommeau, S., Castelnaud, G. and Beaulaton, L. 2008. An appraisal of historical glass eel fisheries and markets: landings, trade routes and future prospect for management. In: Moriarty C. (ed.), The Institute of Fisheries Management Annual Conference 2007. Wespport, Ireland. 49.

The group recognised it would be useful to exchange information between exporting and importing countries (through a hub – for example FAO or UNEP-WCMC?) regarding aquaculture demand and likely exports – to match the two and so ‘squeeze’ the space for illegal trade. China noted they were considering setting quotas to limit imports; and they were also introducing policies to reduce aquaculture over-capacity and improving quality of the product and so potentially reducing demand.

The group closed with the Chair thanking the participants for their help.

2.2.2 WORKING GROUP 2 – Illegal Trade in *A. anguilla*



2.2.2.1 Participants

Guy Clarke	UK Border Force (Chair)
Kate Finney	UK Border Force
Ian Guildford	NWCU
Antonio Galiliea	CITES MA Spain
Fernando Garcia Sanchez	Guardia Civil SEPRONA
Solenn Burguin	Direction Des Peches Maritimes et de L'Aquaculture
Marine Jaspers	Direction Des Peches Maritimes et de L'Aquaculture
Andrew Kerr	Sustainable Eel Group
Katalin Kecse-Nagy	TRAFFIC
Karen Gaynor	CITES Secretariat

2.2.2.2 Mandate

The working group was asked to consider and, as appropriate, make recommendations on the following issues (in no particular order):

- a) Enforcement cooperation
- b) Information and intelligence sharing (shifting patterns/routes/modus operandi)
- c) Species identification challenges

- d) Enforcement effort
- e) Lessons learnt from enforcement operations
- f) Implications for implementation and other species
- g) Reporting of illegal trade (recall the new CITES reporting requirement)
- h) Disposal/storage of seized live specimens (look at Res. on existing guidance, rapid response needed)
- i) Estimating scale of illegal trade (take ES example of estimation)
- j) Illegal trade derives from illegal catch – how to consider this (will need to take this into WG1 later on)
- k) Community involvement and stakeholder awareness (how can communities contribute to recovery and improve effectiveness of the listing) awareness – behaviour change to increase compliance – to feed into WG 1 and 3 discussions later

2.2.2.3 Discussions

Initial contributions focussed on the current situation concerning the visible trade in *Anguilla anguilla*, identifying what is believed to be the quota figures, consumption figures and restocking figures for a number of the EU range States.

Further anecdotal evidence was provided on the issues with the North African countries with recent arrests being made for smuggling live specimens.

The group then discussed how best to quantify the illegal trade in European eel. Discussions centred on identifying the actual amount of *Anguilla anguilla* being illegally traded in Europe, which is believed to be around 20 - 30 tonnes annually. However, the recent report from Europol suggested some 100 tonnes of *Anguilla anguilla* could be being illegally traded by EU MS over one year. Questions were raised about how reliable this data was and the accuracy of the figures.

A method of extrapolating data from seized documents and computer records was suggested as a way of determining the quantities of live specimens previously smuggled by one organised criminal gang (OCG). This sort of historical information coupled with the net weight of the live specimens seized during the successful operation was critical in informing the debate on the quantities of live specimens being smuggled. This discussion point was reflected in the recommendations.

Following this, the issue of reliable catch data was highlighted with good examples being identified of almost real time catch data (within 24 hours) (Telecapeche 1 with Telecapeche 2 currently under development) to examples of catch data being provided after the fishing season is over. It was noted that the Telecapeche system was only used as an indicator by authorities and was not an “official” recording system. It was felt that this disparity in recording standards should be addressed, although lively discussion on the use of “real time” meant it was omitted from the final recommendation.

It was felt that the use of computerised data could be extended from the catch data and used throughout the supply chain allowing those actors further down the chain to use the data for due diligence identifying legality and traceability of stock.

The group then focused on **enforcement matters** and began by noting that the current EU eel legislation 1100/2007 is now some 10 years old and will be subject to a review. It was felt that there was an opportunity for enforcement authorities to feed into the roadmap developed by the EU in order to make Article 12 “Control and enforcement concerning imports and exports of eel” of the EU Regulation more robust.

Evidence was provided by Spain of a change in “Modus operandi” by eel smugglers who are now using 6 x 2 kg bags in each suitcase rather than 12 x 1kg bags probably to increase the chances of survival, with larger bags having a greater capacity for oxygen.

It was noted that Chinese OCG’s are now providing suitcases for couriers which all appear to be one brand but in different colours, which is an important piece of intelligence to be captured and disseminated.

Intelligence on seizures from enforcement authorities in destination countries is currently not being disseminated to countries of origin, which is creating an intelligence “gap”. To address this, it was suggested that seizure intelligence could be disseminated by all Parties to a central hub.

No consideration has to-date been given to the possibility of arranging controlled deliveries of eel to identify “king-pins” in destination countries, in a similar way as is being done for ivory.

Discussions on **recording of seizures** caused lengthy debate, with the conclusion reached that it would be possible to use FIG (Fingerlings) & LIV (Live) CITES reporting codes and the “net weight” should be reported in kilogrammes. This was a compromise solution as representations were made about the different life stages of the eel and more accurate reporting of seizure figures could better inform the illegal trade debate and contribute to the scientific evidence. There was however general agreement that for recording of dead specimens as BOD (Bodies) or MEA (Meat), it would be preferable to record weight in kilogrammes. Additional text should be provided in CITES reporting code to explain that fillets be recorded as meat not bodies, with the rationale that more than one fillet can be obtained from a body, which could lead to inaccurate data.

Forensic testing was identified as an important issue and the working group recommended that all seizures of *Anguilla anguilla* should be DNA tested to confirm the species and furthermore highlighted the importance of testing being done to a level that is admissible in court. The discussion then widened to include testing of seized specimens to determine geographical origin, noting that stable isotope testing is regularly used to determine geographical origin of other heavily persecuted CITES species. Information was also provided on the potential use of chemical imprinting to determine the origin of specimens (e.g. to river basin level). The need to develop a rapid DNA test that would be usable in court was discussed in the context of the challenges of dealing with a high value perishable item like eel.

Concerns were raised over **restocking** figures in the EU during 2016 and 2017. It was noted that the target figure was 60% of catch to be used for restocking, though some figures indicate that the rate could be approximately 21%. No intelligence is available concerning the missing 39%. The group noted that Article 7 of the EU Eel Regulation (Regulation No. 1100/2007) reserves 60% of the glass eel catch for restocking. In France (which accounts for 70% of the EU glass eel catches), 60% of the annual glass eel quota is reserved for

restocking and 40% for consumption. Each year, a small part of the quota allocated for restocking is not consumed, which explains the difference between the quota reserved for restocking and the effective catches used for restocking. In 2016-2017, for instance, in France, the glass eel catches reserved for restocking amounted to around 50% of the total catches. Spain indicated that they have used seized specimens to contribute to restocking figures when the UK returned its seized specimens to Spain for release. The group discussed the need for a review of restocking procedures in the EU with follow up enforcement action as a possibility, although this was treated with some scepticism.

Positive examples of **community engagement** were presented, including engagement with local schools in a river system area, resulting in eels being released upstream, which also provided an opportunity to raise other environmental concerns, including water pollution and plastics in marine/ river environment. Additional examples of fishing communities, scientists and trade associations working together on community related projects were presented.

The group closed with the Chair thanking the participants for their help.

2.2.3 WORKING GROUP 3 - the conservation and sustainable management of non-CITES listed *Anguilla* species.



2.2.3.1 Participants

Eric Feunteun	Museum National D'Histoire Naturelle France (MNHN) - CHAIR
Nelson Garcia Marcano	Ministry of Environment & Natural Resources (Dominican Republic)
Hagi Yulia Sugeha	Research centre for Oceanography, Indonesian Institute of Sciences (LIPI)
Vuong Tien Manh	Vietnam CITES Management Authority
Yusri Bin Yusof	Department of Fisheries Malaysia
Kim Friedman	Food and Agriculture Organisation (FAO)
Dr Truong Nguyen Quang	Vietnam CITES Scientific Authority- Inst of Ecology & Biological Resources
Ni Komang Suryati	Inland Fishery Resources Development & Management Department
Hirohide Matsushima	Ecosystem Conservation Office, Fisheries Agency

Kazuki Yokouchi	Research Centre for Fisheries Management, National research Institute of Fisheries Science, Japan Fisheries Research and Education Agency
Kazuo Uchida	National Federation of Inlandwater Fisheries Cooperatives
Nobuaki Omori	Eel Farmer (Japan)
Masataka Mizuno	Eel Farmer (Japan)
Somboon Siriraksophon	Southeast Asian Fisheries Development Centre
Isao Koya	Southeast Asian Fisheries Development Center (SEAFDEC)
Jeremie Souben	CNPMEM/ French National Committee of inland professional fishers (CONAPPED)
Naohisa Kanda	Japan NUS co Ltd (SEAFDEC)
Hiroshi Shiraishi	TRAFFIC
Karen Gaynor	CITES Secretariat

2.2.3.2 Mandate

The working group was asked to consider, and as appropriate, make recommendations on the following issues (in no particular order):

- Ways to improve CITES & Customs reporting
- Identification of knowledge & data gaps to help determine if trade in non-CITES listed *Anguilla* species is sustainable
- Potential impacts of listing European eel (*Anguilla anguilla*) on non-CITES species
- International co-operation

2.2.3.3 Discussions

The working group began by looking at ways to improve CITES and customs reporting by addressing labelling/codes, traceability, co-operation between countries and emergency procedures in the event of a confiscation.

Considering labelling / codes it was recognised that species identification needs to be based on morphological keys & DNA (barcode). For adult eels there is a need to develop identification keys to assist customs, while DNA barcoding is currently the only way to identify glass eels and this is an expensive and not very rapid procedure.

It was reported that definition and understanding of size of live eel fry (glass eel, elvers) differs between countries and/or species; participants noted that glass eels of tropical eels could be much smaller than 12cm, which is the definition of glass eels used in the EU). In East/Southeast Asian countries use weight per eel to regulate/report trade in eels (including glass eels) rather than length but it varies. In addition, thresholds for different life stages can differ between countries. For example, the threshold (minimum size limit to legal eel export) is 15cms in the Philippines and 150g in Indonesia. There is a need for harmonisation across range States. It is also important that Parties record and report whether the shipment is for live or dead specimens. Harmonisation of recording will help countries monitor the trade more effectively.

The need to develop a system of traceability was discussed including the use of (a) scientific markers (such as DNA barcoding, otolith chemistry or isotope studies, noting that further research is needed in this area), (b) administrative documents / catch documentation (including considering licensing of fishermen, farms, buyers and/or vendors; developing networks and connectivity of stakeholders, recording dates of capture & trade; and the need for the development of a robust reporting system, and (c) co-operation between countries at regional and/or international levels as appropriate. In summary, the group concluded that there was a need for more harmonisation & standardisation of coding, definitions of life stages and traceability. The group also discussed what emergency procedures are needed in the case of a confiscation. More guidance is needed on how to hold and care for the eels until the necessary expertise has been found and the species has been identified, and then how to decide the fate of the eels.

In summarising, the group highlighted that the following would be beneficial towards improving reporting on the trade:

- consider regional differences in terms of priorities of customs and find ways to increase the priority given to the eel trade
- Change custom codes.
- Mention the catch seasons per species/stage/country
- Improve the licensing system to control and trace trade
- Improve communication and cooperation between each country's institutions to improve survival of eels that are under control by the customs. There is a need to produce well defined protocols and methods to achieve this goal.

The group then discussed what knowledge and data gaps there are in terms of what is needed to determine whether trade in Anguillid eels is sustainable (noting that it may not be possible to gather all of the information suggested below). The group considered three sub-items (1) Research/surveys on biology and management ecology, (2) Data on mortality and survival, and (3) Management (including development of management plans).

When considering what sort of information research/surveys on eel biology and ecology could include, the following elements were identified by the group:

- Stock assessment: understand the status and trends of the stocks (declining, stable, increasing)
- Population Dynamics: from glass eel to adult stage (to determine what level of offtake might be considered sustainable)
- Spawning ecology (silver eel runs, spawning migration and spawning areas, which could be in international waters)
- Aquaculture input and production data (would require collaboration with eel farmers)
- Developing aquaculture from artificial breeding
- Assessment of the availability, harmonisation & quality of data per country or territory
- Social / economy science: considering the costs and benefits of restricting trade and fisheries/aquaculture for the sustainable use of eels.

In trying to put fishing mortalities in the context of other known threats to eel species, the collection of data on eel mortality and survival rates on the following could be useful:

- Fishing mortality (Direct and Bycatch, legal and illegal)
- Habitat extent, accessibility, suitability, carrying capacity, water quality, etc.
- Dams, hydropower and non-hydropower dams (irrigation, drinking water supply)
- Eutrophication
- Deforestation, mining
- Contamination (including pesticides, heavy metals, microplastics)
- Diseases & parasites
- Predation by non-native species (and possibly native species)

Finally, managing eels and developing robust management plans for eel species could also include the following:

- Considering essential ecological habitat protection, including spawning areas whether inside national waters or in international areas
- Analyse effects of fishery restriction/ban on stocks (detrimental effect?)
- Restocking effects? Effectiveness at what scales, in what rivers? How does this contribute to the spawning stock?
- Social science (what are positive effects of fishermen / fish farmers on the sustainability of eels?)
- Investigate ways to involve all stakeholders (including fishermen, traders, fish farmers, river developers, scientists, ...) in the development and implementation of management plans.

When considering the impact of the listing of European eel on CITES Appendix II on the trade and stocks of other eels, the following points were raised by participants:

- Increased imports of diversified eel species into Northeast Asia for farming is more a consequence of the decline of Japanese eel than of the CITES listing of European eel or the subsequent trade ban imposed by the EU.
- In Southeast Asia (Indonesia and Philippines) demand and export of tropical species increased in 2012 and 2013. However, demand for tropical eels decreased eventually as a consequence of international market preference, farming system in East Asia and a recovery in the recruitment of Japanese eels.
- Vietnam reported no impact or change in exports due to the CITES listing.
- Increasing demand was noted for glass eels *A. mossambica* from Madagascar.
- Trade in glass eels of *Anguilla rostrata* from the Caribbean area started increasing in 2010. The following tentative explanation was offered: *A. japonica* recruitment decreased, then demand for European eels increased, after the EU ban, exports of *A. rostrata* and *A. mossambica* were reported. It was noted that prior to this, traditional fishing & consumption of eels in the Dominican Republic and Madagascar did not exist.

The participants identified the following examples of ongoing international co-operation initiatives:

1. Japanese eel (*A. japonica*) - in Northeast Asia (Japan, South Korea, China, Chinese Taipei)
2. South East Asia (Cambodia, Indonesia, Myanmar, Philippines, Vietnam and Thailand) for 11 species of eel
3. American eel (*Anguilla rostrata*) - USA & Canada, extending south (Caribbean islands and sea, gulf of Mexico)
4. European eel (*A. anguilla*) - ICES/EIFAC/ICES Working Group on eel (WGEEL), though some range States are missing, especially those from north Africa.

International co-operation was noted to be lacking in the following regions:

1. Indian Ocean, particularly the South-West Indian Ocean (SWIO), for *A. mossambica* and integration of the North Indian Ocean (including India)
2. Need to develop co-operation in the South East Pacific region (Fiji, Samoa, Salomon, Polynesia, New Caledonia, Vanuatu, etc.).

Finally, one initiative discussed was the possibility of promoting eel as an umbrella/ambassador species in the frame of global change. In plenary discussions, it was pointed out that in 2016 IUCN passed a Resolution recognising eel as a flagship species. Challenges were raised in plenary in managing eels as they cross the marine/freshwater boundary and so their management and regulation is covered by different bodies and agencies.

The group closed with the Chair thanking the participants for their help.

Section 3: Workshop Recommendations

The workshop concluded with the following set of recommendations, which have been subdivided under a number of headings (while noting that some are relevant to more than one heading).

Implementation of CITES listing of European eel (*A. anguilla*)

- 1) The description for FIG and the definition for LIV should be amended as follows (new text in **bold**, deleted text in ~~strikethrough~~).
 - i. **Amend description for FIG** (fingerlings) to read:
'**live juvenile fish of one or two years of age for the aquarium trade, aquaculture, hatcheries, consumption or for release operations, including live eels (*Anguilla spp.*) <12cm**'. The group noted that this size limit works for *A. anguilla* but might need re-consideration if other *Anguilla* spp. were listed in future.
 - ii. **Amend definition for LIV** (live specimens) to read:
'**live animals and plants, excluding live fingerling fish – see FIG**'
 - iii. Both specimen types would be better reported in kilos (kg) rather than in numbers.
- 2) The code for meat (MEA) should be used in preference for trade in eels for human consumption and that such trade should be reported in kilos (indeed reporting in kilos was more important than the code used).
- 3) Amending the explanatory text was desirable to indicate that fillets of fish should be reported under MEA and the code for BOD could be amended to remove reference to processed fish, as follows:
 - i. BOD - *substantially whole dead animals, including ~~fresh or processed~~ entire fish, stuffed turtles, preserved butterflies, reptiles in alcohol, whole stuffed hunting trophies, etc*
- 4) The potential use of source code R (ranching) to help distinguish specimens derived from aquaculture from direct wild capture (taking glass eels was a potentially less detrimental form of harvest) should be referred to the CITES Animals Committee for their consideration and guidance.
- 5) While it would be ideal to have a single Customs code for European eel harmonised across countries, this seems unrealistic. It may be more pragmatic to aim for a single Customs code across the species' range, Europe or, more likely, the EU. It was noted that one option might be to have separate codes for 'CITES-listed' specimens and 'non-CITES listed' which would give flexibility if any other *Anguilla* species were listed.
- 6) The Animals Committee should be asked to examine the increasing levels of trade in European eel from Turkey since the selection of three other range States for the Review of Significant Trade (RST).

- 7) Better use should be made of any delayed implementation periods for future listings, in order to drive change in support of management and (legal) trade practices, as follows:
- to identify the key preparatory tasks - as well-defined steps - needed to determine the length of the delayed implementation period and for successful implementation when the listing comes into force;
 - to identify key funding needs for each of the steps to deal with implementation, especially for developing countries;
 - to encourage donors to extend their interest beyond support for listing species, to assist countries in dealing with CITES provisions so legal, sustainable and traceable trade can be conducted

Enforcement

- 8) The working group noted the various systems being used throughout the range states to report catch levels and suggested that consideration should be given to encouraging the implementing of a robust and timely system of recording catch amounts and onward through the supply chain.
- 9) Consideration should be given to reviewing the intra EU movement of *Anguilla anguilla* for restocking and consumption.
- 10) The consultation process for the revaluation of EU regulation 1100/2007 consideration should be given to more detailed input into the Article's covering control & enforcement in order to encourage co-operation and sharing of information, including intra EU trade and import/export data between relevant enforcement authorities.
- 11) All Parties should be encouraged to report all seizures of *Anguilla anguilla* in a timely manner to the country of origin and/or export and include the data in their illegal trade reports.
- 12) Reporting of all live seizures should include the life stage i.e. fingerling, glass eels etc where possible.
- 13) Every seizure of *Anguilla anguilla* – live or dead – should be DNA tested at the point of seizure to an acceptable standard for use in prosecution.
- 14) Further research should be encouraged into the identification of geographical origin of all seized *Anguilla anguilla* specimens e.g. stable isotope or chemical fingerprinting.
- 15) Range States should assist enforcement authorities in destination countries by providing them with good identification material (e.g. species identification sheets) and guidance on dealing with confiscations.
- 16) Enforcement authorities in destination countries should be encouraged to disseminate all relevant data concerning seizures of *Anguilla anguilla*, to a central repository, detailing all relevant information including - but not exclusively- nominal, country of origin, flight details, concealment. (If by Air brand of suitcase used) etc.
- 17) Law enforcement agencies in destination countries should arrange regional meetings with a view to planning targeted operations e.g. Operation Lake or controlled deliveries focusing on *Anguilla anguilla*.

- 18) Co-operation between local communities, scientific institutions and eel traders should be encouraged.
- 19) Consideration should be given to including North African enforcement authorities in ongoing EU *Anguilla anguilla* meetings and/or anti-smuggling operations.

Sustainable use of non-CITES listed *Anguilla* species

The workshop noted that there was much overlap between the working groups and that there were many lessons learned from the experiences of managing European eel (*A. anguilla*) that could be useful in terms of managing other *Anguilla* species. In all cases, the aim is to ensure that fisheries management and trade is sustainable. Some recommendations specific to the sustainable use of *Anguilla* species other than *A. anguilla* can be found in the discussions in section 2.2.3.3. A number of recommendations that could assist destination countries to help European eel range States were also identified as follows:

- 19) There is a need to consider regional differences in terms of the priorities of customs and find ways to upgrade the priority given to the eel trade.
- 20) Customs codes should ideally be amended (though it is recognised that this would be very difficult to achieve)
- 21) Reporting should include species, life stage and country of origin (?).
- 22) The current licensing system should be improved to better control and trace trade.
- 23) Communication and cooperation between range states and importing countries and between agencies in each country needs to be encouraged in order to improve survival rates of eels that are under control by the customs following seizures. Well defined protocols and methods are required to achieve this goal.

Appendix A = Draft Agenda

International technical workshop on eels (*Anguilla* spp.) – Implementation of CITES

Decision 17.186

Organized by the CITES Secretariat

18 - 20 April 2018

Royal Botanic Gardens, Kew, London, United Kingdom of Great Britain and Northern Ireland (UK)

Draft agenda

Moderator: Vin Fleming, UK

Day 1: 18 April

8:30 - 9:00 Registration

9:00 – 11:00 Session 1 (2 hours)

- a) Welcome and introduction of participants
- b) Aims and objectives of the workshop (CITES Secretariat)
- c) On-going international initiatives on conservation and management of European eel
 - o European Commission
 - o CMS
- d) Progress report from Study 1 on European eel (ZSL).
Note: Draft report for Study 1 was circulated to participants in advance of the workshop.
- e) Open discussion on Study 1 (to help identify tasks for working group 1)

11:00 – 11:15 *Coffee Break*

11:15 – 12:45 Session 2 (1 hour 30 mins)

- a) Progress report from Study 1 on illegal trade in European eel (TRAFFIC).
- b) Tackling environmental crime and glass eel trafficking
– including presentations from Europol, UK Border Force and the Portuguese MA
- c) Open discussion on illegal trade in eel (to help identify tasks for working group 2)

12:45 – 13:45 Lunch

13:45 – 15:00 Session 3 (1 hour 45 mins)

- a) On-going international initiatives on other eel species
 - o Dominican Republic – *A. rostrata*
 - o SEAFDEC - Tropical anguillid species
 - o Japan
- b) Progress report from Study 2 on non-CITES listed anguillid species (ZSL/TRAFFIC)
- c) Open discussion on Study 2 (to help identify tasks for working group 3)

15:00 – 15:15 *Coffee break*

15:15 – 17:00 Session 4 (1 hour 45 mins)

a) Establishment of working groups.

There will be 3 working groups: 1) European eel – implementation and effectiveness of current listing, including NDF, 2) European eel – illegal trade, 3) non-CITES listed anguillid eels.

b) Working groups

Day 2: 19 April

9:00 – 11:00 Working groups

11:00 – 11:15 Coffee break

11:15 – 12:45 Working groups

12:45 – 13:45 Lunch

13:45 – 15:00 Working groups

15:00 – 15:15 Coffee Break

15:15 – 17:00 Working groups

Day 3: 20 April

9:00 – 11:00 Working group reports (plenary session)

11:00 – 11:15 Coffee break

11:15 – 12:45 Working groups (wrap up)

12:45 – 13:45 Lunch

13:45 – 15:00 Open discussion

15:00 – 15:15 Coffee break

15:15 – 16:30 Conclusions and recommendations from workshop

16:00 Close of meeting

Appendix B = List of participants

Name	Organisation
Alan Walker	Centre for Environment, Fisheries and Aquaculture (CEFAS) & Chair of ICES WGEEL
Andrew Kerr	Sustainable Eel Group (SEG)
Antonio Galiliea	CITES Management Authority Spain
Claire McLardy	UNEP-WCMC
Dagmar Zikova	European Commission (DG Environment)
Eric Feunteun	Museum National D'Histoire Naturelle France (MNHN)
Fernando Garcia Sanchez	Guardia Civil- SEPRONA
Florian Stein	Sustainable Eel Group (SEG)
Guy Clarke	Border Force UK
Hagi Yulia Sugeha	Research centre for Oceanography, Indonesian Institute of Sciences (LIPI)
Hirohide Matsushima	Ecosystem Conservation Office, Fisheries Agency
Hiromi Shiraishi	TRAFFIC
Ian Guildford	National Wildlife Crime Unit (UK)
Isao Koya	Southeast Asian Fisheries Development Center (SEAFDEC)
Jeremie Souben	CNPMEM/ French National Committee of inland professional fishers (CONAPPED)
Jose-Antonio Alfaro-Moreno	EUROPOL
Karen Gaynor	CITES Secretariat
Katalin Kecse-Nagy	TRAFFIC
Katarzyna Janiak	European Commission (DG Maritime Affairs and Fisheries)
Kate Finney Kazuki Yokouchi	Border Force UK Research Centre for Fisheries Management, National research Institute of Fisheries Science, Japan Fisheries Research and Education Agency
Kazuo Uchida	National Federation of Inlandwater Fisheries Cooperatives
Kim Friedman	Food and Agriculture Organisation (FAO)
Kristopher Blake	Dept of Environment, Food & Rural Affairs (DEFRA)
Marine Jaspers	DIRECTION DES PECHES MARITIMES ET DE L'AQUACULTURE
Masataka Mizuno	Eel Farmer (Japan)
Matthew Gollock	Zoological Society of London (ZSL)
Melanie Virtue	Convention on Migratory Species (CMS)
Naohisa Kanda	Japan NUS co Ltd (SEAFDEC)
Nelson Garcia Marcano	Ministry of Environment & Natural Resources (Dominican Republic)

Ni Komang Suryati	Inland Fishery Resources Development & Management Department
Nichola O'Neill	UNEP-WCMC
Nobuaki Omori	Eel Farmer (Japan)
Solenn Burguin	DIRECTION DES PECHEES MARITIMES ET DE L'AQUACULTURE
Somboon Siriraksophon	Southeast Asian Fisheries Development Centre
Sonja Dhanda	Royal Botanic Gardens Kew
Truong Nguyen Quang	Vietnam CITES Scientific Authority- Inst of Ecology & Biological Resources
Valentina Vaglica	Royal Botanic Gardens Kew
Vin Fleming	Joint Nature Conservation Committee (JNCC)
Vuong Tien Manh	Vietnam CITES Management Authority
Wen Zhanqiang	China CITES Management Authority
Will Chadwick	UNEP-WCMC
Yusri Bin Yusof	Department of Fisheries Malaysia
Zheng Si	China Eel Association