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

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Twenty-fifth meeting of the Animals Committee
Geneva (Switzerland), 18-22 July 2011

CRITERIA FOR THE INCLUSION OF SPECIES IN APPENDICES I AND II (DECISIONS 15.28 AND 15.29)

1. This document has been prepared by the Secretariat.

2. At its 15th meeting (CoP15, Doha, 2010), following discussion of document CoP15 Doc. 63, the Conference of the Parties adopted Decisions 15.28 and 15.29 as follows:

Directed to the Secretariat

15.28 The Secretariat shall:

a) prepare a report that will summarize its experience in applying criterion Annex 2 a B and the introductory text to Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to some or all of the commercially exploited aquatic species that were proposed for inclusion on Appendix II at the 13th, 14th and 15th meetings of the Conference of the Parties, highlighting any technical difficulties or ambiguous issues encountered, including, where appropriate, illustrations of these matters by comparison with application of the criteria to other species;

b) request IUCN/TRAFFIC and the Food and Agriculture Organization of the United Nations to each prepare a report, subject to the availability of external funding, with the same requirements as the report referred to in paragraph a) above; and

c) submit its report and any received under paragraph b) above for consideration at the 25th meeting of the Animals Committee.

Directed to the Animals Committee

15.29 The Animals Committee:

a) on receipt of any or all of the reports referred to in Decision 15.28, and having sought the participation of representative(s) of the Plants Committee, IUCN, TRAFFIC, the Food and Agriculture Organization of the United Nations and other appropriate experts, develop guidance on the application of criterion B and the introductory text of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species proposed for inclusion on Appendix II;

b) recommend the best way to incorporate the guidance for use when applying Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species, without affecting the application of Resolution Conf. 9.24 (Rev. CoP15) to other taxa; and

c) submit its conclusions and recommendations at the 62nd meeting of the Standing Committee.

3. In December 2010, the Secretariat wrote to the Food and Agriculture Organization of the United Nations (FAO) and IUCN/TRAFFIC, requesting them to prepare the report mentioned in paragraph b) of Decision 15.28, offering the assistance of the Secretariat in relation to external funding for this activity and, on behalf of the Animals Committee and in accordance with paragraph a) of Decision 15.29, inviting them to participate in the present meeting.

4. As required in paragraph c) of Decision 15.28, the Secretariat submits here its own report (Annex 1), the report from FAO (Annex 2) and that from IUCN/TRAFFIC (Annex 3).

5. The Animals Committee is invited to develop guidance on the application of criterion B and the introductory text of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species proposed for inclusion in Appendix II, and to recommend the best way to incorporate this guidance for use when applying the Resolution without affecting its application to other taxa. The Committee must submit its conclusions and recommendations at the 62nd meeting of the Standing Committee, which is scheduled to take place from 23 to 27 July 2012.

Application of the introductory text and of criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species

Report of the Secretariat

Role and *modus operandi* of the Secretariat in relation to amendments to the Appendices

1. The role of the Secretariat in relation to amendments to Appendices I and II is set out in Article XV of the text of the Convention. The Secretariat must *inter alia* consult inter-governmental bodies having a function in relation to marine species especially with a view to obtaining scientific data these bodies may be able to provide and to ensuring co-ordination with any conservation measures enforced by such bodies. The views expressed and data provided by these bodies must be communicated to the Parties. The Secretariat is further required to communicate its own findings and recommendations about proposals to amend Appendices I and II to the Parties.

2. In order to maintain independence, the drafting and preparation of the Secretariat's findings and recommendations on proposals to amend the Appendices have been done entirely in-house. It is undertaken in two stages.

   A provisional assessment is published as a Notification to the Parties. This contains general background about the nature and implications of the proposal, the history of the inclusion of the species in CITES, if it has one, and initial reflections on the completeness of the supporting statement. The text is written by a staff member and peer-reviewed by an internal review team, before being endorsed by the Secretariat's Management Team and Secretary-General. The provisional assessments are normally produced within six weeks of the deadline for receiving amendment proposals. A further two weeks is required for translation before a Notification to the Parties can be issued.

   Final findings and recommendations are distributed by Notification to the Parties around eight weeks later. They are generated within the Secretariat using the same process as the provisional assessments. They take full account of the comments of Parties and inter-governmental bodies having a function in relation to marine species, received in accordance with Article XV, paragraph 1 a), of the Convention and, for timber species, the views of the Food and Agriculture Organization of the United Nations (FAO), the International Tropical Timber Organization (ITTO), and the International Union for the Conservation of Nature (IUCN), which are sought in compliance with paragraph b) of Resolution Conf. 10.13 (Rev. CoP15) on *Implementation of the Convention for timber species*.

   The Secretariat also takes account of the IUCN/TRAFFIC *Analyses of Proposals to Amend the CITES Appendices*. These analyses have been produced for each meeting of the Conference of the Parties since 1987 and are widely referred to by Parties as a source of information about amendment proposals. During the period from the 10th to the 13th meeting of the Conference, in recognition of its value to the Parties, production of this publication was supported financially from the CITES Trust Fund.

   The Secretariat has observer status on the FAO *Ad Hoc* Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-Exploited Aquatic Species (the FAO Panel) and, when convened, the IUCN/TRAFFIC meeting which finalizes their analyses. The Secretariat also uses information gleaned from its own research into species affected by proposals.

Recent history of relevant listing proposals concerning commercially exploited aquatic species

3. Fourteen proposals concerning commercially exploited aquatic species and where the introductory text and criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) applied, were submitted at the 13th, 14th and 15th meetings of the Conference of the Parties (CoP13, CoP14 and CoP15). Details can be found in Table 1. The Secretariat can therefore use the history of preparing its findings and recommendations for all of these proposals in summarizing its experience in applying the introductory text and criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15).

Nature of the listing criteria and the Secretariat's experiences of applying them

4. The criteria by which proposals to amend Appendices I and II are judged are contained in Resolution Conf. 9.24 (Rev. CoP15). The Secretariat explained the history of the development and use of the criteria by the Parties, and the way that it had interpreted them in document CoP15 Doc. 63. The Secretariat also explained this interpretation in document SC58 Doc. 43 which was presented at the 58th meeting of the Standing Committee (Geneva, July 2009). Neither the Committee, nor the Conference of the Parties instructed the Secretariat to revise this interpretation.

5. Criterion A of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) refers to species which may qualify for inclusion in Appendix I in the near future (defined as 5-10 years in Annex 5). It follows therefore that criterion B of Annex 2 a refers to a longer time-frame than this. The Secretariat considers that the intention of the Parties in drafting this criterion was to take pre-emptive action, through inclusion in Appendix II, in order to avoid a species becoming eligible for inclusion in Appendix I, i.e. before reduction engenders a decline. As explained in document CoP15 Doc. 63, the Criteria Working Group set up by the Conference of the Parties deliberately developed criteria for inclusion of species in Appendix II that were more qualitative than quantitative, as is shown by this extract from their report (document Inf. ACPC.1.2) submitted at a joint meeting of the Animals and Plants Committees (Shepherdstown, December 2000) during the development of the criteria currently in use:

> *Some participants expressed the view that clearly-defined biological criteria, as used for Appendix-I listings, should also be developed for Appendix-II. Others believed, however, that this would not be workable and difficult to implement by many of the range States concerned, and that the criteria should be flexible. The Criteria Working Group… largely supported a descriptive approach...*

6. In providing its findings and recommendations to Parties, the Secretariat is also mindful of the preamble of Resolution Conf. 9.24 (Rev. CoP15), where the Conference of the Parties:

> *RESOLVES that, when considering proposals to amend Appendix I or II, the Parties shall, by virtue of the precautionary approach and in case of uncertainty either as regards the status of a species or the impact of trade on the conservation of a species, act in the best interest of the conservation of the species concerned and adopt measures that are proportionate to the anticipated risks to the species.*

   The Secretariat does adopt the precautionary approach and in cases of uncertainty recommends that a species be included in Appendix II where it is considered to be in the best interest of the conservation of the species and a proportionate measure.

7. The introductory text to Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) states that:

> *The following criteria must be read in conjunction with the definitions, explanations and guidelines listed in Annex 5, including the footnote with respect to application of the definition of 'decline' for commercially exploited aquatic species.*

   Annex 5 of the Resolution contains definitions, explanations and guidelines for the following terms which are used in criterion B of Annex 2 a: "species", "inferred or projected" and "wild population" (the latter within its "area of distribution" as itself defined). Whilst the definitions of two of these terms in Annex 5 are straightforward, the Secretariat has found the definition of "inferred or projected" open to interpretation, particularly projections about the likely need to regulate trade in the future. Nevertheless, this has been more a question of judgement than one of technical difficulty *per se*.

8. Regarding criterion B of Annex 2 a, the Secretariat firstly assesses the extent to which harvest of specimens from the wild is a factor influencing the status of the species in the wild. If this harvest appears to be reducing the population in the wild within its area of distribution, the Secretariat then assesses whether the level of this reduction is such that it might threaten the survival of the species or render the species threatened by other influences. The key assessment is the relationship between the level of harvest and the status of the species: the greater the size of the harvest, the more robust the population of the species needs to be to support it. Conversely, for a species that is not naturally abundant or fecund, even a more modest level of harvest may pose a problem for the conservation and sustainable use of the species. It should be noted that Parties have not determined any precise thresholds in this regard and any assessment is therefore a matter of judgement. Finally, it must assessed if regulation of trade in the species (through CITES) is required to address any such problems identified – in essence, whether CITES listing would help.

9. In determining its findings and recommendations in this respect for CoP13, CoP14 and CoP15, the Secretariat has encountered a number of points of technical difficulty or ambiguity:

   a) It is the “harvest of specimens from the wild” which is referred to in criterion B of Annex 2 a, rather than “trade” (as defined by CITES). This leads to a situation where harvest for local use or national trade plays a role in determining whether a species should be included in Appendix II. This contrasts with the situation for Appendix I where (international) trade is the key impact. The use of "harvest of specimens from the wild" conflicts perhaps with the introductory text to Annex 2 a, which speaks of the need to act on the basis of available **trade** data and information (emphasis added).

   b) The reference to “harvest of specimens from the wild” also includes specimens harvested as a bycatch. The term 'bycatch' has been interpreted in different ways, but FAO’s glossary defines it thus: “part of a catch of a fishing unit taken incidentally in addition to the target species towards which fishing effort is directed. Some or all of it may be returned to the sea as discards, usually dead or dying.” There have been some suggestions that inclusion of commercially exploited aquatic species in the CITES Appendices may increase bycatch and in particular discards, which are usually considered wasteful and to be avoided. The likelihood of such a potentially perverse outcome warrants examination.

   c) A frequently encountered problem is the situation where one part of the global population appears to meet the criteria for inclusion in the Appendix II while others do not. This situation is frequent with marine species, which are often managed at ‘stock’ level. In its Annex 3, Resolution Conf. 9.24 (Rev. CoP15) states that "split-listings that place some populations of a species in the Appendices, and the rest outside the Appendices, should normally not be permitted." The inclusion of stocks that may not otherwise currently qualify for inclusion in Appendix II could be supported because it can be projected that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences. Alternatively, the species could be included under criterion A of Annex 2 b (look-alike reasons) or criterion B of Annex 2 b, which refers to inclusion of species in Appendix II for compelling reasons to ensure that effective control of trade in **currently** listed species is achieved (emphasis added). It is arguable whether this can be applied to non-qualifying stocks of candidate species. It is often difficult to decide when a whole species should be included in the Appendices; if not all of the individual stocks of the species qualify.

   d) It is noteworthy that the expression “survival might be threatened” used in criterion B of Annex 2 a differs from the expression “threatened with extinction” which is used in Article II of the Convention and in Annex 1 of Resolution Conf. 9.24 (Rev. CoP15) in relation to the criteria for inclusion in Appendix I. The Secretariat considers them to be largely equivalent, but this point may warrant further consideration.

   e) One phrase which the Secretariat finds useful in Annex 2 a B is that which refers to regulation of trade in the species being **required** to ensure that negative effects of harvest of specimens from the wild do not continue. The Secretariat understand this to mean can CITES act in help? - either on its own, or in a complementary way with other bodies such a regional fisheries management organizations. This assists in determining the usefulness and desirability of inclusion in Appendix II.

10. As the text of criterion B of Annex 2 a does not distinguish between its application to commercially exploited aquatic species and to other species, the Secretariat draws no such distinction when elaborating its findings and recommendations. The principle difference in practice is that, mainly thanks to the existence of the FAO Panel, much more information is usually available for the consideration of proposals concerning commercially exploited aquatic species than for other species.

11. Of the 14 amendment proposals concerning commercially exploited aquatic species where the introductory text and criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) applied, which were submitted at CoP13, CoP14 and CoP15, the Secretariat came to the same conclusion as the FAO Panel on eight occasions. On six occasions (although involving only four different taxa as some proposals have been submitted at more than one meeting), the Secretariat’s recommendation was different to that of the FAO Panel. The Secretariat attributes this almost entirely to the difference in interpretation over the applicability of the definitions, explanations and guidelines listed in Annex 5 of Resolution Conf. 9.24 (Rev. CoP15) to the terms used in criterion B of Annex 2 a. This is explained fully in documents CoP15 Doc. 63 and SC58 Doc. 43.

Secretariat observations on the use of listing criteria by the Parties

12. The Secretariat has examined the summary records of CoP13, CoP14 and CoP15. Parties making proposals for the inclusion of commercially exploited aquatic species relied almost entirely on demonstrating compliance with the listing criteria in the appropriate version of Resolution Conf. 9.24. In contrast, the majority of objections to these proposals were based on other criteria. The table below shows the number of individual Party speakers mentioning particular reasons for objecting to listing proposals.

Objections cited	Number of speakers from Parties (in decreasing order)
COMPETENCE OF CITES	
National and regional fishery management measures are sufficient	16
Regional Fishery Management Organizations have primary responsibility or legal competence for management	12
Better implementation of existing measures preferred	12
Could set a precedent for listing other species	2
Would affect the sovereign rights of countries	2
	44
LISTING CRITERIA	
Listing criteria not met	24
Proposal not in line with recommendation of FAO Panel	9
	33
IMPLEMENTATION PROBLEMS	
Difficulty in identifying products in trade	13
Difficulty in making non-detriment findings	4
Difficulty applying the Convention to specimens introduced from the sea	4
Lack of capacity to implement listing	2
Cost of implementation would outweigh benefits	2
Concern about sanctions if incorrectly implemented	1
Difficulty applying controls to pre-Convention specimens	1
	27
EFFICACY	
Problem is national rather than international trade	5
Would lead to increased demand or illegal trade	4
Species mainly caught as bycatch	2
CITES not designed for commercially exploited aquatic species	1
	12
SOCIO-ECONOMIC IMPACTS	
Listing would have negative socio-economic impact or affect livelihoods	7
	7

Conclusions

13. Primarily because of our lack of knowledge of the natural world and its responses to human activities, the implementation of criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) and many other scientific determinations to be made in implementing CITES are fraught with uncertainty. It is therefore neither surprising, nor necessarily undesirable, that opinions differ on these matters. As noted in paragraph 6 of the present Annex, the Parties have agreed that, when considering proposals to amend Appendix I or II, they should act in the best interest of the conservation of the species concerned and adopt measures that are proportionate to the anticipated risks to the species. This appears to the Secretariat to be a useful guide in cases of uncertainty. At meetings of the Conference of the Parties, the Parties collectively need to decide on a way forward, using the agreed voting procedures if required.

14. The Secretariat has outlined a number of technical difficulties or ambiguities in paragraph 9 above which could usefully be considered and, if possible, resolved or clarified.

15. The crux of the difference of view over criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) is whether the definition of decline found in Annex 5 of the Resolution applies to both Annex 2 a A and 2 a B (as explained by FAO in Annex 3 of document CoP14 Doc. 68), or whether the Parties intended the definition to apply to Annex 2 a A only, with Annex 2 a B to be applied in more flexible and qualitative way. The Secretariat agrees with FAO that the definition of decline applies to Annex 2 a A. However, in view of the history of the development of the criteria, the decisions taken by the Parties in the past and the specific

terms used in Annex 2 a B, (explained in detail in document CoP15 Doc. 63) the Secretariat is of the opinion that the decline guidelines were never intended to apply to Annex 2 a B. The Secretariat has been consistent in applying this interpretation, as it considers to have been the intention of the Parties. Parties are however free to change their approach at any time.

16. The Secretariat believes that the Animals Committee may have some difficulty in devising a proposal that will assist Parties unless this fundamental issue is resolved. The Committee could seek further guidance from the Standing Committee about whether the definition of decline in Annex 5 applies to criterion B of Annex 2, and if it does not, whether some additional guidelines are required for Annex 2 a B. If the definition does apply, guidance should be sought on whether it is to be interpreted to mean the same as for Annex 2 a A or be made more flexible and qualitative. This could be based on the current text or by starting afresh.

17. Whichever option is chosen, according to FAO's publication *The State of World Fisheries and Aquaculture*, for fish stocks for which assessment information is available, the percentage of the world's stocks which are overexploited, depleted or recovering from depletion has risen continually since 1974 when it was 10 %. In recent years, it has increased from 22 % of stocks in 2003 to 25 % in 2005, 28 % in 2007 and 32 % in 2008. Against this background, it is perhaps not surprising that more commercially exploited aquatic species are now qualifying for inclusion in the CITES Appendices, whether assessed according to the listing criteria as interpreted by the Secretariat or as interpreted by FAO.

Table 1. Proposals presented to the 13th, 14th and 15th meetings of the Conference of the Parties concerning commercially exploited aquatic species, where criterion Annex 2 a B and the introductory text to Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) applied

Taxon	Proposal number and proponent	Proposal	Secretariat's recommendation	FAO's recommendation	Final decision
CoP13					
Carcharodon carcharias (Great white shark)	CoP13 Prop. 32 Australia and Madagascar	Inclusion in Appendix II with a zero annual export quota.	Adopt.	Not possible to confirm or exclude the possibility that the species as a whole meets the criteria for listing in Appendix II.	Adopted by vote with 87 in favour, 34 opposed and 9 abstentions (hereinafter recorded as "87/34/9")
Cheilinus undulatus (Humphead wrasse)	CoP13 Prop. 33 Fiji, Ireland (on behalf of the Member States of the European Community) and the United States of America	Inclusion in Appendix II. [in accordance with Article II, paragraph 2 (a), of the Convention and Resolution Conf. 9.24 (Rev. CoP12), Annex 2 a, paragraph B.]	Adopt.	Adopt.	Adopted by consensus
Lithophaga lithophaga (Mediterranean date mussel)	CoP13 Prop. 35 Italy and Slovenia (on behalf of the Member States of the European Community)	Inclusion in Appendix II. [in accordance with Article II, paragraph 2 (a)]	Reject.	On the basis of the available information, the Panel was of the opinion that the species is not presently at risk of extinction in the foreseeable future, as substantial portions of its range remain unexploited or lightly exploited (e.g. Turkey). It was noted, however, that there is little evidence that healthy, unexploited populations can provide new recruits/juveniles for exploited populations. Furthermore, if harvesting continues with the highly destructive practices currently in use, the species will probably be progressively extirpated and thus be at real risk of extinction in an unspecified distant future.	Adopted by consensus

Taxon	Proposal number and proponent	Proposal	Secretariat's recommendation	FAO's recommendation	Final decision
CoP14					
Lamna nasus (Porbeagle)	CoP14 Prop. 15 Germany (on behalf of the European Community Member States acting in the interest of the European Community)	Inclusion in Appendix II, with the following annotation: "The entry into effect of the inclusion of *Lamna nasus* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Management Authority."	Adopt.	Reject.	Rejected after vote: 55/39/12
Squalus acanthias (Spiny dogfish)	CoP14 Prop. 16 Germany (on behalf of the European Community Member States acting in the interest of the European Community)	Inclusion in Appendix II, with the following annotation: "The entry into effect of the inclusion of *Squalus acanthias* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues, such as the possible designation of an additional Management Authority."	Adopt.	Reject.	Rejected after vote: 58/36/10
Anguilla anguilla (Eel)	CoP14 Prop. 18 Germany (on behalf of the European Community Member States acting in the interest of the European Community)	Inclusion in Appendix II	Adopt.	Adopt.	Accepted after vote: 93/9/4.
Pterapogon kauderni (Banggai cardinalfish)	CoP14 Prop. 19 United States of America	Inclusion in Appendix II	Adopt.	The Panel concluded that Banggai cardinalfish should not be listed on CITES Appendix II.	Withdrawn

Taxon	Proposal number and proponent	Proposal	Secretariat's recommendation	FAO's recommendation	Final decision
Panulirus argus and *Panulirus laevicauda* (Caribbean spiny lobsters)	CoP14 Prop. 20 Brazil	Inclusion of the Brazilian populations in Appendix II	Reject.	Reject.	Withdrawn
Corallium spp. (Red coral)	CoP14 Prop. 21 United States of America	Inclusion in Appendix II	Adopt.	Reject.	An amended proposal to add the annotations "Entry into force delayed 18 months" and "Fossils are not subject to the provisions of the Convention" was was accepted in Committee I after a vote: 62/28/13. Rejected in Plenary after a vote: 65/55/7.
CoP15					
Sphyrna lewini (Scalloped hammerhead shark) [Together with other species as 'look-alikes']	Prop. 15 Palau and United States of America	Inclusion in Appendix II with the following annotation: "The entry into effect of the inclusion of these species in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues."	Adopt.	Adopt.	Rejected in Committee I after a vote: 75/45/14. Amended proposal for *Sphyrna lewini* in Appendix II with a delay of 24 months before entry into force, rejected in Plenary after a vote: 76/53/14
Carcharhinus longimanus (Oceanic whitetip shark)	Prop. 16 Palau and United States of America	Prop. 16 Inclusion of in Appendix II with the following annotation: "The entry into effect of the inclusion of *Carcharhinus longimanus* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues."	Adopt.	Adopt.	An amended proposal extending the entry into force delay until 24 months was rejected after a vote: 75/51/16.

Taxon	Proposal number and proponent	Proposal	Secretariat's recommendation	FAO's recommendation	Final decision
Lamna nasus (Porbeagle)	Prop. 17 Palau and Sweden (on behalf of the European Community's Member States acting in the interest of the European Community)	Prop. 17 Inclusion in Appendix II with the following annotation: "The entry into effect of the inclusion of *Lamna nasus* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve related technical and administrative issues, such as the possible designation of an additional Management Authority and adoption of Customs codes."	Adopt.	Adopt.	Accepted after a vote in Committee I: 86/42/8. Rejected after a vote in Plenary: 84/46/10
Squalus acanthias (Spiny dogfish)	Prop. 18 Palau and Sweden (on behalf of the European Community's Member States acting in the interest of the European Community)	Prop. 18 Inclusion in Appendix II with the following annotation: "The entry into effect of the inclusion of *Squalus acanthias* in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve related technical and administrative issues, such as the development of stock assessments and collaborative management agreements for shared stocks and the possible designation of an additional Scientific or Management Authority."	Adopt.	Reject	Rejected after a vote: 60/67/11.

Taxon	Proposal number and proponent	Proposal	Secretariat's recommendation	FAO's recommendation	Final decision
Corallium rubrum, C. secundum, C. lauuense (C. regale), C. elatius, C. konojoi, C. sp. nov. and *Paracorallium japonicum*. (Red corals) [Together with other species as 'look-alikes']	Prop. 21 Sweden (on behalf of the European Community's Member States acting in the interest of the European Community) and United States of America	Prop. 21 Inclusion of all species in the family in Appendix II with the following annotation: "The entry into effect of the inclusion of species in the family Coralliidae in Appendix II of CITES will be delayed by 18 months to enable Parties to resolve the related technical and administrative issues."	Adopt.	Reject.	Rejected after a vote 64/59/10.

REPORT OF FAO*

FAO experience in applying criterion Annex 2 A B and the introductory text to Annex 2 A of Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species proposed for inclusion on Appendix II

In response to the request by the 15th Conference of the Parties in 2010 (Dec. 15.28), FAO convened the "Workshop to review the application of CITES criterion Annex 2 a B to commercially-exploited aquatic species". The workshop was attended by twelve participants, eight external experts who had served at least once on the "*FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species"* and four FAO officers[1]. The meeting report was endorsed by FAO and the substantive part of it submitted to the CITES 25th Animals Committee for its consideration.

From the report of the FAO "Workshop to review the application of CITES criterion Annex 2a B to commercially-exploited aquatic species". Rome, Italy, 19−21 April 2011

OUTCOME OF THE MEETING

Interpretation of criteria

The "*FAO Expert Advisory Panel for the Assessment of Proposals to Amend Appendices I and II of CITES Concerning Commercially-exploited Aquatic Species"* (FAO Expert Advisory Panel) has operated under Terms of Reference approved by the twenty-fifth session of COFI (2003). These state, inter alia, that:

For each proposal the Panel shall:

– *assess each proposal from a scientific perspective in accordance with the CITES biological listing criteria, taking account of the recommendations on the criteria made to CITES by FAO;*

– *comment, as appropriate, on technical aspects of the proposal in relation to the biology, ecology, trade and management issues, as well as, to the extent possible, the likely effectiveness for conservation.*

The recommendations on the criteria referenced above are those contained in Appendix F of the Second Technical Consultation on the Suitability of the CITES Criteria for the Listing of Commercially-Exploited Aquatic Species held in Windhoek, Namibia, 22-25 October 2001.

FAO Expert Advisory Panel Evaluation of Proposals

In order to evaluate possible differences between the proposals and the FAO Expert Advisory Panel evaluations, a comparison of 11 previously-submitted Appendix II proposals with the corresponding FAO Expert Advisory Panel evaluations was carried out. Generally proposals provided adequate information of species biology, so that the FAO Expert Advisory Panel had no difficulty in assessing aspects such as productivity and vulnerability; accordingly the workshop did not focus further on these issues.

A total of 102 categories of population abundance and other indicators were presented in the proposals, most of which addressed the decline criterion. Very few of the proposal indicators (5%) were not explicitly addressed in the FAO Expert Advisory Panel reports. The FAO Expert Advisory Panel often gave greater weight to some of the indicators in the proposal than others. This sometimes resulted in discrepancies in emphasis between proposals and FAO Expert Advisory Panel evaluations, of which three primary causes were identified:

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* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

1 *External particpants were: Arne Bjørge (Norway), Elizabeth Brooks (United States of America), Doug Butterworth (South Africa), Steven E. Campana (Canada), Masashi Kiyota (Japan), Ramiro Pedro Sanchez (Argentina), Georgios Tsounis (Spain), Anna Willock (Australia). FAO officers present were Kevern Cochrane, Johanne Fischer, Pedro Barros and Monica Barone..*

a) Relative use of quantitative and qualitative indicators

Each FAO Expert Advisory Panel evaluation scored the reliability of each indicator mentioned in the proposal (see Appendix C). Although the proposals included a roughly equal mix of qualitative and quantitative indicators, the FAO Expert Advisory Panel found that in general quantitative abundance indicators were more scientifically rigorous and thus obtained a higher reliability score than some of the qualitative abundance indicators. Since the FAO Expert Advisory Panel considered it important that the evaluations be as objective as possible and capable of withstanding careful scientific scrutiny, FAO Expert Advisory Panel evaluations of population decline tended to emphasize quantitative over qualitative abundance indicators where both were available.

b) Quality of decline indicator

Not all indicators of decline were equally robust, since some were excellent indicators of population abundance while others were less so. In some cases, the underlying data were of inadequate quality, perhaps reflecting difficulty in collecting the data. In particular, anecdotal information was difficult to evaluate since the quality of the information was almost impossible to assess. Anecdotal information comprised most of the few (5%) indicators that were not explicitly addressed in the FAO Expert Advisory Panel reports. In other cases, the data were not properly analyzed in the proposals to reveal population trends. An example of the latter was the use of catch or landings data without standardization to fishing effort. Almost all proposals included time series of landings and interpreted them as reflective of population abundance. However, landings by themselves do not necessarily reflect abundance. For example, landings of a species can decline in response to reduced fishing quotas, changes in management plans, stock rebuilding efforts, changes in market demand or price, and other factors, even if population abundance is actually increasing. For this reason, catch or landings by themselves were given relatively low weight by the FAO Expert Advisory Panel unless first standardized to effort (eg- CPUE).

c) Historical extent versus recent rate of decline

Many proposals included indicators of both historical extent and recent rate of decline. The reliability scores assigned by the FAO Expert Advisory Panel tended to be higher for the historical extent of decline indicators because it was more often the case that those indicators had been standardized. Many of the recent rate of decline indicators were estimated from anecdotal information, between estimates extracted from different literature sources, from non-standardized landings time series, or from pooled species information. Nevertheless, the FAO Expert Advisory Panel also viewed cases where the recent rate of decline was reliably estimated, for example *Anguilla anguilla* (European eel), as being of more urgent concern than those that had declined many years ago, and had since stabilized or begun to recover (eg- some porbeagle populations).

The workshop also considered instances where the FAO Expert Advisory Panel was able to access additional information not included in the proposals. This occurred in several proposals for example: *Lithophaga lithophaga* (Mediterranean date mussel), *Cheilinus undulatus* (humphead wrasse), Coralliidae (red and pink corals), and *Lamna nasus* (porbeagle shark). The intent of the FAO Expert Advisory Panel in considering this additional information was to be comprehensive in its evaluation. In some cases, the additional information introduced had the effect of strengthening the proposals while in others it weakened the argument for listing. Most of the cases where the FAO Expert Advisory Panel introduced information were “data-poor proposals”: no quantitative indicators or poorly constructed quantitative indices such as *Lithophaga lithophaga* (Mediterranean date mussel), *Cheilinus undulates* (humphead wrasse) and Coralliidae (red and pink corals). In these cases, the FAO Expert Advisory Panel were often able to compensate for the missing data. In the case of *Lamna nasus* (porbeagle shark) for example, the FAO Expert Advisory Panel reconstructed the index out of concern that the stated decline was derived simply from the time series maximum and minimum without any consideration of fluctuations between those two observations.

The workshop noted the distinction between a proposal for a data poor species and a proposal that did not make good use of the available information. A data poor species is one for which little is known beyond basic life history, and vulnerability is inferred. Most of the indicators would be qualitative, requiring a more flexible approach for evaluation. Some specific examples follow.

1. An example of a proposal that did not make adequate use of the available information was the proposal 35, CoP13 for *Lithophaga lithophaga* (Mediterranean date mussel), in Appendix II, which contained moderate amount of information and no time series to evaluate against the decline criteria. Additional information on life history and abundance time series were made available by FAO Expert Advisory Panel members. The species is protected through national legislation and international convention in most range

states in the Mediterranean. The exploitation and trade in the species is largely illegal and the catch and trade statistics are not available. The current methods of exploitation are destructive towards the limestone habitat. Recolonization of the destroyed habitat is very slow. The species has a wide distribution on limestone rock in the Mediterranean and the Atlantic coast of North Africa, and the species is not or lightly exploited in the eastern Mediterranean and the Atlantic coast of Africa. With the additional information, the FAO Expert Advisory Panel was in a better position to assess whether the species met the criteria of Annex 2 a A and B.

2. The proposal 33 for the CoP13 to include, *Cheilinus undulatus* (humphead wrasse), in Appendix II in accordance with Annex 2 a B contained information largely of qualitative nature. This is an example of a data-poor species. In several areas there is no fisheries management in place for *Cheilinus undulatus* (humphead wrasse). Therefore, there was no baseline information to evaluate against the decline criteria. However, the FAO Expert Advisory Panel inferred that depletion is a widespread phenomenon based on substantial declines in local abundance at numerous points within the species range. Accordingly, the FAO Expert Advisory Panel concluded that this large, sedentary and highly valued species meets the criteria according to Annex 2 a B and possibly A. It was noted that CITES listing could make a significant contribution to the conservation of the species, but strengthening the regional and national management of the fisheries is also essential for the conservation of the species.

3. Proposal 19 for CoP14 to include *Pterapogon kauderni* (Banggai cardinal fish), in the Appendix II according to the criteria of Annex 2 a B is an example of a proposal of a data-poor species where the FAO Expert Advisory Panel was provided with additional relevant information including recent local initiatives to establish fisheries management. The species has a relatively small area of distribution (9,100 km2). The proposal failed to demonstrate that the species as a whole met the decline criteria although one sub-population was likely extirpated. The FAO Expert Advisory Panel was concerned that listing in Appendix II would hinder national management efforts in this species. The FAO Expert Advisory Panel noted that the Government of Indonesia and concerned NGOs were making efforts in cooperation with local communities to strengthen local management and establish captive breeding programmes that could supply the ornamental fish marked and restock depleted populations.

Further differences were identified between proposals and the FAO Expert Advisory Panels regarding Resolution Conf. 9.24 (Rev. CoP15) where it is stated that determination for the purpose of listing should be to "…adopt measures that are proportionate to the anticipated risks to the species…". In applying this, the FAO Expert Advisory Panel considered evidence for all populations that were identified in the proposals, both exploited populations as well as unexploited (or lightly exploited) populations, noting also the guidance to avoid split listings in Annex 3 of the Resolution Conf. 9.24 (Rev. CoP15). The decision as to whether the proposed species globally met the decline criteria was based on the fraction of populations with quantitative indices that met the decline criteria (extent of decline, or recent rate of decline). The FAO Expert Advisory Panel tended to focus on populations with estimable decline because there was data available to make such a determination. For the remaining populations, those with unknown decline were evaluated for future potential to decline based on market demand and likelihood for future exploitation to increase. Where the preponderance of populations was deemed to meet or likely soon to meet the decline criteria, the FAO Expert Advisory Panel concluded that the species met the biological CITES criteria for listing.

Comparison of interpretations of Annex 2 a B

In accordance with their terms of reference, the FAO Expert Advisory Panel has focused their work on assessing if the biological listing criteria were met based on the best available data and information, and wherever possible across the full range of the species. As noted, the FAO Expert Advisory Panel has made efforts to access additional information, not contained in the proposal, which in some cases assisted in clarifying technical difficulties and/or ambiguities in the data and information provided in the proposal.

In addition to its analyses of proposals based on the biological listing criteria, the FAO Expert Advisory Panel has also considered and provided comment on the information available on the nature and extent of trade, the impact of trade on the harvest, and management regimes in place for a species that may mitigate the need for trade to be regulated under CITES. The FAO Expert Advisory Panel has also addressed the likely effects of a CITES Appendix II listing for a species conservation and its value as a complement to existing fisheries management measures. While the FAO Expert Advisory Panel has considered and provided comment on these factors in their reports, to date the FAO Expert Advisory Panel has supported all proposals to list a species where they found that the biological listing criteria had been met.

Examination of the recommendations for listing proposals for commercially-exploited aquatic fish species provided by the CITES Secretariat indicates that the rationale of the Secretariat for application of Annex 2 a B is

generally consistent across relevant proposals assessed by them since CoP13. It can be illustrated, for example, by the following two proposals for which the FAO Expert Advisory Panel did not support the proposal but the CITES Secretariat did:

– Proposal 21 *Corallium* spp., CoP14: "Whilst the species in the genus *Corallium* have not suffered marked population declines large enough to meet the Appendix II listing criteria throughout their range, given the demand for specimens of the species and the history of over harvesting in one area after another, it does not seem unreasonable to conclude that for these populations, in accordance with paragraph B. in Annex 2 a..., regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population …, or that over harvesting for international trade may affect the role of these species in the ecosystems where they occur." (CoP14 Doc. 68 – p. 42);

– Proposal 18 *Squalus acanthias*, CoP15: "The Secretariat concurs with the FAO Ad Hoc Expert Advisory Panel that marked population declines in some stocks... have been large enough to justify an inclusion in Appendix II. The status in other parts of the range of the species is less clear-cut. However, given that demand for meat does appear to be a driver for international trade, it does not seem unreasonable to conclude that, for other populations which are close to meeting the marked population decline guideline (north-west Atlantic and south-west Atlantic), in line with paragraph B in Annex 2 a..., regulation of trade in the species is required to ensure that the harvest of specimens is not reducing the wild populations..." (CoP15 Doc. 68 – p. 35).

A key factor differentiating the conclusions of the FAO Expert Advisory Panel and the CITES Secretariat is the treatment of the risk to a species in the future as a result of international demand for trade. The recommendations of the CITES Secretariat indicate that it considers that this potential risk, in combination with indication of some decline, is sufficient to justify listing under Annex 2 a B. By comparison, the FAO Expert Advisory Panel considered that there should be a demonstrable impact on the species in accordance with the Annex 5 definitions and guidelines, in particular those related to decline, to justify listing.

The approach taken by the CITES Secretariat can therefore be seen as anticipating a possible impact across the global distribution of the species without requiring data based evidence to project or infer the magnitude of such an impact. On the other hand, the FAO Expert Advisory Panel considered that Resolution Conf. 9.24 (Rev. CoP15) as a whole, in particular the footnote for commercially-exploited aquatic species, sets the acceptable level of risk through precaution included in the thresholds.

An important question for CITES Parties is which, if either, of these two approaches to dealing with risk in the application of Annex 2 a B is appropriate for commercially-exploited aquatic species in the context of the Convention or whether further guidance is required.

Technical difficulties and ambiguities

There were two classes of indicators for which the information provided in the proposals made it difficult for the FAO Expert Advisory Panel to evaluate, and therefore did not weight heavily in the FAO Expert Advisory Panel evaluations: habitat degradation and role of the species in its ecosystem. For example in the *Anguilla anguilla* (European eel) proposal (CoP14 Prop. 18), habitat degradation caused by barriers to upstream migration and pollution of benthos was referred to as an influential factor. However, the FAO Expert Advisory Panel did not place great emphasis on pollution because the information available was not sufficient. In addition, it was difficult to evaluate the impact of pollution on prey items even though some information was available. In the case of *Lithophaga lithophaga* (Mediterranean date mussel), the proposal stated that the exploitation was highly destructive to the littoral habitat. This may be a general issue where exploitation of benthic species cause extensive damage to the habitat (see below).

The proposal of *Pterapogon kauderni* (Banggai cardinal fish) (CoP14 Prop. 19) stated that coral habitat occupied by this species is highly susceptible to anthropogenic stress such as overfishing of food fish and the destructive fishing method, increased siltation and nitrification, and uncontrolled deforestation. However, the FAO Expert Advisory Panel could not assess the impact of this issue, because the actual data on habitat degradation and its relation to cardinal fish population trends were not shown in the proposal.

For *Corallium spp*., the removal of coral is directly linked to habitat destruction, because corals are important habitat-structuring organisms in marine benthic environment.

In such cases the FAO Expert Advisory Panel could only acknowledge the problem but had a technical difficulty incorporating this negative impact into evaluation of the species against Annex 2 a criteria.

As noted, proposals for commercially-exploited aquatic species often contain data and information that indicate wide variation between heavily exploited populations (that meet the decline criteria) and populations that are only lightly exploited. This has raised two issues: (a) Guidance is required on how many of these populations need to satisfy the listing criteria for global listing of the species; and (b) there is potential for ambiguity to arise between the guidance contained in Annex 3 that split listings should be avoided because of enforcement difficulties and the guidance contained in Annex 4 to adopt measures that are proportionate to the anticipated risk to the species. The approach taken by one recent proposal (*Squalus acanthias* [spiny dogfish], [CoP15 Prop. 18]) was to list lightly exploited populations under Article 2b, the so-called "look-alike" criterion. The converse of avoiding split listing because of enforcement problems under CITES is to shift the bureaucratic burden and implementation costs to fisheries that may be sustainably harvesting populations of the species in question.

Guidance on Interpretation

Differences in interpretation of the CITES listing criteria between the FAO and CITES Secretariats have arisen particularly in regard to proposals for listing under Appendix II.

In its contribution (CoP14 Inf. 64) on the interpretation of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) in relation to commercially-exploited aquatic species, FAO emphasized the statement in these criteria that they "must be read in conjunction with the definitions, explanations and guidelines listed in Annex 5, including the footnote with respect to application of the definition of 'decline' for commercially-exploited aquatic species."

Annex 2 a requires "to avoid [the species] becoming eligible for inclusion in Appendix I in the near future", and 2a B "to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences". FAO has held the view that the intent of both criteria are addressed operationally for commercially-exploited aquatic species by the relevant definitions, explanations and guidelines in Annex 5. The following paragraph of the footnote is particularly pertinent to Annex 2 a B:

> *Even if a population is not declining appreciably, it could be considered for listing in Appendix II if it is near the extent-of-decline guidelines recommended above for consideration for Appendix I listing. A range of between 5% and 10% above the relevant extent-of-decline might be considered as a definition of 'near', taking due account of the productivity of the species.*

The workshop endorsed this FAO view noting that it allows due account, incorporating precaution, to be taken of the possibility of "other influences" than harvesting such as environment or demographic variability, disease and habitat perturbation reducing an otherwise stable population to a level at which its survival may be threatened.

The workshop noted that the CITES Secretariat made a distinction between the terms "decline" and "reduce" in assessing listing proposals under Annex 2 a. To this point the FAO Expert Advisory Panel have evaluated decline using Annex 5 and the associated footnote. However the comments of the CITES Secretariat have left it unclear if the term "reduce" might be referring to some other measure of decline. Clarification on this issue is needed, in particular whether different quantitative guidelines are intended to apply to Annex 2 a B compared to Annex 2 a A, in which case those different guidelines would need to be specified.

Furthermore, the CITES criteria define decline in relation to abundance, area of distribution, or area of habitat of the species. The workshop deliberated whether there were other attributes of a species or its environment which might deteriorate (reduce), such as feeding conditions, placing the species under threat. It considered that for commercially-exploited aquatic species, any such attributes would be strongly correlated with at least one of abundance, area of distribution, or area of habitat. As indicators for these three attributes would usually be more readily available than for other attributes, operationally the current definition is sufficient to also address these other attributes.

The Annex 2 a B criterion requires an assessment as to whether the regulation of trade under a CITES listing is necessary. It was not always easy for the FAO Expert Advisory Panel to evaluate the effectiveness of a CITES listing for a species that currently meets the biological CITES listing criteria. This is especially true in the case of a species subject to effective fishery management measures to rebuild the population, and/or measures to monitor and control its trade.

When many and widespread populations are involved, guidance is required on how many of these populations need to satisfy the criteria for global listing of the species.

As elaborated under section three there are two approaches to deal with potential risk to the species under the application of Annex 2 a B. The approach taken by the CITES Secretariat can be seen as anticipating a possible impact across the global distribution of the species without requiring data based evidence to project or infer the magnitude of such an impact. On the other hand, the FAO Expert Advisory Panel considers that Resolution Conf. 9.24 (Rev. CoP15) as a whole, in particular the footnote for commercially-exploited aquatic species, sets an acceptable precautionary level of risk. Therefore, an important question for CITES Parties is which, if either, of these two approaches is appropriate for commercially-exploited aquatic species in the context of the Convention or whether further guidance is required.

REPORT OF IUCN/TRAFFIC*

Inclusion of commercially exploited aquatic species in CITES Appendix II

Summary

This report summarizes the experiences of IUCN/TRAFFIC in applying criterion Annex 2 a B and the introductory text to Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to commercially exploited aquatic species proposed for inclusion in CITES Appendix II at the 13th, 14th and 15th meetings of the Conferences of the Parties. It provides a brief summary of the development of the criteria for amending the Appendices to CITES contained in Resolution Conf. 9.24 and its revisions, relating these to the text of the Convention, and then outlines IUCN/TRAFFIC's general approach to analysing proposals and discusses the use of quantitative terms in Resolution Conf. 9.24, including the footnote to Annex 5.

We then discuss in some detail application of Annex 2 a B in the IUCN/TRAFFIC Analyses of Proposals, using relevant examples and noting that when we analyse proposals for inclusion in Appendix II we address three general questions: Is there evidence that harvesting is having any adverse impact? What can we deduce about the impact of harvest on the population as a whole? What is the role of international trade, including, in the case of marine species, Introduction From the Sea, in driving the harvest?

We then discuss the term "*its survival might be threatened*" in Annex 2 a B noting that how this is interpreted has a major impact on the outcome of analysis against this criterion. We also note that in IUCN/TRAFFIC's interpretation of the footnote to Annex 5 of Resolution Conf. 9.24 (Rev. CoP15), most of this footnote clearly applies to Annex 2 a A with the remainder applicable to both Annex 2 a A and 2 a B. The latter parts are very general in content and, we find, do not materially inform our analyses under Annex 2 a B to any great extent.

We conclude by noting that one important lesson that has emerged from our experiences in applying the criterion in Annex 2 a B is that there are clearly divergent views, held by Parties and others as to what Appendix-II listings should be for. Some consider that Appendix II should apply to species for which there is genuine concern that harvest for trade might make the species eligible for inclusion in Appendix I sooner rather than later, with others considering that it should be a mechanism for ensuring long-term sustainable use of species that feature in trade. The current wording of the criterion in Annex 2 a B allows for flexibility in interpretation, so that decisions can be made on a case-by-case basis.

Introduction

This report has been prepared by IUCN/TRAFFIC in response to Decision 15.28, in which CITES Parties asked us, subject to external funding, to "prepare a report that will summarize its experience in applying criterion Annex 2 a B and the introductory text to Annex 2 a of Resolution Conf. 9.24 (Rev. CoP15) to some or all of the commercially exploited aquatic species that were proposed for inclusion on Appendix II at the 13th, 14th and 15th meetings of the Conference of the Parties (CoP), highlighting any technical difficulties or ambiguous issues encountered, including, where appropriate, illustrations of these matters by comparison with application of the criteria to other species". IUCN and TRAFFIC are very grateful to Environment Canada for providing the funds to enable us to undertake this work.

In preparing the report we found it helpful to summarise the background to the development of the criteria adopted at CoP9 and the changes that have been made to them since CoP12. We then discuss our application of the relevant criteria at CoPs 13, 14 and 15, illustrating how our understanding and interpretation has shifted, ending with a discussion of how we see the criteria today.

As with much to do with the criteria, there is no explicit definition of "commercially exploited aquatic species". In determining which species to discuss in this analysis we have concentrated on marine species. A number of non-marine, more or less aquatic Asian chelonians that are commercially exploited (being harvested for trade as food and traditional medicines) were proposed for inclusion in Appendix II at CoP13. Our consideration of

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

these proposals added relatively little to our understanding of how to apply criterion 2 a B and they are not therefore discussed further in this report.

Background

Text of the Convention

According to Article II (fundamental principles) of CITES, Appendix II shall include:

(a) all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival; and

(b) other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control.

The term "species" is understood under the Convention to mean "any species, subspecies, or geographically separate population thereof" (Article I – definitions). Some of the other terms in this part of Article II (namely "trade" and "specimens") are also defined in Article I, but important concepts such as "threatened with extinction" and "utilization incompatible with their survival" are not further elaborated in the Convention text.

Elaboration of criteria for assessing proposals to amend the Appendices

From CoP2 to CoP9, Parties assessed proposals to amend the appendices of the Convention on the basis of the Bern criteria (Resolution Conf. 1.1), which elaborated in a general way on the wording in Article II. At CoP9 the Parties adopted, in Resolution Conf. 9.24, much more explicit criteria for the amendment of Appendices I and II, to come into effect at CoP10. These expanded upon the wording of Article II providing, among other things, an elaboration of the meaning of "threatened with extinction" based on but not identical to the then criteria for the assessment of the status of species in the IUCN Red List [Categories and Criteria version 2.3 (1994), themselves since revised (version 3.1(2001)]. To help in assessing whether or not a species might be considered threatened, the CITES criteria included quantitative guidelines covering factors such as rate of decline, population size and extent of range, it always being stressed that any figures included should be regarded strictly as guidelines and not thresholds.

In the original adopted version of Resolution Conf. 9.24, criteria for inclusion in Appendix II in accordance with Article II, paragraph 2(a) of the Convention were as follows:

A species should be included in Appendix II when either of the following criteria is met.

A. It is known, inferred or projected that unless trade in the species is subject to strict regulation, it will meet at least one of the criteria listed in Annex I in the near future,

B. It is known, inferred or projected that the harvesting of specimens from the wild for international trade has, or may have, a detrimental impact on the species by either:

i) exceeding, over an extended period, the level that can be continued in perpetuity; or

ii) reducing it to a population level at which its survival would be threatened by other influences.

The introductory text to Annex 2 a of Resolution Conf. 9.24 stated that these criteria were to be read in conjunction with Annex 5 of the Resolution, which comprised definitions, guidelines and notes covering the following: affected by trade; area of distribution; decline; extended period; fragmentation; generation; large fluctuations; population; sub-populations; possibly extinct; and threatened with extinction.

Annex I of the Resolution (referred to in paragraph A above) comprised biological criteria for inclusion in Appendix I, that is criteria for meeting the definition of "threatened with extinction", covering population size; area of distribution of the wild population; and decline in number of individuals in the wild.

Other criteria – the so-called lookalike criteria – were adopted for including species in Appendix II in accordance with Article II, paragraph 2 (b) of the Convention.

Revision of the criteria at CoP12 and CoP13

Minor revisions to Resolution Conf. 9.24 were made at CoP12, but these had no material impact on the criteria. At CoP13, the Parties agreed to some substantive revisions to the Resolution, including changes to the wording of Annex 2 a to read:

> ***Annex 2 a: Criteria for the inclusion of species in Appendix II in accordance with Article II, paragraph 2 (a), of the Convention***
>
> *The following criteria must be read in conjunction with the definitions, explanations and guidelines listed in Annex 5, including the footnote with respect to application of the definition of "decline" for commercially exploited aquatic species.*
>
> *A species should be included in Appendix II when, on the basis of available trade data and information on the status and trends of the wild population(s),* ***at least one*** *of the following criteria is met:*
>
> *A. It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future; or*
>
> *B. It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.*

The footnote referred to in the opening paragraph is included as an Appendix to this report, and is also quoted and discussed in some detail below.

Paragraph A of Annex 2 a now referred to inclusion in Appendix I rather than to meeting the criteria in Annex 1 of Resolution Conf. 9.24. Paragraph B no longer referred to harvest exceeding, over an extended period, the level that can be continued in perpetuity.

IUCN and TRAFFIC's approach to analysing proposals

Since 1987, in order to help Parties in their deliberations at CoPs, IUCN and TRAFFIC have jointly analysed the proposals to amend the CITES Appendices, using the criteria pertaining at the time. The IUCN/TRAFFIC Analyses of Proposals to Amend the CITES Appendices (The Analyses) are made available 60 days before the start of the relevant CoP.

The format of the Analyses has changed over time. Our understanding of the criteria and how to apply them has also evolved, but certain elements have remained consistent.

Importantly, IUCN and TRAFFIC analyse the proposed amendment to the Appendices, to determine, using the available knowledge, whether the proposal may or may not meet the relevant criteria in Resolution Conf. 9.24. In doing this both the supporting statement and additional sources of information are used. The Analyses are not, therefore, a critique of the supporting statement, although where parts of the supporting statement may not be corroborated by other information or expert opinion, or may even be contradicted the relevant issue, this is highlighted. Given this, a proposal with a weak supporting statement may nevertheless appear to meet the relevant criteria while conversely a proposal with a thorough, well-referenced supporting statement may not.

As an extension of this, we examine the proposal in the light of all relevant criteria for that particular change in listing. Thus, a proposal submitted to include a species in Appendix II will be considered in the light of the criteria in Annex 2 a and 2 b, regardless of whether any specific criterion is identified in the supporting statement (which is often not the case). This means that we do not look at Annex 2 a B in isolation. (Note: sometimes, where a range of species has been proposed under the lookalike criteria in Annex 2 b, lack of time has precluded us from looking at each of these in the terms of Annex 2 a in as much detail as we would like. A relevant recent example of this was the four shark species – two *Sphyrna* and two *Carcharhinus* – proposed as lookalikes in the proposal centred on the Scalloped Hammerhead *Sphyrna lewini* at CoP15 (CoP15 Prop. 15).)

IUCN and TRAFFIC do not make recommendations in the Analyses as to whether we believe a proposal should be accepted or not. This is the role of the TRAFFIC Recommendations, prepared in concert with the Analyses, but which may take other factors into account.

Applying the criteria in the various revisions of Resolution Conf. 9.24: general observations of guidelines, thresholds and caveats

The criteria in Resolution Conf. 9.24 were developed in order put the listing of species in the Appendices on a more objective, scientific footing. It was inevitable that numbers e.g., with regard to population size, etc., would be invoked in some form or another to help in this. In the final negotiations at the ninth Conference of the Parties, numbers were avoided in the annexes setting out the criteria themselves, but were included in Annex 5 – definitions, explanations and guidelines.

The current version of the Resolution includes numerical or quantitative guidelines for: population size (small wild population and very small wild population); rates and extent of decline; "near future"; and natural mortality rate. The first version of the resolution also included a numerical guideline for a restricted area of distribution, but this was dropped in the revision made at CoP13.

All the numerical guidelines are qualified to a greater or lesser extent with caveats indicating that there will be cases where they do not apply and emphasising, where relevant, that they are not thresholds; guidance on determining when they might not apply is given in very general terms. The most prescriptive of the guidelines is that for the "near future", which "should be greater than five years and less than ten years".

The most detailed and specific guidelines are those given in the footnote to Annex 5, entitled "application of decline for commercially exploited aquatic species". This footnote sets out three narrow percentage ranges for extent of decline from baseline (regarding biological criteria for inclusion in Appendix I) for commercially exploited fish species of different productivity (5-10% for species of high productivity; 10-15% for those of medium productivity; 15-20% for those of low productivity) and indicates that one possible guideline for assessing productivity is the natural mortality rate, with a range of 0.2-0.5 per year indicating medium productivity and, by inference, a rate of less than 0.2 per year indicating low productivity and a rate of greater than 0.5 indicating high productivity. Even this footnote, however, ends with a general caveat indicating that "account needs to be taken of taxon- and case-specific biological and other factors that are likely to affect extinction risk".

The way that the Resolution is worded means that, interpreted literally, we can effectively never say with certainty that a species does or does not meet any given criterion. Even if we have reliable and undisputed information on the various parameters outlined above, that species might always be considered one of the exceptions. Almost always the information available is incomplete, of variable quality and open to differing interpretations. For this reason we avoid saying in the Analyses that this species does or does not meet the criteria for inclusion in an appendix. The strongest phrasing we use is "appears to meet" or "does not appear to meet".

Clearly, there are cases where there is in practice very little disagreement as to whether a species does or does not meet the relevant criteria (though this does not necessarily mean that the Parties will then agree to the proposal in question). Often, however, matters are less clear-cut. Sometimes, there is simply not enough reliable information to make any useful judgement one way or the other. Further, there is often considerable room for differing interpretations of available information. The Analyses try to reflect these differing cases in the language used.

Applying Annex 2 a B at CoP13, 14 and 15

The wording of Annex 2 a changed significantly as a result of agreement reached at CoP13, most importantly in removing the reference in part B to harvest exceeding the level that can be maintained in perpetuity, but also in referring to the new footnote in Annex 5.

While taking full account of these changes we continued to look at the criteria in Annex 2 a as a whole, regarding Annex 2 a B as a somewhat more diffuse and non time-bound version of Annex 2 a A. In essence, for a proposal to meet criterion 2 a A we would have to be satisfied that the species in question would be eligible for inclusion in Appendix I in the near future (as defined in Annex 5) while to meet criterion 2 a B, the species would be eligible for inclusion in Appendix I in a longer time period if regulation of international trade were not introduced.

For CoP13 and CoP14 we took this approach implicitly, rather than explicitly, and tended to frame the analysis in terms of the whole of Annex 2 a rather than teasing out which paragraph we considered to apply. In a typical case, such as the Spiny Dogfish *Squalus acanthias* (CoP14 Prop. 16), some stocks already appeared to meet the criteria for inclusion in Appendix I, while the condition of other stocks and knowledge of those stocks were

both much more variable). For CoP15 a more explicit approach was adopted, reflecting the call made by Parties at CoP14 directed at proposing Parties, the Secretariat and FAO to be clear in how they were interpreting and applying the footnote in Annex 5. The Analyses for COP15 did, however, take quite a stringent line in interpretation of the phrase *its survival might be threatened* in Annex 2 a B, taking this to mean that the species might plausibly become subject to biological extinction if regulation of harvest for trade is not introduced. This is discussed further below.

Despite the changes in approach to applying Annex 2 a B, certain common threads have applied throughout this period. Most importantly, in considering proposals for inclusion in Appendix II, experience from undertaking the Analyses suggests there are three very general questions to be asked:

– Is there evidence that harvesting is having any adverse impact?
– What can we deduce about the impact of harvesting on the population as a whole?
– What is the role of trade (that is, in a CITES context, international trade, including Introduction From the Sea) in driving the harvest?

The impact of harvest

To date, it has been unusual for an aquatic species to be proposed for inclusion in Appendix II without there being some reasonably persuasive evidence that harvest has had a marked impact on at least some populations or stocks (this is not necessarily the case for other species, which may be proposed merely on the basis of their appearing in some numbers in international trade). For marine fishes such evidence is usually in the form of changing stock assessments or measures of catch per unit effort in well monitored or reasonably well-monitored parts of the world – often largely the North Atlantic and parts of the North Pacific. The information may be in a variety of forms and span a range of timescales, from a few recent years to estimated declines from baseline several decades ago. The one notable example in recent years where this was not unequivocally the case was the European Eel *Anguilla anguilla* (CoP14 Prop. 18). Although harvest may have played a role, the reasons for the precipitous decline in this species in the last few decades are not fully understood. (In a similar way, historical declines of populations of the South American timber tree Palo santo *Bulnesia sarmientoi* (CoP15 Prop. 42) were evidently largely driven by land clearance, rather than felling for harvest).

The impact of harvest on the population as a whole

In most cases available information on the impact of harvesting applies to only part of the whole population. There are usually stocks or populations for which there is both little information on exploitation rates and on the impacts of exploitation on stock levels. Further, sometimes there are stocks – usually in parts of the Southern Hemisphere – that are believed not to be heavily exploited at present and sometimes there are stocks that are apparently under reasonably effective fisheries management.

The difficulty is in combining information from all these different cases to come up with a picture of the state of the population as a whole, to try to answer the question: if present actions or the present situation continues is it likely that this will lead to the survival of the species as a whole becoming threatened at some point in the future? There is a need to balance the differing status and situations of different stocks, taking in to account also the variable quality of much of the information available and be prepared to make plausible extrapolations as to what might happen in the future. The challenge is further compounded by the fact that information on different stocks is often expressed in different terms (e.g. spawning stock biomass; number of individuals; number of breeding females).

Other questions to be considered include: What is the likelihood that currently unexploited or lightly exploited stocks will start to be exploited in the future, given what is often a continuing depletion of other stocks? Does the fact that there might be one well-managed stock that may be stable or increasing mean that the species does not meet the criteria in Annex 2 a B, even if there is good evidence that all other stocks are being depleted? If not, what is a reasonable balance between depleted or unsustainably harvested stocks and undepleted or well-managed stocks at which point it might be said that the species no longer meets these criteria?

The role of international trade

Having made an assessment of the above, based on the available information, we then assess the relative importance of harvest for trade, that is international trade, as opposed to harvest for domestic consumption. If a significant proportion of harvest takes place in international waters, as for example with the Oceanic Whitetip

Shark *Carcharhinus longimanus* (CoP15 Prop. 16), then this question is relatively easy to answer, as all this harvest counts as Introduction From the Sea and is regarded as trade under CITES. For some species all harvest may take place in territorial waters with the specimens used domestically and therefore not considered under CITES definitions as in trade. In recent years such species have very rarely been proposed for inclusion in the Appendices. More usually, the situation is somewhere between the two, with a proportion of specimens entering trade. Even where reliable data are available (which is usually not the case) there are no definite rules or guidelines for determining the point at which international trade becomes a significant factor. Trade measured by volume might be a small proportion of recorded catch, but may be the most valuable part, and therefore a significant driver of harvest, or it may simply be a small and unimportant component of overall use – such appeared to be the case with the Date Mussel *Lithophaga lithophaga*, proposed at CoP13 (CoP13 Prop. 35). For a species that is being severely depleted, even a relatively small contribution to harvest pressure from international trade may be significant.

When assessing proposals, the kind of harvest regime the species is subject to is also reviewed. Some of the species proposed are usually caught in general, undirected fisheries, or may largely be taken as by-catch in fisheries primarily targeted at other species. In these cases it is not absolutely clear how we should interpret the wording of Annex 2 a, or indeed of Article II of the Convention, as it is not evident that regulating trade will have an impact on the actual harvest – this is similar to, though not quite the same as, the case with the European Eel (CoP14 Prop. 18) and Palo santo (CoP15 Prop. 42), discussed above, in which it was not clear that harvest for use (either domestic or for international trade) was a significant factor affecting the species. In some cases where a species is caught entirely as by-catch it may be that it will become threatened with extinction whether trade is regulated or not (in a different context this seemed to apply to the sawfishes, family Pristidae, when these were proposed for inclusion in Appendix I at CoP14 (CoP14 Prop. 17). However, there are indications that in some cases, notably in capture of sharks in pelagic fisheries aimed primarily at tuna, a significant proportion of the catch is taken alive, and may have a reasonable chance of survival if released rather than used [e.g. Oceanic Whitetip (CoP15 Prop. 16)]. In such a case, regulation of trade might well have an impact on harvest-induced mortality. It may also be argued that if a species is caught in a general fishery and is a non-negligible part of the catch, then regulation of trade through inclusion in Appendix II might well have an impact on harvest, primarily through the need to make non-detriment findings.

Interpretation of "its survival might be threatened"

As noted above, until CoP15 we tended to view Annex 2 a as a whole. At CoP15 we more clearly distinguished between the criterion set out in Annex 2 a A and that in Annex 2 a B. In doing this, we also took a stringent line in interpreting the phrase "*its survival might be threatened*", taking this to mean that there should be some realistic prospect of biological extinction. Most of the aquatic species that have been proposed for inclusion in Appendix II in recent years have had large areas of distribution and generally substantial populations. There is a widespread view that the majority of such species are unlikely to be reduced to biological extinction or near-biological extinction by overexploitation – in common parlance it is believed that such species will reach "commercial extinction" before they approach biological extinction, at which point harvest pressure is expected to ease and the species is likely to persist, albeit in greatly reduced numbers. We considered this to apply to Spiny Dogfish (CoP15 Prop. 18) and most or all members of the family Coralliidae (CoP15 Prop. 21), which are clearly far from biological extinction and seem unlikely to become seriously at risk of such extinction in the foreseeable future. On this basis, we considered it difficult to see how these species might meet the criterion in Annex 2 a B. We should note that we considered essentially the same argument to apply to some of the tree species proposed at CoP15, notably Brazilian Rosewood (CoP15 Prop. 29) and Palo santo (CoP15 Prop. 42).

Applying the footnote in Annex 5 on application of decline to commercially exploited aquatic species

As noted above, the introductory paragraph to Annex 2 a instructs us to read the criteria in that annex in conjunction with Annex 5, including the footnote with respect to application of the definition of "decline" for commercially exploited fish species. Also as noted above, there has been considerable disagreement as to whether this footnote is applicable to paragraph B of Annex 2 a or not. FAO, in particular, believe that the term "is reducing the wild population" is essentially equivalent to "the wild population is declining" and that the numerical guidelines in the footnote therefore apply to paragraph B. Others, including the CITES Secretariat, do not agree with this interpretation.

It is unfortunate that there is no explicit guidance in the footnote as to how it should be applied to the criteria in Annex 2 a. It is certainly true that the footnote is appended to a paragraph in Annex 5 that is clearly referring to declines in the context of Annex 1 (biological criteria for inclusion in Appendix I), so that it might most reasonably be taken that the footnote itself was intended to apply to Annex 2 a A, which is that part of the Appendix-II criteria that also refers directly to Annex 1. There are, however, some general statements in the

footnote which it appears could be equally applied to both sets of criteria. Taking those parts that apply explicitly or implicitly to Appendix-II listing:

> *For listing in Appendix II, the historical extent of decline and the recent rate of decline should be considered in conjunction with one another. The higher the historical extent of decline, and the lower the productivity of the species, the more important a given recent rate of decline is.*

The above statement seems to us to be widely applicable and uncontentious.

> *A general guideline for a marked recent rate of decline is the rate of decline that would drive a population down within approximately a 10-year period from the current population level to the historical extent of decline guideline (i.e. 5-20% of baseline for exploited fish species). There should rarely be a need for concern for populations that have exhibited an historical extent of decline of less than 50%, unless the recent rate of decline has been extremely high.*

The first sentence of the paragraph above seems to us to be clearly intended to apply to Annex 2 a A, in that it uses language ("marked [recent rate of] decline") and figures derived from Annex 1 and associated guidelines. The second sentence seems to us to be more widely applicable as a general statement regarding when a species might or might not benefit from Appendix-II listing. In our experience it is highly unusual for a species to be proposed for inclusion in the Appendices on the basis of an overall decline (rather than small population or limited distribution) that has not already undergone a 50% decline or more from a historical baseline, where such declines can be plausibly estimated.

> *Even if a population is not declining appreciably, it could be considered for listing in Appendix II if it is near the extent-of-decline guidelines recommended above for consideration for Appendix-I-listing. A range of between 5% and 10% above the relevant extent-of-decline might be considered as a definition of "near", taking due account of the productivity of the species.*
>
> *A recent rate-of-decline is important only if it is still occurring, or may resume, and is projected to lead to the species reaching the applicable point for that species in the Appendix-I extent-of-decline guidelines within approximately a 10-year period. Otherwise the overall extent-of-decline is what is important. When sufficient data are available, the recent rate-of-decline should be calculated over approximately a 10-year period. If fewer data are available, annual rates over a shorter period could be used. If there is evidence of a change in the trend, greater weight should be given to the more recent consistent trend. In most cases, listing would only be considered if the decline were projected to continue.*

The paragraphs above again seem to us to be clearly intended to apply to Annex 2 a A, in explicitly referring to the guidelines for Appendix-I listing and in referring to a 10-year future period (the upper limit for "near-future" as defined in Annex 5). The last sentence has more general application.

> *In considering the percentages indicated above, account needs to be taken of taxon- and case-specific biological and other factors that are likely to affect extinction risk. Depending on the biology, patterns of exploitation and area of distribution of the taxon, vulnerability factors (as listed in this Annex) may increase this risk, whereas mitigating factors (e.g. large absolute numbers or refugia) may reduce it.*

The above paragraph is a restatement of the general caveats which are stressed throughout the resolution.

In our application of the criteria in the analyses for CoP14 and CoP15 we have essentially followed the above, that is in applying those parts of the footnotes that we felt applied to Annex 2 a A to any analysis undertaken against that criterion [most explicitly the analysis for Spiny Dogfish (CoP15 Prop. 18) and Coralliidae (CoP15 Prop. 21) at CoP15] and applying the other parts more widely to both Annex 2 a A and 2 a B. These latter parts are very general and have not informed our analyses under Annex 2 a B to any great extent.

Further reflections on Annex 2 a B

At CoP15 we interpreted the phrase "its survival might be threatened" in Annex 2 a B to mean "the species might become biologically extinct". Recognising how unlikely this was in the case of widespread species such as Spiny Dogfish (CoP15 Prop. 18) and Porbeagle *Lamna nasus* (CoP15 Prop. 17), we concentrated in the analysis on Annex 2 a A, particularly as additional information had become available since these species were considered at CoP14 (CoP14 Prop. 16, CoP14 Prop. 15) that allowed a very approximate extrapolation of quantitative declines for the species as a whole. However, on further reflection it seems to us that, in the context of Resolution Conf. 9.24, the phrase "its survival might be threatened" in Annex 2 a B is essentially the

same as “threatened with extinction”, the biological basis on which species are deemed to meet the criteria for inclusion in Appendix I and which is defined by Annex 1 of the resolution.

On this basis, the paragraph can be interpreted as: It is known, or can be inferred or projected that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which it might meet any of the criteria in Annex 1.

This formulation is now very similar to the formulation in Annex 2 a A (….. *regulation of trade is necessarily to avoid [the species] becoming eligible for inclusion in Appendix I in the near future*) with two exceptions: the reference to “harvest of wild specimens reducing the wild population” present in B but not in A and the absence in B of reference to the “near future”.

The latter seems to us to be the crucial difference. Put simply, under Annex 2 a A a species meets the criteria for inclusion in Appendix II if it is thought likely to meet the criteria for inclusion in Appendix I in the near future (between five and ten years), while under Annex 2 a B it meets the criteria for inclusion in Appendix II if it is thought likely to meet the biological criteria for inclusion in Appendix I at any time in the future. This is very similar to the original formulation of Annex 2 a B (harvest for trade exceeding, over an extended period, the level that can be continued in perpetuity or reducing the population to a level at which it might be threatened by other influences). In other words, virtually any species that is not being sustainably harvested can be regarded as meeting this criterion.

Conclusions – the unresolved tensions around what Appendix II is for

The foregoing discussions illustrate the experiences of IUCN/TRAFFIC in applying Annex 2 a B of Resolution Conf. 9.24 to proposals for commercially important aquatic species. We have not addressed the question of whether we consider the criteria as set out in the various revisions of Resolution Conf. 9.24 to effectively embody the intent or spirit of the Convention, either in the minds of those who framed and adopted it, or as the Parties understand them now.

The issue is perhaps best demonstrated by the fact that a change in understanding of the phrase “its survival might be threatened” in Annex 2 a B, from one perfectly reasonable interpretation to another, greatly alters the implications of the paragraph: if we take it to mean that harvest for trade might ultimately threaten the species directly or indirectly with biological extinction, then the criterion is hard to meet in the case of many widespread commercially harvested species (not just aquatic species but most timber species); on the other hand if we take it to mean that the species is likely to become threatened with extinction as defined elsewhere in the Resolution then, as we have said, virtually any species that is currently unsustainably harvested for trade will meet the criterion.

It appears there are divergent views, held by Parties and others, as to what Appendix-II listings should be for. For some, Appendix II should be retained only for species for which there is genuine concern that harvest for trade might pose a threat to overall survival sooner rather than later, that is species that are well on the way to becoming eligible for Appendix-I listing. For others, Appendix II should operate essentially as a tool for ensuring long-term sustainable use of species that feature in trade, so that they should be included well before they are close to meeting the criteria for Appendix-I listing. These divergent views become most apparent in cases where the species are economically important and where there may be other international mechanisms playing a role in various aspects of management – most notably species that feature in commercial fisheries (as here) and various timber species.

It may be possible to revise the criteria to more clearly reflect one view or the other – indeed the criteria used at CoP13 leant more explicitly towards the interpretation that any species that was “unsustainably” harvested for trade was eligible for inclusion in Appendix II. However, this would not necessarily resolve the tension between these polarised viewpoints. It may be that the Parties prefer there to be some flexibility in interpretation of the Appendix-II criteria, so that they can make decisions on a case-by-case basis, use the best available information and analysis, and, in the words of Annex 4 of Resolution Conf. 9.24 (Rev. CoP14) “act in the best interest of the conservation of the species concerned and adopt measures that are proportionate to the anticipated risks to the species.”

Appendix A – Footnote to Annex 5 of Resolution Conf. 9.24 (Rev. CoP15) for "Application of decline for commercially exploited aquatic species"

Application of decline for commercially exploited aquatic species

In marine and large freshwater bodies, a narrower range of 5-20% is deemed to be more appropriate in most cases, with a range of 5-10% being applicable for species with high productivity, 10-15% for species with medium productivity and 15-20% for species with low productivity. Nevertheless some species may fall outside this range. Low productivity is correlated with low mortality rate and high productivity with high mortality. One possible guideline for indexing productivity is the natural mortality rate, with the range 0.2-0.5 per year indicating medium productivity.

In general, historical extent of decline should be the primary criterion for consideration of listing in Appendix I. However, in circumstances where information to estimate extent-of-decline is limited, rate-of-decline over a recent period could itself still provide some information on extent-of-decline.

For listing in Appendix II, the historical extent of decline and the recent rate of decline should be considered in conjunction with one another. The higher the historical extent of decline, and the lower the productivity of the species, the more important a given recent rate of decline is.

A general guideline for a marked recent rate of decline is the rate of decline that would drive a population down within approximately a 10-year period from the current population level to the historical extent of decline guideline (i.e. 5-20% of baseline for exploited fish species). There should rarely be a need for concern for populations that have exhibited an historical extent of decline of less than 50%, unless the recent rate of decline has been extremely high.

Even if a population is not declining appreciably, it could be considered for listing in Appendix II if it is near the extent-of-decline guidelines recommended above for consideration for Appendix-I-listing. A range of between 5% and 10% above the relevant extent-of-decline might be considered as a definition of "near", taking due account of the productivity of the species.

A recent rate-of-decline is important only if it is still occurring, or may resume, and is projected to lead to the species reaching the applicable point for that species in the Appendix-I extent-of-decline guidelines within approximately a 10-year period. Otherwise the overall extent-of-decline is what is important. When sufficient data are available, the recent rate-of-decline should be calculated over approximately a 10-year period. If fewer data are available, annual rates over a shorter period could be used. If there is evidence of a change in the trend, greater weight should be given to the more recent consistent trend. In most cases, listing would only be considered if the decline were projected to continue.

In considering the percentages indicated above, account needs to be taken of taxon- and case-specific biological and other factors that are likely to affect extinction risk. Depending on the biology, patterns of exploitation and area of distribution of the taxon, vulnerability factors (as listed in this Annex) may increase this risk, whereas mitigating factors (e.g. large absolute numbers or refugia) may reduce it.

Appendix B – IUCN/ TRAFFIC Analyses of Proposals referred to in this report

Analyses CoP13 Prop. 35

Inclusion of the Date Mussel *Lithophaga lithophaga* in Appendix II. Proponents: Slovenia and Italy (on behalf of the Member States of the European Community)

Summary: The Date Mussel *Lithophaga lithophaga* resembles fruit of the date palm, and is a boring bivalve that inhabits limestone rocks. It occurs in the Mediterranean area, along the north West African coast to Senegal and along the northern coast of Angola. It is a pioneer species and its 10-20 cm long burrows provide habitat for many other organisms. A slow-growing species, individuals take 15-20 years to reach a size of five to six cm, when they are suitable for human consumption. Maximum sizes of 12 cm have been recorded. The species is thought to reach sexual maturity before it reaches a commercially viable size. Data on population trends and on the extent of exploitation are only available from restricted localities. In these areas, habitat damage from harvest is extensive, and ecosystems may take decades to recover. Over-exploitation resulting in habitat loss has been documented in areas of the Italian, Croatian, Serbia-Montenegrian and Spanish coasts. As a culinary delicacy, the species is in demand nationally and internationally, reportedly fetching prices of EUR 35-60 per kg in the illegal market in Italy. The species is subject to various levels of regulation in a number of range States: harvesting and export are prohibited in at least 12, and the species is protected in a further two, and listed as threatened in one. It is also listed as strictly protected under the Bern Convention, the Geneva/Barcelona Protocol, under the Barcelona Convention and the European Union (EU) Habitats Directive. Despite these regulations, enforcement is clearly a problem as indicated by the reported seizures of illegal shipments. Much of the illegal trade occurs among south-east European countries (Croatia, Serbia-Montenegro, Albania), and between these countries and Member States of the European Union (France, Germany, Italy, Slovenia, Spain); illegal trade from Morocco to Spain has also been reported.

The FAO *ad hoc* Expert Advisory Panel considered that the proposal identified a real and important problem, but believed that Date Mussels were probably not over-exploited as a result of international trade in a significant portion of their range.

Analysis: According to the available evidence *Lithophaga lithophaga* is in international trade and is subject to national collection for human consumption in a number of range States. Harvest is prohibited in a number of these States and the majority of use and trade is considered illegal. However, information on the status of the species throughout its range is sparse and it is therefore difficult to assess the overall impact of harvest. The species is very slow growing and restricted to a specialised habitat and there is evidence of localised depletion resulting from over-exploitation. Collection practices are clearly very destructive and the species cannot re-colonise such areas for many decades. However, there is also evidence that in some areas, the species does not grow sufficiently large to make exploitation commercially worthwhile, which may ultimately protect it from extinction. Overall it is uncertain whether or not harvest for international trade exceeds levels that can be continued in perpetuity. In cases of uncertainty, the precautionary measures of Resolution Conf. 9.24 Annex 4 recommend that Parties act in the best conservation interest of the species. An Appendix II-listing is likely to strengthen trade controls, in particular by Member States of the EU.

Analyses CoP14 Prop. 15

Inclusion of Porbeagle L*amna nasus* in Appendix II

Proponent: Germany, on behalf of the European Community States, acting in the interest of the European Community

Summary: The Porbeagle *Lamna nasus* is a large warm-blooded shark occurring in temperate waters of the North Atlantic and in a circumglobal band in the Southern Hemisphere (30–60°S). While it grows faster than many cold-blooded sharks, the Porbeagle has several life history characteristics that make it highly vulnerable to over-exploitation in fisheries. These include relatively slow growth, late maturation (8–13 years), long life span (26–45 years), large body size (up to 355 cm), small numbers of young (1–5 pups per litter) and long gestation leading to a low intrinsic rate of population increase (5–7% annually). Porbeagles are one of relatively few shark species directly exploited for their meat and there is a well documented history of Porbeagle fisheries that have over-exploited stocks, as well as declines in the amount of reported bycatch in other fisheries. Following the collapse of the Northeast Atlantic Porbeagle fishery in 1960 (with 85–99% declines in landings in 69 years), Norwegian fleets moved to the Northwest Atlantic where the fishery was only sustained for six years before also collapsing. Catch per unit effort of Porbeagle bycatch by pelagic longliners in the Southwest Pacific and Southwest Atlantic may also have declined by between 50% and 95% in 10–20 years. A few fisheries still

target Porbeagle in the North Atlantic including 8–11 French vessels which catch 300–400 t per year, and Canadian inshore and offshore vessels which have recently landed only 139–229 t of the 250 t annual quota from the Northwest Atlantic (quota reduced to 185 t in 2006). Assessments of the Northwest Atlantic population indicate it remains at a low level but is relatively stable with a slight decline in females. Only very limited recovery of stocks has occurred despite catch restrictions.

Porbeagle meat is of high quality and high value and is known to be traded internationally, but patterns and trends in international trade are largely unknown due to lack of species-level trade records. Porbeagle fins are of questionable value for the fin trade, but being large are traded internationally and sometimes as a by-product of the meat industry. A large proportion of Porbeagles caught in New Zealand waters are landed as fins and all fins exported for the fin trade. Porbeagle fisheries are managed in only a small portion of their global range, with catch quotas in Canada, USA and New Zealand. While the species is listed on various international conventions, management measures have yet to be introduced. The FAO Committee on Fisheries (COFI) recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, fewer than 20% of the COFI Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA).

This species is proposed for inclusion in Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2 a criteria A and B because of marked historic and recent population declines based on stock assessments and landings in the North Atlantic. Other stocks have unknown status but are subjected to heavy fishing pressure with little current management in place.

Analysis: Porbeagles are inherently vulnerable to overexploitation owing to a suite of life history characteristics. They have a long history of being caught in unsustainable target and non-target fisheries, with much evidence (from both catch data and stock assessments) demonstrating the impact of fishing on wild populations in the North Atlantic. There is undoubtedly demand for high value Porbeagle meat and large fins, and the species is traded internationally. Because of the lack of species-specific data, the exact scale of this international trade is unknown, meaning that the relative importance of the trade in observed and predicted declines compared with other factors (chiefly bycatch and harvest for domestic use) is also unknown. It is therefore not possible to conclude with certainty that the species meets the criteria for inclusion in Appendix II. However at least one fishery appears to be driven largely by international demand and it seems likely that such demand is an important contributing factor in other fisheries. (North Atlantic populations at least already appear to meet the biological criteria for inclusion in Appendix I with several recorded marked historical extents of decline to 1–15% of the baseline as well as marked recent declines to 10% within 10 years – these being in accordance with the guidelines recommended for commercially exploited aquatic species).

The listing would require Parties to make non-detriment findings for specimens introduced from the sea.

Analyses CoP14 Prop. 16

Inclusion of Spiny Dogfish *Squalus acanthias* in Appendix II

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community

Summary: The Spiny Dogfish *Squalus acanthias* is a temperate water largely migratory shark of the shelf seas in the northern and southern hemispheres. Despite being naturally abundant, this species is exceptionally vulnerable to over-exploitation due to its long life span (50–100 years), long generation time (25–40 years), relatively large body size (83–200 cm), slow growth rates (2.7–3.3 mm per year for adults) and late age at first maturity (females 12–23 years, males 6–14 years). The Spiny Dogfish is one of the few species of sharks for which there are species-specific trade data. Strong, persistent demand for highly valued Spiny Dogfish meat, primarily from Europe, drives international trade and the targeting of fisheries around the world. There is also international trade in Spiny Dogfish fins and other products. As the Spiny Dogfish is migratory and usually strongly aggregated by age and sex, fishers can maintain catches despite stock depletion and target the most valuable part of the stock (large, pregnant females). Heavily exploited populations become male biased with reduced pup production. Many Spiny Dogfish populations have been severely depleted by fisheries and the species has been characterised by serial depletion around the globe. Spiny Dogfish have undergone marked historic declines in stock abundance and landings in the Northeast Atlantic and Northwest Pacific, and marked recent declines on the Iberian coast, in the Black Sea and Northwest Atlantic populations. Some declines have been severe and have also been very rapid: recruitment failure began after less than ten years targeted exploitation of the Northwest Atlantic population. The few management measures in place for Spiny Dogfish largely lack either a scientific basis or full enforcement and encompass only a limited part of their full range. The

FAO Committee on Fisheries (COFI) recognised the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA – Sharks), endorsed by the FAO Council in 2000. However, fewer than 20% of the COFI Member States (of which there are over 100) have reported to FAO that they have implemented the IPOA through the drafting of a National Plan of Action (NPOA). The Spiny Dogfish is listed globally as Vulnerable on the IUCN Red List, and regional populations have been assigned individual listings ranging from Vulnerable to Critically Endangered except for the South African and Australasian populations, which are considered to be of Least Concern.

The Spiny Dogfish is proposed for inclusion in Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2 a criteria A and B because of significant and continuing population declines driven by international trade. The proposed listing would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve the related technical and administrative issues.

Analysis: All but two populations of Spiny Dogfish have shown declines in catches and stock abundance driven by strong and persistent demand for high priced meat. Available evidence indicates that a high proportion of harvested Spiny Dogfish enters international trade. The species is also inherently vulnerable owing to a suite of life history characteristics. It seems likely that those Spiny Dogfish populations that remain relatively unexploited are likely to be the focus of expanding fishing pressure in the face of sequential declines in other populations and continuing demand for Spiny Dogfish meat for the international market, as has already been observed in New Zealand and Morocco. It would appear therefore that the Spiny Dogfish meets the criteria for inclusion in CITES Appendix II under Resolution Conf. 9.24 (Rev. CoP13) Annex 2 a Criteria A and B.

Analyses CoP14 Prop. 17

Inclusion of the Sawfish family Pristidae in Appendix I

Proponent: Kenya and the United States of America

Summary: The family Pristidae comprises two genera and approximately seven species of cartilaginous rays that are related to sharks and chimeras. Sawfish occur in subtropical and tropical freshwater, marine and coastal habitats to at least 80 m depth and exhibit species differences in their degree of tolerance to freshwater habitats. Their circumtropical distribution is thought to have once been continuous across areas of suitable habitat but is now severely fragmented with virtually all remaining populations believed to be seriously depleted. Two species (*Pristis pristis* and *P. perotteti*) have relatively limited distribution, being confined to coastal waters of the eastern and western Atlantic respectively; the remaining species are widespread, apparently occurring in a number of discrete populations. Sawfish have a suite of life history characteristics that make them extremely vulnerable to over-exploitation including slow growth rate, low fecundity, high age at first maturity and a low intrinsic rate of increase. Principal threats to sawfish are from fishing (formerly targeted in part, but now mostly incidental capture) and habitat degradation and loss. Few quantitative population trends can be determined for most species, however evidence from numerous surveys, field collections and landings data suggest that many sawfish populations have been extirpated or nearly extirpated from large areas of their former ranges, with very few sightings since the 1960s and1970s. Population collapses have been recorded, for example, in Nicaragua and the Philippines, while US populations of *P. pectinata* are estimated to be currently 5% of historic levels. Sawfish have been demonstrated to be highly vulnerable to degradation and disruption of shallow coastal and freshwater habitats, through for example dam building blocking sea access for migration and pollution.

The toothed rostrum of the sawfishes makes them especially prone to accidental entanglement in fishing nets and possibly line gear. Sawfish are exploited for their rostra, fins and meat and are highly prized exhibits in public aquaria. Some past sawfish declines are known to have been largely driven by a lucrative market for meat and fins. Two fisheries are currently known to target sawfish for the international trade in fins and aquarium exhibits, while the majority of captures are incidental due to the very low population abundance. Sawfish fins are regarded as some of the highest quality in the shark fin trade but no studies have focused on identifying them in the trade. International trade in many sawfish products has been documented, for example in US Fish and Wildlife Service import trade data. However data are scarce and insufficient to precisely quantify the levels of international trade. A few species of sawfish are protected in some countries by national legislation, but there is no international management or monitoring of sawfish populations. All the sawfish species are currently listed as Critically Endangered on the IUCN Red List.

The proponent seeks to include all species of the family Pristidae in CITES Appendix I in accordance with Resolution Conf. 9.24 (Rev. CoP13), Annex 1, Criteria A.i); A.v); B.i); B.iii); B.iv) and Criterion C.ii) on the basis that the population is small, has undergone declines and is fragmented due to habitat loss and over-exploitation. Biological characteristics of the species make them particularly vulnerable.

Analysis: There is very little recent information on population sizes or extent of distribution of sawfish species. However, historical data and the extreme scarcity of recent sightings indicate declines in some stocks in some species that are likely to be of the magnitude suggested in the guidelines in Resolution Conf. 9.24 (Rev. CoP13) for inclusion in Appendix I, particularly given the long generation time of sawfishes. Sawfish fins are known to be valuable and to be traded internationally; there is also some trade in sawfish rostra and very limited trade in live specimens for aquaria. However, evidence of targeted fisheries for international trade is limited and the majority of captures are known to be incidental.

Given taxonomic uncertainty regarding the number of sawfish species, the similarity of sawfishes to each other, and the difficulty of distinguishing between parts in trade of different species, enforcement would be problematic if some species were to be included in the Appendices and not others.

Analyses CoP14 Prop. 18

Inclusion of the European Eel *Anguilla anguilla* in Appendix II

Proponent: Germany, on behalf of the European Community Member States, acting in the interest of the European Community

Summary: European Eels *Anguilla anguilla* are elongated snake-like bony fishes with smooth, slimy skin that are catadromous (spend most of their life in freshwater and descend to the sea to breed) and are generally considered to consist of a single panmictic (freely interbreeding) population. However, genetic studies have suggested some degree of non-random mating and restricted gene flow, and the debate continues over the structure of the stock. European Eels are long-lived (captive-bred eels have lived for 84 years) and females can attain 6 kg and over 100 cm in size while males typically reach about 45 cm. The species undergoes a life cycle encompassing a wide geographical scale and involving long-distance migrations. Spawning has never been observed, however the leaf-like larvae (known as leptocephali) are observed in the Sargasso Sea, east of Bermuda. These larvae drift on the Gulf Stream to the continental shelves of North West Africa and Western Europe after a journey of up to three years (but in some cases less than one year) after which time they metamorphose into eel-like, transparent juveniles called glass eels. Fisheries target these glass eels as they gather in estuaries and wait for the water temperature to reach 10–12oC before entering inland waters. Glass eels first metamorphose into pigmented elvers as they enter estuaries, then become pigmented yellow eels and subsequently spend a growth phase of between three and 25 years in rivers. They undergo a final metamorphosis into silver eels before embarking on a trans-Atlantic migration back to the Sargasso Sea where they spawn and die. Fisheries target silver eels as they leave inland and coastal waters and commence their long-distance journeys. All major life stages (glass eel, silver and yellow eels) are exploited in directed fisheries with an estimated annual catch of 30 000 t caught by approximately 25 000 fishermen.

The latest review of the status of the European Eel was conducted by the Joint European Inland Fisheries Advisory Commission (EIFAC) and International Council of the Exploration of the Sea (ICES) Working Group on Eels in 2006. Scientific consensus supported the view that the species has declined in most of its distribution and is outside safe biological limits. In the mid 1980s, the number of glass eels entering rivers in Western Europe (i.e. recruitment) decreased dramatically to 20% or less of levels observed not more than three generations previously; a figure that is widely agreed on. Recruitment time series from 19 rivers in 12 countries all showed downwards trends in the last 25 years (from both catch data and fishery independent assessments). Data are lacking to show conclusively whether continental stocks of yellow and silver eels have also declined as much as recruitment and whether the two are linked. Data are also currently too fragmentary to be able to confidently determine the cause of the observed declines in recruitment and landings of European Eel. There is some evidence that the collapse in recruitment may have been caused by declining spawning stock in continental waters, but other data suggest that inland catch declines have been less pronounced and could have been driven by climatic and economic factors. In one study in which 54 catch and fishery-independent stock datasets were assessed, 37% showed significant declines, 7% showed significant increases and 56% showed no clear trends. In addition to overfishing, other anthropogenic impacts might have contributed to the sharp decline in European Eel recruitment, including freshwater and coastal habitat loss, pollution, climate change, blocking of inland migration routes by dams and mortality in hydroelectric turbines. It is also suggested that natural fluctuations in ocean climate may have an important influence on European Eel recruitment.

In response to the widely recognised precarious state of the European Eel population, the European Community has proposed a recovery plan with a target of escapement to sea of at least 40% of silver eels relative to potential escapement under unfished, unpolluted and unobstructed conditions. The aim is to achieve this goal via the establishment of River Basin District-based eel management plans that are due for submission at the end of 2007. Given the many uncertainties in eel biology and management, the continuing precautionary

advice of ICES is that stocks should be managed to allow 50% of the potential maximum pristine spawner escapement. There remains lack of clarity regarding the underlying reference status of silver eel biomass.

The meat of European Eels is highly valued in Europe and parts of East Asia, with glass, yellow and silver eels favoured in different regions. International trade of European Eel is high and from Europe consists mainly of live glass eels exported to Asia for rearing in aquaculture. Several other eel species are also traded internationally, mainly fresh, frozen and smoked. Between 1995 and 2005, an estimated half a billion live European glass eels were exported from the EU on average each year to Asia. At the current time, captive breeding of European Eels is not possible and were it to become so, it would take some time for it to become apparent as to whether such technology would transform international markets in glass eels.

Analysis: Available data, supported by scientific consensus from the ICES/EIFAC Working Group, show marked and widespread declines in glass eel recruitment to less than 20% of levels observed up to three generations previously and therefore the taxon may already meet the biological criteria for inclusion in Appendix I set out in Resolution Conf. 9.24 (Rev. CoP13). These declines are not disputed but trends in catches of silver and yellow eels and their relationship to recruitment and stock size remain much less clear, because the datasets that are available are fragmentary. Nonetheless, significant declines in older stages have been observed in 20 out of 54 available fishery and stock assessment datasets. Factors that are likely to contribute to the changes in European Eel stocks and recruitment include fisheries (for local use and international trade), habitat degradation, disruption of migratory routes, pollution and natural climate fluctuations as well as human-induced climate change; the relative contribution of each of these remains unresolved. However, there is significant international trade due to heavy demand for European glass eels for export to Asia for captive rearing. While total exports have declined in recent years, high prices are likely to maintain incentives to catch this species for export. It seems that exploitation for trade may be a significant factor in current eel declines, possibly exacerbated by changing oceanic climatic conditions. The European Eel may therefore meet the criteria for inclusion in Appendix II.

In view of the presence of other eel species in trade, effective enforcement would require the development of adequate identification methods for all parts that featured prominently in trade.

Analyses CoP15 Prop. 15

Inclusion of Scalloped Hammerhead Shark *Sphyrna lewini*, Great Hammerhead Shark *Sphyrna mokarran*, Smooth Hammerhead Shark *Sphyrna zygaena*, Sandbar Shark *Carcharhinus plumbeus,* and Dusky Shark *Carcharhinus obscurus* in Appendix II

Proponent: Palau and the USA

Summary: The Scalloped Hammerhead Shark *Sphyrna lewini* is a large circumglobal species found in distinct ocean basin populations in coastal warm temperate and tropical seas. It has low productivity due to several life history characteristics including: long life span (up to at least 30 years), large size at maturity (108–200 cm or more depending on sex and population), late age at maturity (6–17 years), long generation time (20 years), long gestation time (8– 12 months), relatively low litter size (12–41 pups per litter) and low population growth rate (8–10% per year). In much of their range, Scalloped Hammerheads are caught both in targeted shark fisheries, where they make up a large proportion of total catches, and as by-catch by longline, gillnet, coastal trawlers and purse-seine fleets. In some countries these sharks are also caught in recreational fisheries. Juveniles and neonates are heavily targeted in many locations. Where data are available on abundance and catch rates of Scalloped Hammerheads or a hammerhead complex including two other sphyrnid species (*S. zygaena* and *S.mokarran*), marked historic declines to below 15–20% of baseline as well as recent declines are evident. These include: a stock assessment of Scalloped Hammerheads in the North West Atlantic reporting an 83% decline in 24 years; decline in catch per unit effort of Scalloped Hammerheads by 98% in 32 years off North Carolina (United States of America); stocks in the Eastern Pacific (Cocos Island National Park) and South West Indian Ocean (South Africa) have also undergone declines of around 60–70% over the course of between eight and 25 years. Data aggregated for the hammerhead shark complex (*S. lewini*, *S. mokarran* and *S. zygaena*) follow similar declines including up to 99.9% in the Mediterranean since the early 19th century, by more than 85% over 44 years off the Queensland coast in Australia, and by 93% in industrial landings of sphyrnids in southern Brazil between 1994 and 2008. Scalloped Hammerheads are heavily exploited in several data-poor areas, including large parts of the Western Indian Ocean and the Western Pacific, where similar declines are suspected.

Scalloped Hammerhead fins are among the most highly valued in the international fin trade due to their large size and high needle count (meaning these fins are particularly desirable as the needles are the consumable part of the fin). Patterns and trends in international trade are largely unknown due to lack of species-specific

trade records. However, commercial trade records and genetic analysis of the Hong Kong fin market provided a combined estimate of 1.3– 2.7 million Scalloped Hammerheads and Smooth Hammerheads harvested for the fin trade annually. Genetic analysis of a sample of fins in the Hong Kong market indicated that Scalloped Hammerheads are exploited for the fin trade from populations in the Indo-Pacific, East and West Atlantic. Growing demand for fins is driving increased retention and targeting of hammerheads, including Scalloped Hammerheads. Hammerhead shark meat is often considered unpalatable because of a high concentration of urea; nonetheless, there are some records of international trade. In some regions, such as Brazil, Scalloped Hammerhead neonates and juveniles are targeted by coastal gillnet fisheries and traded in domestic markets. Scalloped Hammerheads are listed on various international conventions, but species-specific management measures have yet to be introduced. As of January 2010, capture of Scalloped Hammerheads will be prohibited in Spanish fishing fleets wherever they operate. Scalloped Hammerheads should be gaining some protection from various regional shark finning bans, wherever they are effectively enforced, as well as shark fishing bans throughout the Exclusive Economic Zones of French Polynesia, Palau and the Maldives. Scalloped Hammerheads are listed globally as Endangered on the *IUCN Red List of Endangered Species*, with regional populations assigned individual listings of Vulnerable and Endangered.

The Food and Agriculture Organization of the United Nations (FAO) Committee on Fisheries (COFI) recognized the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), endorsed by the FAO Council in 2000. In 2009, FAO reported that out of 68 members responding to a questionnaire, 50% had conducted assessment as to whether a National Plan of Action (NPOA) was needed; 90% of those have gone on to develop and implement an NPOA. To date there has been no assessment of the effectiveness of NPOAs.

The Scalloped Hammerhead is proposed for inclusion in Appendix II under *Resolution Conf. 9.24 (Rev. CoP14)* Annex 2 a because of significant and continuing population declines driven by the international fin trade and caught as by-catch in other fisheries. The proposed listing would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve related technical and administrative issues. The Great Hammerhead Shark *Sphyrna mokarran*, the Smooth Hammerhead Shark *Sphyrna zygaena*, the Sandbar Shark *Carcharhinus plumbeus*, and the Dusky Shark *Carcharhinus obscurus* are also proposed for listing in Appendix II under *Resolution Conf. 9.14 (Rev. CoP14)* Annex 2b criterion A for look-alike reasons. All are caught in targeted and by-catch fisheries and their fins are traded internationally. Fins from all these species are thin and falcate with the dorsal fin height longer than its base. As fins in trade, hammerhead fins, along with fins from *C. plumbeus* and *C. obscurus*, are morphologically similar to *S. lewini*. Hammerhead catches are often amalgamated as *Sphyrna* spp., and *S. lewini* is often confused with *S. zygaena*. Because of the difficulty in identification of these larger hammerhead species, catches of *S. lewini* are often amalgamated with *S. mokarran* and *S. zygaena*. Because of the higher value associated with the larger triangular fins of hammerheads and *Carcharhinus plumbeus* and *Carcharhinus obscurus*, traders sort them separately from other carcharhinid fins, which are often lumped together. Sorting fins to species is done by professional fin processors but this does not occur until late in the trade chain and certainly occurs after Customs would be officially required to identify fins to species.

The four other species proposed share many life history characteristics with Scalloped Hammerheads, making them vulnerable to exploitation and slow to recover. A series of stock assessments in the North West Atlantic have shown the following declines: Great Hammerheads declined by 96% between 1981 and 2005, Smooth Hammerheads declined by 91% between 1981 and 2005, Sandbar Sharks declined by 64–71% from unexploited levels, and Dusky Sharks declined by at least 80% from unexploited levels.

Analysis: The Scalloped Hammerhead is the target of fisheries that are driven by the international fin trade and is also caught as by-catch in other fisheries, with the products entering international trade. The species is intrinsically vulnerable to overexploitation. Harvest has led to major declines in some areas such that some stocks would appear already to meet the criteria for inclusion in Appendix I. Similar declines are suspected in other areas where the species is known to be harvested, but quantitative data are lacking. All subpopulations of the species have been assessed as either Vulnerable or Endangered by IUCN and there are not known to be any major unexploited populations. It would appear therefore that the species meets the criteria for inclusion in Appendix II, in that regulation of the trade is required to ensure that the species does not become eligible for inclusion in Appendix I, assuming that it does not already do so.

Scalloped Hammerheads are primarily in trade as fins. These fins are traded with those of the other four species proposed here for look-alike reasons. While fin traders with expert knowledge are able to sort shark fins reliably to species—except notably for Scalloped and Smooth Hammerheads which are often grouped together at all stages in the supply chain—such sorting typically does not occur until after Customs would be officially required to identify fins to species. DNA tests are available to confirm species identification for sharks but are not suitable for routine Customs checks. Hence it would seem that these other species do meet

criterion A in Annex 2b of *Resolution Conf. 9.24 (Rev CoP14)* based on the difficulty of distinguishing their fins from those of Scalloped Hammerheads.

Analyses CoP15 Prop. 16

Inclusion of Oceanic Whitetip Shark *Carcharhinus longimanus* in Appendix II

Proponents: Palau and the United States of America

Summary: The Oceanic Whitetip Shark *Carcharhinus longimanus* is one of the most widespread shark species, ranging across tropical and subtropical waters (300N–300S). This highly migratory species has a large body size (largest specimens in recent studies 250–300 cm), late age at maturity (four to seven years), moderately long life span (up to 22 years), long gestation time (9–12 months), small mean litter size (five–six pups), and long generation time (10 years). These factors mean that the species has low productivity, making it vulnerable to over-exploitation and slow to recover following depletion.

Oceanic Whitetip Sharks were formerly among the most abundant pelagic sharks within their range and have been caught as by-catch in many pelagic fisheries around the world. A few significant small-scale fisheries target them and this species continues to make up a substantial proportion of total shark bycatch in many pelagic fisheries, mostly longline and purse seine fleets targeting tuna and Swordfish. Between 1993 and 2004, Oceanic Whitetip Sharks made up over 20% of the total shark by-catch by the purse seine fishery in the East Pacific. They are also present in 16% of French and Spanish tuna purse seine sets in the western Indian Ocean. The estimated annual by-catch of Oceanic Whitetip Sharks in longline fisheries is over 7000 individuals in the North Pacific and just under 540 000 in the Central and South Pacific. Lack of reporting and recording mean that Oceanic Whitetip Shark catches may be higher than documented in some areas. No stock assessments are available to determine population sizes, but available catch datasets indicate that this species has undergone severe historic and recent declines. In the North West Atlantic and Central Pacific, declines of 90–99% in catch per unit effort and biomass have been observed since the 1950s. Catch per unit effort of Oceanic Whitetip Sharks underwent a declining trend in the East Pacific of 90% in 10 years. Catches reported to the West and Central Pacific Fisheries Commission (WCPFC) declined by around 85% in eight years up to 2006. There is relatively little information on the status of the species in the Indian and South Atlantic Oceans, but it is known to be taken as by-catch in these areas (and in a directed fishery in the Gulf of Aden) and may be expected to have been subject to similar declines to those documented elsewhere. Catches in longline fisheries in the equatorial Atlantic are reported to have declined steeply. A large proportion of Oceanic Whitetip Shark by-catch in pelagic longlines is alive when brought onto the vessel (>75% in the USA longline fishery, 76–88% in Fijian longline fishery) and most individuals would be likely to survive if released unharmed.

Strong demand for Oceanic Whitetip Shark fins drives international trade and encourages the removal and retention of fins from sharks taken as by-catch throughout their range. Patterns and trends in the international fin trade are largely unknown as a result of a lack of species-specific trade records. However, analysis of commercial trade data from the Hong Kong fin market provided an estimate of 200 000 to one million Oceanic Whitetip Sharks harvested for the fin trade in 2000. It is estimated that Oceanic Whitetip Shark fins made up 2% by weight of the total global fin trade between 2002 and 2004.

Oceanic Whitetip Sharks are listed in Annex I of the United Nations (UN) Convention on the Law of the Sea, although no species-specific management has yet been put in place. They are subject to a joint quota in the USA and should benefit from shark finning bans which are in place in various countries and shark fishing bans in Palau, French Polynesia and the Maldives. Oceanic Whitetip Sharks are listed globally as Vulnerable on The IUCN Red List of Threatened Species, while the North West Atlantic and Central Atlantic populations are listed as Critically Endangered.

The FAO Committee on Fisheries (COFI) recognized the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), endorsed by the FAO Council in 2000. In 2009, FAO reported that out of 68 members responding to a questionnaire, 50% had conducted assessment as to whether a National Plan of Action (NPOA) was needed; 90% of those have gone on to develop and implement an NPOA. Several current NPOAs encompass regions where Oceanic Whitetip Sharks are caught as by-catch, including Japan, USA, and Fiji (Pacific Islands Regional Plan of Action). To date there has been no assessment of the effectiveness of NPOAs.

The proposed listing would include an annotation to delay entry into effect of the inclusion of *C. longimanus* in Appendix II by 18 months to enable Parties to resolve related technical and administrative issues.

Analysis: Oceanic Whitetip Shark fins are heavily exploited as by-catch in fisheries that occur throughout their range, where removal and retention of fins is encouraged by the high value of their fins in international trade. A large proportion of the Oceanic Whitetip Shark catch is alive when brought onto the vessel and it is believed that most individuals would survive if released unharmed, rather than retained for fin removal. The species is inherently vulnerable to overexploitation and there is evidence demonstrating declines in most cases where exploited populations are monitored. Several stocks of Oceanic Whitetip Shark appear already to meet the criteria for inclusion in Appendix I, with historical declines to <10% of baseline, which for this low productivity species is within the decline guidelines for commercially exploited aquatic species in Resolution Conf. 9.24 (Rev. CoP14). Other stocks are of unknown status, but in many areas are known to be subject to heavy fishing pressure; these may be expected to show similar changes to monitored populations. There is no indication of substantial unexploited stocks.

It would appear, therefore, that the species meets the criteria for inclusion in Appendix II, in that regulation of international trade is required to ensure that the species does not become eligible for inclusion in Appendix I.

Analyses CoP15 Prop. 17

Inclusion of Porbeagle *Lamna nasus* in Appendix II

Proponent: Sweden, on behalf of the European Community's Member States acting in the interest of the European Community

Summary: The Porbeagle *Lamna nasus* is a large warm-blooded shark occurring in temperate waters of the North Atlantic and in a circumglobal band in the Southern Hemisphere (30–600S). While it grows faster than many cold-blooded sharks, the Porbeagle has several life history characteristics that make stocks highly vulnerable to over-exploitation and slow to recover subsequently. These include: relatively slow growth rate, late maturation (8–18 years), long life span (29–65 years), large body size (up to 357 cm), small numbers of young (average is four pups per litter), long gestation (8–9 months) and long generation time (18–26 years) leading to a low intrinsic rate of population increase (5–7% annually in the North Atlantic, 2.6% in the South West Pacific) and low productivity.

The Porbeagle is one of relatively few shark species directly exploited for its meat and there is a well documented history of Porbeagle fisheries that have over-exploited stocks, as well as declines in the amount of reported by-catch of other fisheries. Following the collapse of the North East Atlantic Porbeagle fishery in 1960 (with 85–99% declines in landings in 69 years), Norwegian, Faroese and Danish fleets moved into the North West Atlantic where the fishery collapsed after six years. Stock assessments by the International Commission for the Conservation of Atlantic Tunas (ICCAT) and the International Council for the Exploration of the Sea (ICES) in 2009 identified historical declines to 6% of baseline in the North East Atlantic in 82 years (1926 to 2008), to 22–27% in the North West Atlantic in 44 years (1961 to 2005), and in the South West Atlantic to 18% in 47 years (1961 to 2008) and also a 60% decline from 1982 to 2008. Catch per unit effort (CPUE) of Porbeagle by pelagic longliners in the South West Pacific may also have declined by 50–80% in 10 years (1992 to 2002) and 80–95% in 17 years (1983 to 2000). Porbeagles have virtually disappeared from the areas of the Mediterranean where they were previously abundant, with catches in tuna traps declining by over 99.99% in some areas. Porbeagles continue to be targeted in the North Atlantic, including by five French vessels, Canadian vessels (185-t quota) and vessels from the USA (11-t quota). Fleets from Spain, Japan, Taiwan (Province of China) and South Korea take unquantified by-catch of Porbeagles in the South East Pacific. Assessments of the North West Atlantic stock indicate that numbers remain at a low but relatively stable level with a slight continuous decline in the number of reproductively mature females, a likely contributing factor to the limited recovery of stocks to date despite catch restrictions. Future projections suggest a recovery to Maximum Sustainable Yield (MSY) in the North West Atlantic would take place between 2030 and 2060, if the fishery were to be closed. Total reported catch in New Zealand has declined steadily from 300 t in the period 1988–89 to 50 t in the period 2005–06, despite increased catch effort.

Porbeagle meat is of high quality and high value and is traded internationally, but patterns and trends in international trade are largely unknown owing to lack of species-level trade records. Porbeagle fins are of questionable value for the fin trade but are traded internationally, largely as a by-product of the meat industry. A large proportion of Porbeagles caught in New Zealand waters are landed as fins and all fins are exported for the fin trade. Porbeagle fisheries are managed in only a small portion of their global range, with catch quotas in Canada, the USA and New Zealand, and a zero catch quota set for 2010 in the European Union (EU). The total allowable catch (TAC) in New Zealand is not based on a stock assessment and only around 20% has been reported as landed in recent years. The amount of unreported and unregulated fishing on the high seas is unknown but believed to be substantial, and a threat to stock recovery. The species is listed globally as Vulnerable in *The IUCN Red List of Threatened Species*, and regional populations have been assigned

individual listings ranging from Near Threatened (Southern Ocean) to Critically Endangered (North East Atlantic and Mediterranean).

The Food and Agricultural Organization (FAO) Committee on Fisheries (COFI) recognized the need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), endorsed by the FAO Council in 2000. In 2009, FAO reported that, out of 68 members responding to a questionnaire, 50% had conducted assessments as to whether a National Plan of Action (NPOA) was needed; 90% of those have gone on to develop and implement an NPOA. To date there have been no assessment of the effectiveness of NPOAs.

The proposed listing would include an annotation to delay entry into effect by 18 months to enable Parties to resolve related technical and administrative issues.

Analysis: Porbeagles are inherently vulnerable to over-exploitation owing to their life history characteristics. They have a long history of being caught in unsustainable target and non-target fisheries. In all areas for which they are available, landing and CPUE statistics and stock assessments indicate marked recent declines or historic collapses, ascribed in all cases to the impact of fishing. There is undoubtedly high demand for Porbeagle meat, which has high economic value; fins are apparently in less demand. Both products are traded internationally, but a lack of species-specific data means it is not possible to gauge the exact scale of international trade. The relative overall importance of trade on observed and predicted declines compared to other factors, chiefly by-catch and harvest for domestic use, is also unknown. However, at least one fishery (New Zealand) appears to be driven very largely by international demand and it seems likely that such demand is an important contributing factor in other fisheries.

Several stocks, notably those in the North Atlantic and Mediterranean, already appear to meet the biological criteria for inclusion in Appendix I with recorded historical extents of decline in abundance and landings to <10% of baseline. In addition, available trend data for South West Atlantic and Pacific populations have shown declines of at least 50%, some displaying declines to near the quantitative guidelines for Appendix I. No information is available on one stock (South East Atlantic/South West Indian Ocean) but this stock occupies a relatively small proportion of the range of the species and its status is unlikely to affect an assessment of the overall status of the species as a whole. There is also no reason to assume that it would not respond in the same way as all other stocks if harvesting is occurring or were to occur.

Given the observed declines, and the known role of trade in at least one fishery and its likely role in others, it would appear that the Porbeagle meets the criteria for inclusion in Appendix II in that regulation of trade is required to prevent its becoming eligible for inclusion in Appendix I in the near future.

Analyses CoP15 Prop. 18

Inclusion of Spiny Dogfish *Squalus acanthias* in Appendix II

Proponent: Sweden, on behalf of the European Community's Member States acting in the interest of the European Community

Summary: The Spiny Dogfish *Squalus acanthias* is a temperate water, largely migratory shark of the shelf seas in the Northern and Southern Hemispheres. This species is widely acknowledged as the slowest-growing, latest maturing (10–32 years) and longest lived (35–100 years) of the sharks with the lowest known intrinsic rate of population increase for any marine fish (2.3–7%, depending on the stock) and extremely long gestation time (18–22 months). As a consequence, Spiny Dogfish have very low productivity and are exceptionally vulnerable to over-exploitation.

The Spiny Dogfish is one of the few shark species for which some species-specific trade data exist. Strong, persistent demand for highly valued Spiny Dogfish meat, primarily from Europe, is the key driver of international trade and targeted fisheries worldwide. Spiny Dogfish fins and other products are also traded internationally. Many Spiny Dogfish populations have been severely depleted by directed fisheries (which usually target mature females) and the species has been characterized by serial depletion around the globe. As the Spiny Dogfish is migratory and usually strongly aggregated by age and sex, fishers can maintain catches despite stock depletion and they can target the most valuable specimens in the stock (i.e. large females). Spiny Dogfish have undergone marked historic declines in stock abundance and landings in the North Atlantic and North Pacific to <20% of baseline and have also shown high recent rates of decline. Particular concerns for the North West Atlantic stock include a male-biased sex ratio (4–7:1), a decade of poor recruitment, a lack of small and large females (over 100 cm) in the population and declining brood size and mean pup length. Some North East

Pacific (Canada) stocks appear relatively stable, some have declined, some are variable. Spiny Dogfish have declined greatly in the West Mediterranean and are now very rare. Data for other stocks are lacking; they are taken as by-catch in the South West Pacific but may be protected in a large part of the Argentinean shelf by management measures for other species; stocks in Alaska and New Zealand are considered to be stable or increasing; little is known about the stocks in South Africa and Australia.

Recent closure of the European Union (EU) and Norwegian Spiny Dogfish target fisheries in the North East Atlantic mean that the majority of future demand for Spiny Dogfish meat in Europe will have to be supplied by imports. The North East Atlantic Fisheries Commission (NEAFC) prohibited high seas fisheries for Spiny Dogfish in the North East Atlantic in 2008 (and 2009). Elsewhere, there has been little improvement in Spiny Dogfish management since 2007 when the Food and Agriculture Organization (FAO) noted that the management record for this species was “poor to extremely poor throughout the world”. Off the east coast of the USA, Spiny Dogfish fishing quotas have notably increased in recent years. There is no management in the North West Pacific despite reported declines in catch per unit effort.

The FAO Committee on Fisheries (COFI) recognized the pressing need to improve management of shark fisheries with the adoption in 1999 of the International Plan of Action for the Conservation and Management of Sharks (IPOA–Sharks), endorsed by the FAO Council in 2000. Ten years later, FAO reported that out of 68 members responding to a questionnaire, 50% had conducted assessment as to whether a National Plan of Action (NPOA) was needed; 90% of those have gone on to develop and implement an NPOA. To date, there have been no assessments of the effectiveness of NPOAs. The Spiny Dogfish is listed globally as Vulnerable in *The IUCN Red List of Threatened Species*, and regional populations have been assigned individual listings ranging from Vulnerable to Critically Endangered except for South African and Australasian populations, which are considered to be of Least Concern.

The proposed listing in Appendix II would include an annotation to delay entry into effect of the inclusion by 18 months to enable Parties to resolve the related technical and administrative issues.

Analysis: The Spiny Dogfish is a widely distributed and numerically abundant fish. As a species it is inherently highly vulnerable to exploitation, the consequence of a suite of life history characteristics including extremely low productivity and a very long generation time (25–40 years). Demand for its highpriced meat, chiefly in Europe, has driven the exploitation of many stocks and it is believed that a high proportion of Spiny Dogfish meat enters international trade.

The state of stocks, and indeed the state of knowledge of stocks, is highly variable across the range of the species. Some stocks, notably in the Southern Hemisphere, are not known to be heavily exploited at present and appear to be stable. Virtually all Northern Hemisphere stocks have been heavily exploited in the past and many continue to be exploited. In almost all cases where data are available exploited stocks have demonstrated marked or very marked historical declines. Some historically or currently exploited stocks are believed to be stable or increasing although none is believed to be near the historical baseline and in at least one case (North West Atlantic–US) it is predicted that the decline will resume within less than 10 years because of recent poor recruitment.

An indication of trends in the species as a whole can be obtained by summing the best available current estimates for mature females, using relatively conservative figures for historical declines where these are known to have taken place, and assuming no change where these are not known (e.g. South West Atlantic, South West Pacific). On this basis, a very rough estimate would be that the current total population of mature females is around one third (33%) of historical population, historical in this case being more than 10 years ago, but well within three Spiny Dogfish generations.

The guidelines for commercially exploited aquatic species note that there should “rarely be a need for concern for populations that have undergone an historic extent of decline of less than 50%”. Current information indicates that the Spiny Dogfish (in terms of number of mature females) has undergone a decline considerably in excess of this. The guidelines also note that a species may be considered for listing in Appendix II if it is near the extent-of-decline guidelines recommended for inclusion in Appendix I. In the case of a low productivity species, the latter decline is to 15–20% of baseline, while “near” is defined as between 5% and 10%, taking into due account the productivity of the species. Given the extremely low productivity of the Spiny Dogfish, it may be taken that this species is at the top of these ranges, that is, that an extent-of-decline to 30% of baseline could make the species eligible for inclusion in Appendix II. This is close to the (very rough) figure derived above, indicating that the species may meet the criteria for inclusion in Appendix II in *Resolution Conf. 9.24 (Rev. CoP14)*.

Analyses CoP15 Prop. 21

Inclusion of Coralliidae spp. in Appendix II, with the following annotation: "the entry into effect of the inclusion of species in the family Coralliidae in Appendix II of CITES will be delayed by 18 months to enable parties to resolve the related technical and administrative issues"

Proponents: Sweden, on behalf of the Member States of the European Community, and the United States of America

Summary: Coralliidae spp. are a group of about 31 species of octocorals that occur throughout the world. They are benthic suspension feeders, occurring at depths ranging from seven to 1500 m. They are part of a valuable group known as precious corals, but many species have populations that are too small or scattered to be useful for commercial fisheries. The species that are used commercially include *Corallium rubrum* in the Mediterranean and North-east Atlantic and several species in the North-west Pacific. The axis colour of the various species ranges from white, through various shades of pink and orange, to deep red, and the products are used extensively in jewellery and art objects. Many species, especially those in deeper waters, are slow-growing and longlived and particularly vulnerable to over-exploitation. *C. rubrum*, which occupies depths from seven to 300 m, reaches maturity relatively quickly and has had sustained extensive exploitation in several areas of the western Mediterranean for many years; however, populations have shown a dramatic decrease in their size, age and reproductive output in recent years and some populations are no longer commercially viable. Genetic studies of *C. rubrum* and some Pacific species have demonstrated significant isolation between some populations and considerable heterozygote deficiencies in some species, but not others.

Trade data show the most important producers of *Corallium rubrum* for the period 1967–2006 have been Italy, Spain and Tunisia, with smaller quantities from Albania, Algeria, Croatia, France, Greece and Morocco. Dredging the seabed in the past to collect *C. rubrum* and other species destroyed large areas of habitat, but these crude methods have largely been replaced by more selective, less damaging ones. The commercial species in the Pacific occur mainly in Japan, Taiwan (Province of China), the USA, and seamounts in international waters. Based on trade data, the most important species are *Corallium secundum*, *C. elatius*, and *Paracorallium japonicum*, with very small quantities of *C. konojoi*. There have also been large quantities of an undescribed species, referred to as “Midway deep coral” but, without taxonomic documentation, this cannot be definitely ascribed to this family. The Pacific species have been subject to rapid exploitation following discovery of commercially viable beds, leading to exhaustion of the resource. After harvesting has been discontinued, the populations have shown signs of recovery but, even after a number of years, have not fully recovered. Much of the trade is in the form of processed beads, traditionally processed and exported by Italy but, more recently, several Asian countries have been involved. The USA is the main importer of Coralliidae products, involving millions of unworked and worked items. Illegal harvesting was a problem in US territorial waters in the past and has been reported with increasing frequency in Spanish waters. The main threat to Coralliidae is over-harvesting, but secondary human impacts include pollution, sedimentation in the Mediterranean and incidental take and habitat degradation, associated with longline fishing and bottom trawling in the Pacific. Climate change may also provide an additional threat; it has been asserted that dense, short-lived populations with a high turnover are likely to be more susceptible to mass mortalities when fishing pressure is combined with global climate change (especially temperature anomalies). Mass mortalities have also been linked to disease.

Harvesting of *Corallium rubrum* is regulated in most countries. The Pacific species are regulated in the Hawaiian Islands, other areas under US jurisdiction, Japan and Taiwan (Province of China). Coralliidae are not managed by any existing fisheries management organizations. *C. elatius, C.* (= *Paracorallium*) *japonicum, C. konjoi* [sic] and *C. secundum* were listed in Appendix III by China, effective from 1 July 2008.There are currently no captive-breeding or propagation programmes for Coralliidae.

Analysis: Coral derived from Coralliidae species is a valuable commodity that is traded in large amounts. Populations of various Coralliidae species, chiefly in the Mediterranean, North-east Atlantic and North-west Pacific, have been exploited for their coral, much of it destined for international trade. This exploitation has often been intensive and, in recent years, some populations have shown very marked decreases in size, age and reproductive output.

There remain, however, significant uncertainties regarding the impact of harvest for international trade on Coralliidae species, particularly in regard to the Pacific species. These uncertainties include: the proportion of each species that remains inaccessible to harvest and how changing technologies may in future alter that proportion; the proportion of accessible populations that is not harvested (because it is not economic to do so or because of enforced controls on harvest); rates of recovery of harvested populations and the degree to which species can recolonize areas; the age of reproduction of colonies relative to the age at which they are harvested; the impact of other factors, such as sedimentation, pollution and incidental take, on Coralliidae

populations; in some cases the identity of the species involved. Given these uncertainties, it is not possible to say with certainty whether or not most Coralliidae species meet the criteria for inclusion in Appendix II set out in *Resolution Conf. 9.24 (Rev. CoP14*).

Considerably more is known about *Corallium rubrum* than about other Coralliidae species, but even in this case it is difficult to apply the criteria in *Resolution Conf. 9.24 (Rev. CoP14)* for inclusion in Appendix II in a straightforward way, largely because they were clearly not established with widely distributed, colonial marine organisms in mind. In attempting to assess this species against the criteria, it may be argued that the "application of decline to commercially exploited aquatic species" set out in the footnote to Annex 5 should apply. In fact, the language in the footnote is derived from conventional fisheries biology and management practice, which itself can only meaningfully be applied to conventional fisheries stocks. It is, arguably, even less relevant to the case of Coralliidae than the general criteria and guidelines in the Resolution. Taking these as set out in Annex 2 a of *Resolution Conf. 9.24 (Rev. CoP14)*, two cases apply: is regulation (i.e. inclusion in Appendix II) required to ensure that the species does not become eligible for inclusion in Appendix I in the near future (Annex 2 a A.); or is regulation required to ensure that harvest is not reducing the wild population to a level at which its survival might be threatened by continued harvest or other influences (Annex 2 a B.)?

The first case requires assessment using the Appendix-I criteria. The species evidently does not have a small population, nor a restricted area of distribution, nor is it predicted to have so in the near future. Regarding any observed or inferred decline in population, if population size is taken to mean number of colonies, then it is unlikely that the species has undergone a recent marked decline or will do so in the near future: most current harvest is agreed to have the effect of reducing the average size of colonies (sometimes drastically) rather than their absolute number. However, were it to be argued that the total number of individual polyps was more indicative of population size, then the overall mass or weight of the population might be a more relevant measure. In this case, because the average size of colonies in exploited areas has decreased, then it is possible that the species has undergone an overall marked decline in these areas (it has certainly done so locally). Exploitation is increasingly targeting deeper waters, where colonies are generally larger but more sparsely distributed, so that such a decline might be expected to continue. However, considerable uncertainties remain because, as with other species of Coralliidae, there is a lack of knowledge of the overall biomass of deeper water colonies and of their current rate of exploitation. Because of these uncertainties, it is not possible to say whether the overall rate of decline of the species (as measured by biomass) is near to being "marked" or not. Interpretation is further hampered by the fact that there is no settled definition of generation time for this species, nor is one likely to be agreed on, although it can assumed to be longer than the earliest reported age at maturity (seven years). The high unit value of the species in international trade would indicate that there is an incentive to target (and deplete) any accessible stocks.

Regarding the second criterion, it has been argued that reduction in average colony size as a result of harvest for trade reduces reproductive potential and makes colonies more liable to destruction from other sources. The evidence that harvest for trade is likely to lead to the survival of the species becoming threatened in either of these ways is weak. No definite link has been established between recruitment rates (as opposed to recruitment potential) and colony size or absolute production of larvae, nor has it been clearly demonstrated that small colonies or those at lower densities are inherently more vulnerable to extinction. The species has a wide distribution and at least some populations are extremely likely to remain inaccessible to exploitation or economically unviable to exploit, and otherwise remote from other direct human influences. This means that the species as a whole is inherently unlikely to become extinct, unless there are wholesale and catastrophic environmental changes throughout its range.

In conclusion, it is conceivable, but by no means certain, that *Corallium rubrum* meets the criteria for inclusion in Appendix II by virtue of regulation of trade being necessary to prevent the species becoming eligible for inclusion in Appendix I in the near future, applying the decline criterion for Appendix-I listing to overall mass of the species rather than colony number, assuming an extended generation time for the species and assuming that deeper water, inaccessible colonies do not represent a significant proportion of the recent overall mass of the species as a whole. The species does not appear to meet any other criterion for inclusion in Appendix II.

Species of Coralliidae in trade resemble each other and it probably will not be possible to identify all specimens in trade to the species level; therefore, inclusion of some but not all species in the Appendices might create implementation problems.

Analyses CoP15 Prop. 29

Inclusion of Brazilian Rosewood *Aniba rosaeodora* in Appendix II with annotation #11 "Designates logs, sawn wood, veneer sheets, plywood and essential oil"

Proponent: Brazil

Summary: Brazilian Rosewood *Aniba rosaeodora* (also known as Rosewood, Pau-rosa and Palo de Rosa) is a slow-growing hardwood tree reaching a height of up to 30 m and trunk diameter at breast height (DBH) of two metres. It is one of about 40 members of the Neotropical genus *Aniba* and occurs in dense primary wet tropical rainforest at medium and high altitudes in Brazil, Colombia, Ecuador, French Guyana, Guyana, Peru, Suriname and Venezuela. The tree has been extensively felled to harvest its wood which is rich in linalool oil, valued as a fragrance in top-of-the-range perfumes, as a component in a wide range of scents and in aromatherapy. *A. rosaeodora* wood can also be used in furniture and in canoe manufacturing, but is rarely used for these purposes because of the high commercial value of its essential oil.

The species grows at low densities and discontinuously. Little detailed information exists on its current status as there are virtually no known forest inventories. The highest density population is believed to be in the central Amazon predominantly in the state of Amazonas, Brazil. In this area there are reported to be usually fewer than two trees per ha, but locally densities may be higher: in one, unexploited population in a 10 000-ha forest reserve in the Manaus region of Amazonas, there are three to four adult trees per hectare. Accessible stocks are believed to have been largely exhausted through overexploitation in French Guyana, Guyana and Peru, as well as Amapá, Pará and a significant area of Amazonas in Brazil. It is included in lists of threatened tree species of Colombia and Suriname. Remaining stands are reportedly in remote forest areas where access is difficult. Evidence of natural regeneration has been found recently, but it takes place slowly, irregularly and infrequently.

Brazil is now apparently the only producer of *A. rosaeodora* essential oil, which is derived almost entirely from natural stands. Although all parts of the tree are oil rich, the oil is extracted almost entirely from the wood as this is the most valued for the fragrance industry and in aromatherapy. Current extraction methods require the tree's destruction. Typically trees over 30 cm diameter at breast height and on average 30 to 35 years old are cut down, due to the higher quality aroma allegedly obtained from older trees. Now smaller trees are also being harvested because of the shortage of readily accessible older *A. rosaeodora* trees.

It is estimated that between 1937 and 2002, a large number (825 000) of trees were logged, believed to correspond to harvest from more than four million ha of forest. The harvesting and distillation processes are highly inefficient, partly because very old equipment is used. Some illegal mobile distilleries may still be operating, although most or all may have been recently closed by the Brazilian Institute of Environment and Natural Resources (IBAMA).

It is estimated that 15% of oil is used in the perfume industry in Brazil, with the remainder exported. There is some disagreement about recent oil production volumes; figures from the 1990s and early 2000s varied from 38 t per year to 100-130 t per year. It appears that since 2000 export has been less than 39 t and has reportedly failed to meet demand, in spite of increasing prices.

A comparison of the volume of logs authorized for extraction (equivalent to between 1000 and 2000 trees annually) and the quantity of oil exported between 2003 and 2008 indicates that a large proportion of the oil exported must have come from unauthorized felling. Over five times more raw material than was legally harvested would be needed for the total level of export reported in the period (although the annual discrepancy between recorded oil export and authorized volume of logs has been much less since 2006). In recent years the USA has been the chief international buyer of oil. In the period 2000–2003, it accounted for just under half of reported exports, with France, Belgium and the UK accounting for almost all the remainder. The oil is expensive, with advertised retail prices of up to ca USD2 per ml in importing countries.

Cheaper, synthetic linalool oil, and Ho wood *Cinnamomum camphora* and Ho leaf oils are substitutes for that obtained from *A. rosaeodora* in low price and mid-range perfumes, but *A. roseaodora* oil is still much in demand for fine perfumes because of its superior aroma. Adulteration or substitution of A. *rosaeodora* oil with oil from other *Aniba* species, synthetic linalool, Ho wood and Ho leaf oils, and linalyl acetate is reported to occur. However, the extent of this, and the extent to which other *Aniba* species (none of which is listed in the CITES Appendices) are harvested for oil extraction, remains the subject of controversy. Adulteration can only be detected by chemical analysis.

The Brazilian Government has many laws and general measures designed to help conserve the species, and while there has been some success, there are difficulties in enforcing the regulations. In 2006 an electronic Document of Forest Origin system was introduced which is necessary for the domestic transport of the oil.

Only a small number of plantations of *A. rosaeodora* exist and it is likely to take a few decades for these to produce oil acceptable to the market. There is high potential for the sustainable production of oil from *A. rosaeodora* leaves and stems. Two drums of oil from this source were exported in 2008, but it will be an estimated six to eight years before substantial quantities are available for export and widespread approval from the fragrance industry of oil from this source is still needed.

A. rosaeodora was assessed by IUCN as Endangered (A1d+2d) in 1998; this assessment is regarded as in need of updating. It was listed as endangered in Brazil in 1992.

The proponent seeks to list *A. rosaeodora* in Appendix II, in accordance with Article II, paragraph 2a) of the Convention and *Resolution Conf. 9.24* Annex 2a, Paragraph A, with Annotation #11 designating logs, sawn wood, veneer sheets, plywood and essential oil. However the current annotation #11 lists "powder and extracts" and not "essential oil".

Analysis: *Aniba rosaeodora* is a wide-ranging, heavily exploited and slow-growing tree known to be depleted in many parts of its range. Exploitation is very largely driven by export trade, although this trade, as far as is known, is now confined to one country—Brazil—albeit the one where most of the surviving population is found.

The species certainly does not have a restricted range or a small population under the guidelines for inclusion in Appendix I provided in *Resolution Conf. 9.24 (Rev. CoP14)*. There is insufficient information on historical trends to determine whether the overall population has undergone a marked recent decline or not. There is therefore insufficient information to determine whether regulation in trade is needed to ensure that the species does not meet the biological criteria for inclusion in Appendix I in the near future (Criterion Annex 2 a A).

While harvesting for trade has certainly depleted accessible populations, it is not evident that regulation is required to ensure that harvest is not reducing the total wild population to a level at which its survival might be threatened by continued harvesting or other influences (Criterion Annex 2 a B).

Analyses CoP15 Prop. 42

Inclusion of Palo santo *Bulnesia sarmientoi* in Appendix II with annotation #11 Designates logs, sawn wood, veneer sheets, plywood, powder and extracts

Proponent: Argentina

Summary: Palo santo *Bulnesia sarmientoi* is a large slow growing tree, reaching 10-20 m in height and 30-80 cm diameter at breast height (DBH). It is confined to the Gran Chaco region in Bolivia, Paraguay, Argentina and a small part of Brazil. Within the region it is found in isolated or continuous stands mainly in the semi-arid Chaco subregion, with scattered individuals in other subregions. It may once have occurred in an area of around 100 000 km2 and is the dominant species in some areas. FAO's Forest Resource Assessment estimated the Argentine stock in 2000 at 19.4 million m3. One study in Argentina in 2004–2005 found an average of 58 adult trees per ha (DBH>20 cm) with average number of individuals of 227/ha. Older studies (1979) in Argentina of productivity for this species estimate standing volume of wood at 0.75–0.783 per ha. Average growth rate was estimated at 0.022–0.025 m3/ha/yr. The species has the ability to re-sprout from cut stumps and can be one of the commonest species in re-growth forest. One study found it to be one of the most frequent species in an area of secondary forest in the Argentine Chaco at a volume of 3.31 m3 per ha.

The Gran Chaco has been subject to land-use changes for agriculture and stock-farming and is intensively logged for timber and charcoal production. It has been estimated that between 1998 and 2006 at least 20 000 km2 (2 million ha) of "chaqueño" forest have been deforested in Argentina. Extensive and more recently intensive stockbreeding systems has reportedly resulted in degradation and the loss of restoration ability of approximately 15 million hectares of native forest. Forest destruction has also reduced the species' habitat in Paraguay. In Bolivia, overall rates of deforestation in the Gran Chaco have slowed somewhat from an estimated 260 km2 (26 000 ha) per year in 1992–2000 to ca 190 km2 (19 000 ha) in 2001–2004, believed to be due in part to a reduction in rates of agricultural conversion because of recurrent drought.

The wood of *Bulnesia sarmientoi* is heavy (density 0.990–1.280 kg/dm^3), very strong and decay-resistant, even underground, because of its resin content, which also gives it aromatic properties. It has a wide range of uses

including furniture, flooring, lathe work, manufacture of propeller shaft bearings for ships, and (fence) poles. The essential oil derived from *B. sarmientoi* wood, known as “Guayacol”, “Guajol” or “Guayaco” is used in the perfume cosmetics industry and in mosquito repellents. Palo santo resin, derived from the residue of the distillation process can be used to produce dark varnishes and paints. The tree is also used for charcoal production and the leaves have been used for medicinal purposes.

Trade data, especially from Bolivia, are limited for this species. Argentina and Paraguay are known to export *B. sarmientoi* wood with recorded exports increasing rapidly from approximately 100 t in the early 2000s to 40 000 t in total by 2006. The majority of Argentinean exports for 2006–2008, estimated at almost 53 000 t, were of roundwood, cylinders and posts (87%), with 12.6% sawn wood and a very small amount of firewood and charcoal. China was the main importing country, with small amounts destined for Uruguay and other countries. Between 2000 and 2006 most exports from Paraguay were of sawn wood, logs, cylinders and poles with “less than 1% destined for extracts and other items” (although it is not clear whether this is by weight and whether it was already in the form of extract). The destination of exports from Paraguay, based on data for the period 2000–2004, was primarily China (90%). The main destinations for extract are said to be France and Spain. The extent of trade in essential oil or “Guayacol”, for the perfume cosmetics industry, is difficult to estimate although it appears to be met by exports from Paraguay. In the early 1970s an estimated 75 and 100 t of guaiac wood oil were produced each year. Production of extract is said to be from damaged branches and trade from Paraguay is reportedly a by-product of land clearing. There may be some limited trade in artisanal crafts to Europe and North America, although this apparently only uses dead wood because felled wood tends to crack. There is some local use for furniture. 2

Significant areas of the Gran Chaco are within protected areas in Bolivia, Argentina and Paraguay and initiatives are under way to prevent further deforestation. Argentina listed the species in App. III in 2008, which has reportedly had a significant effect on trade volume and control. *Bulnesia sarmientoi* shares the common names lignum-vitae and guaiac with the *Guaiacum* species, which were listed in Appendix II in 2003. *Bulnesia arborea* is also referred to as lignum-vitae and guaiac and can be used for the same purposes. Identification of *Bulnesia* to the genus level through wood anatomy is relatively straightforward; however *B. sarmientoi* and *B. arborea* are almost indistinguishable at the macroscopic and microscopic level.

Analysis: *Bulnesia sarmientoi* has a wide range and evidently a very large global population. Given the reported extent of forest clearance in the Chaco region, it is possible that its overall population has undergone a considerable decline, although given the lack of quantitative historical data, and uncertainty as to what an appropriate generation time for this species is, it is not possible to say whether such a decline is near one that might qualify it for inclusion in Appendix I in the near future. Moreover, historical declines were driven by land-use change, not by harvest for international trade. The species is now harvested for international trade, but it is not clear to what extent this is leading to population declines over and above those brought about by land-use change. If it were doing so to any extent, then it could be argued that regulation of trade was required to prevent the species becoming eligible for inclusion in Appendix I in the near future [Criterion in Annex 2 (a) A in *Resolution Conf. 9.24 (Rev. CoP14)*]. The large number of small trees present in surveyed areas, its presence in re-growth forest, and current information on standing stocks and increment rates, at least in Argentina, imply that it is not doing so, although this cannot be said with certainty.

Similarly it is not clear that regulation of trade is necessary to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences [Criterion in Annex 2 (a) B in *Resolution Conf. 9.24 (Rev. CoP14*)].

The annotation suggested appears to cover the main parts and derivatives in trade. However it would not cover handicrafts, which are also apparently in trade but are normally made from dead wood, nor would it cover furniture. It appears that manufacture of furniture takes place within importing countries and therefore the annotation would cover the main parts exported from range States.