

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



Joint sessions of the 31st meeting of the Animals Committee and  
the 25th meeting of the Plants Committee  
Geneva (Switzerland), 17 July 2020

Interpretation and implementation matters

Regulation of trade

Non-detriment findings

REPORT OF THE SECRETARIAT

1. This document has been prepared by the Secretariat.

Background

2. At its 18th meeting (CoP18, Geneva, 2019), the Conference of the Parties adopted Decisions 18.132 to 18.134 on *Non-detriment findings*:

**18.132 Directed to the Secretariat**

*The Secretariat shall:*

- a) *inventory and review the materials and guidance for the making of non-detriment findings (NDFs) that are available to the Parties, and identify any apparent gaps or needs (e.g. regarding taxonomic or geographical coverage, form or format, comprehensiveness, accessibility, languages, updates, practicality, etc.), including guidance for making NDFs for trade in specimens from different sources (W, R and F), and NDFs for taxa prioritized/called for in Decisions or Resolutions;*
- b) *identify, in consultation with the Animals and Plants Committees and Parties, and based on the analysis, priorities for additional or improved NDF guidance materials, and for addressing apparent gaps or needs;*
- c) *subject to external funding, address the agreed priorities in capacity-building by:*
  - i) *undertaking targeted research in support of the development of new or updated NDF guidance materials in collaboration with relevant experts, Parties and organizations; and*
  - ii) *organising one or more interdisciplinary expert workshops on NDFs, including the 2nd international expert workshop on non-detriment findings, with assistance of the Animals and Plants Committees, where draft guidance materials on NDFs are to be reviewed, advanced or completed;*
- d) *present the results of the work to the Animals and Plants Committees for their review, and make suggestions on how best to use the outputs to assist Scientific Authorities in the making of NDFs; and*

- e) *make available to Parties on the CITES website the NDF guidance materials resulting from the implementation of the present Decision.*

#### **18.133 Directed to the Animals and Plants Committees**

*The Animals and Plants Committees shall:*

- a) *review the Secretariat's gap analysis of NDF materials and guidance, and assist in identifying priorities for additional or improved NDF guidance materials, and for addressing apparent gaps or needs;*
- b) *participate as appropriate in the interdisciplinary expert workshops on NDFs where draft guidance materials are to be reviewed, advanced or completed;*
- c) *assist the Secretariat in preparing the 2nd international expert workshop on non-detriment findings as a follow up from Cancun 2008, based on the progress made since then;*
- d) *review and make recommendations concerning the outcomes of the interdisciplinary expert workshops on NDFs; the final draft guidance materials on NDFs; the use of these outputs in support of the making of NDFs by Scientific Authorities; and their publication on the CITES website; and*
- e) *report on these activities at the 19th meeting of the Conference of the Parties.*

#### **18.134 Directed to Parties**

*Parties are encouraged to:*

- a) *provide financial support for the implementation of Decision 18.132, including the 2nd international expert workshop on non-detriment findings;*
- b) *provide any help and information regarding methodologies, tools, scientific information, expertise and any other resources used to formulate NDFs in order to contribute to such a workshop, the results of which should be submitted to the Conference of the Parties for consideration at its 19th meeting; and*
- c) *make use of the guidance materials on NDFs resulting from the implementation of Decisions 18.132 and 18.133, and report experiences and findings to the Animals and Plants Committees.*

3. As per paragraphs a) and b) of Decision 18.132, the Secretariat inventoried and reviewed relevant materials and guidance for the making of non-detriment findings (NDFs) that are available to Parties on the CITES website and identified potential gaps and needs. Since CoP18 was delayed by several months, an initial inventory, and a suggested approach for the gap analysis could already be made available at CoP18 in information document [CoP18 Inf. 74](#). The complete analysis is presented below to the Animals and Plants Committee for their review in order to assist the Secretariat in identifying priorities for additional or improved NDF guidance materials and addressing apparent gaps or needs.

#### Analysis of NDF materials and guidance available to the Parties

##### **Definitions and methodology**

###### *Definition of NDFs, NDF materials and NDF guidance*

4. In accordance with Articles III and IV of the Convention, export permits for specimens of species included in Appendices I and II shall be granted only when a Scientific Authority of the State of export has advised that such export will not be detrimental to the survival of the species (following a determination known as a 'non-detriment finding'). Article IV, paragraph 3, requires a Scientific Authority of each Party to monitor exports of specimens of Appendix-II species and, whenever necessary, to advise the Management Authority of suitable measures to be taken to limit such exports in order to maintain such species throughout their range at a level consistent with their role in the ecosystems and well above the level at which they would qualify for Appendix I.

5. Paragraph 1 a) of [Resolution Conf. 16.7 \(Rev. CoP17\)](#) on *Non-detriment findings* further recommends that Scientific Authorities take into account the following concepts and non-binding guiding principles in considering whether trade would be detrimental to the survival of a species:
- i) *a non-detriment finding for an Appendix-I or -II species is the result of a science-based assessment that verifies whether a proposed export is detrimental to the survival of that species or not;*<sup>1</sup>
  - ii) *Scientific Authorities should consider whether the species would be maintained throughout its range at a level consistent with its role in the ecosystems in which it occurs;*
  - iii) *in making a non-detriment finding, Scientific Authorities should consider the volume of legal and illegal trade (known, inferred, projected, estimated) relative to the vulnerability of the species (intrinsic and extrinsic factors that increase the risk of extinction of the species);*
  - iv) *the data requirements for a determination that trade is not detrimental to the survival of the species should be proportionate to the vulnerability of the species concerned;*
  - v) *the making of an effective non-detriment finding relies upon a correct identification of the species concerned and verification that it is specimens of this species that are to be exported;*
  - vi) *the methodology used to make a non-detriment finding should reflect the origin and type of specimen, such that the method used to make a non-detriment finding for a specimen known to be of non-wild origin may be less rigorous than that for a specimen of wild origin for example;*
  - vii) *the methodology used should be flexible enough to allow for consideration of the specific and individual characteristics of different taxa;*
  - viii) *the implementation of adaptive management, including monitoring, is an important consideration in the making of a non-detriment finding;*
  - ix) *the non-detriment finding is based on resource assessment methodologies which may include, but are not limited to, consideration of:*
    - A. *species biology and life-history characteristics;*
    - B. *species range (historical and current);*
    - C. *population structure, status and trends (in the harvested area, nationally and internationally);*
    - D. *threats;*
    - E. *historical and current species-specific levels and patterns of harvest and mortality (e.g. age, sex) from all sources combined;*
    - F. *management measures currently in place and proposed, including adaptive management strategies and consideration of levels of compliance;*
    - G. *population monitoring; and*
    - H. *conservation status; and*
  - x) *the sources of information that may be considered when making a non-detriment finding include but are not limited to:*
    - A. *relevant scientific literature concerning species biology, life history, distribution and population trends;*
    - B. *details of any ecological risk assessments conducted;*

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<sup>1</sup> In considering whether an export may be detrimental, the sustainability of the overall harvest will usually be a necessary consideration.

- C. *scientific surveys conducted at harvest locations and at sites protected from harvest and other impacts; and*
- D. *relevant knowledge and expertise of local and indigenous communities;*
- E. *consultations with relevant local, regional and international experts; and*
- F. *national and international trade information such as that available via the CITES trade database maintained by UNEP World Conservation Monitoring Centre (UNEP-WCMC), publications on trade, local knowledge on trade and investigations of sales at markets or through the Internet for example.*

6. These recommendations suggest that making an NDF has several components: (i) an account of relevant information concerning the species, (ii) an evaluation of the conservation status of the species, (iii) a description of harvest and export, and (iv) a finding whether a proposed export would be detrimental to the survival of that species or not. These four aspects can be addressed at different levels of detail, with varying emphasis and in different formats. For this analysis, NDF materials were collected that address each of these aspects.
7. For the purpose of this analysis, the following working definitions were applied:
  - a) “NDFs” are considered to be fully elaborated assessments for a specific species, containing concrete and specific information for each of the four components specified in paragraph 6 above, including an advice regarding the export of specimens. Most, if not all, were made by national Scientific Authorities, and submitted to the Secretariat by the Parties concerned.
  - b) “NDF guidance” is a broader and more abstract term, providing models, methods, or recommendations regarding the making of NDFs, often addressing higher order taxa (e.g. snakes) or specific ‘use categories’ (products derived from a variety of biological taxa that share similar uses, e.g. hunting trophies), but not necessarily containing all required species-specific information, and not recommending decisions on actual exports.
  - c) “NDF materials” is used as an umbrella term that includes both NDFs and NDF guidance.

*Methodology for search and inventory of NDFs and NDF guidance*

8. The Secretariat reviewed sections of the CITES website where useful NDF materials are primarily located. Documents and information located and analysed included: the [NDF database on the CITES website](#), comprised of material submitted by Parties; and documents submitted to [Plants](#) and [Animals Committees](#) [working and information documents for meetings, and documents, reports and correspondence related to the Review of Significant Trade (RST) process]. Relevant materials were also collected from other webpages, such as those on [queen conch](#), and the [Virtual College](#). Materials were included up until autumn 2018. Only few additional materials were added in 2019, and the Secretariat is of the opinion that these few additional materials would not fundamentally change the presented conclusions.
9. To focus efforts on NDF materials that are up-to-date, relevant, and accessible (see Annex 1 to this document), the inventory included:
  - a) all NDFs and NDF guidance in the NDF database [including guidance by the International Union for Conservation of Nature (IUCN) and all guidance related to the 2008 workshop in Mexico] as well as the queen conch and Virtual College information as per autumn 2018; and
  - b) all NDFs or NDF guidance (including RST-related materials) submitted as working or information documents to the Animals and Plants Committees since the adoption of [Resolution Conf. 16.7 \(Rev. CoP17\)](#) on *Non-detriment findings* in 2013, and until autumn 2018.

*Methodology for review of NDFs and NDF guidance*

10. Decision 18.132, paragraph a), gives examples of criteria that can be used for the gap analysis, such as taxonomic and geographic coverage, and comprehensiveness. To these, the Secretariat added ‘trade volumes’ in order to ensure potential gaps are directed to taxa that are common in trade. For the purpose of this review, goals are proposed for the various criteria, representing an ‘optimal’ or ‘ideal’ situation, i.e. which

would make the best and most complete NDF guidance available to Parties. These are described in the table below.

Criterion	Goal
Taxonomic coverage	Availability of NDF guidance covering all major taxa groups (defined at the 2008 NDF workshop as: mammals, birds, reptiles and amphibians, fish, invertebrates, trees, succulents and cycads, geophytes and epiphytes, perennial plants).
Geographic coverage	Availability of NDF guidance for all six CITES regions: Africa, Asia, Central and South America and the Caribbean, Europe, North America, and Oceania.
Languages	Availability of NDF guidance in all three CITES languages: English, French, and Spanish.
Taxa that dominate trade	Availability of NDF guidance for taxonomic groups that dominate trade. Trade volumes by major taxonomic group are derived from <i>Harfoot et al. 2018</i> (in information document AC30/PC24 Inf. 4).
Sources	Availability of NDF guidance that applies to different source codes. This criterion is treated as part of comprehensiveness (see below).
Resolutions, Decisions, CoP18 documents	Availability of NDF guidance that addresses requests for such guidance emanating from valid CITES Resolutions and Decisions, and CoP18 documents.
Comprehensiveness	Availability of NDF guidance that addresses all aspects of making NDFs that are specified in <a href="#">Resolution Conf. 16.7 (Rev. CoP17)</a> on <i>Non-detriment findings</i> . Several individual criteria and benchmarks were defined, which are elaborated in Annex 2 to this document.
Form, format, practicality, accessibility	All NDF guidance are available on, and easily accessible from the CITES website. Rather than an individual assessment of materials, general recommendations to improve form, format, practicality and understandability are made.

11. In a first step, characteristics of all selected NDF guidance and NDFs against the criterion mentioned above were reviewed and recorded in a spreadsheet. In a second step, overall strengths and weaknesses were analysed per criterion. Examples of particularly good practice were highlighted, and common deviations from benchmarks were identified as gaps.

#### *Inventory of NDF materials available to Parties*

12. Overall, 121 NDF materials were identified on the CITES website that matched the requirements in paragraphs 6 and 9. Twenty-nine are NDF guidance (12 of which were derived from the 2008 NDF workshop), and 36 are NDFs. An additional 56 materials are case studies initially prepared for the 2008 NDF workshop. Due to their large number, and because their strengths are reflected in the guidance that this workshop produced, these case studies were excluded from further review. A full list of inventoried materials and weblinks is shown in Annex 1.
13. The inventory thus reflects the set of NDF materials that is available to Parties through the CITES website to support their making of NDFs, leading to the following observations:
  - a) The number of available materials, and in particular of NDFs, is limited. To put this in context, one Party, Mexico, reported to have made 1,539 NDFs in 2014-2018 (personal communication), while there are 36 NDFs in total available from the CITES website.
  - b) Many of the NDF-related materials generated through the RST process or within specific projects and programmes (e.g. the CITES Tree Species Programme) are of auxiliary relevance to NDF-making because they address particular recommendations and focus on specific aspects only and may therefore not contain a comprehensive NDF or be replicable elsewhere.
  - c) Fifty-six of 121 identified NDF materials are case studies from a single workshop dating 10 years back, and an additional 12 of the 29 NDF guidance available were derived from the same workshop. Thus, the total number of materials available NOT derived from, or generated by this workshop is 53 (36 NDFs and 17 NDF guidance). This indicates the relevance of updating the NDF guidance that is readily available to CITES Parties.

## Results of analysis of available NDF materials

14. The value of NDFs for guiding other Parties in making NDFs is limited, since they are submitted and available in one language, focus on single species, the national situations and parameters differ between range States, and because they are generally not conceptualised to serve as user-friendly guidance. However, the Secretariat included them in this analysis, since they may be of value to guide other Parties if containing relevant information on specific taxa or methods, and they may serve as examples and illustration to other Parties working on the same or similar taxa or intending to use similar methods. Including NDFs in this analysis thus broadens the information on which the conclusions are based, but the Secretariat considers only NDF guidance in its recommendations for implementing the CoP18 Decisions.

### Review of taxonomic coverage

15. The available NDFs and NDF guidance per taxonomic group in the table below suggests that Parties can find ample material to support the making of NDFs for trade in mammals, fish, and trees. For trees, for example, there are eight guidance specifically dedicated to tree species, 11 NDFs to serve as examples, and several more general guidance materials that can be applied to trees (such as the IUCN guidance). For fish, there are four guidance documents and eight example NDFs to choose from.

Main taxa in trade	NDF	NDF guidance		NDF	NDF guidance
Mammals	7	3	Animals	22	13
Birds	1	1			
Reptiles and Amphibians	4	3			
Fish	8	4			
Invertebrates	2	2			
Trees	11	8	Trees	11	8
Succulents and Cycads	2	1	Other plants	3	4
Geophytes and Epiphytes	0	1			
Perennials	1	2			
Various / all	0	4	Various / all	0	4
<b>TOTAL</b>	<b>36</b>	<b>29</b>	<b>TOTAL</b>	<b>36</b>	<b>29</b>

16. Other major taxa are less represented, especially birds that are heavily traded but are only covered by one NDF and one guidance. This limits the support available to Parties. For some major taxa, almost all available materials focus on only a few species. For example, six out of seven NDFs for mammals concern the African leopard. Seven out of eight NDFs for fish concern sharks or rays in waters of the United States of America or New Zealand. Compared to materials available for animals (13 guidance, 22 NDFs), there is very little material available for trade in non-tree plants (four guidance, three NDFs).

### Review of geographic coverage

17. As presented in the table below, Europe contributed guidance on several taxa. Europe was also involved in guidance that was produced through interregional collaboration (e.g. all guidance developed during or following the 2008 workshop). Parties in the African and the Central and South American and the Caribbean regions have submitted the largest number of NDFs, which mostly focus on species native to these regions, and populations within the range State that produced the NDF. The Secretariat notes that most NDF guidance address broad taxa, such as snakes, trees, plants, or hunting trophies, and thus do not have clearly defined geographic foci. Only a small number of guidance focus on taxa with narrowly defined geographic ranges, such as agarwood, or queen conch.

Regions that produced NDF materials	NDF	NDF Guidance
Africa	14	1
Asia	4	2
Central and South America and the Caribbean	8	1
Europe	1	6
North America	3	0
Oceania	4	0
Interregional/Global	2	19
<b>TOTAL</b>	<b>36</b>	<b>29</b>

18. Non-European regions are generally under-represented in the NDF guidance available to the Secretariat. In turn, the Secretariat notes the low number of NDFs submitted from regions other than Africa and CSAC regions, in particular Asia. All seven NDFs from North America and Oceania are on sharks and rays, while the only NDF from a European Party is on queen Conch in St. Eustatius (a territory of the Netherlands in the Caribbean).

*Review of language coverage*

19. The table below presents the available materials by major taxon and language. By far the largest number of materials is available in English, with roughly the same number of materials available in French and Spanish. Some guidance is available in several CITES languages. Only a few are available in other than the three official CITES languages. For example, the guidance on [hunting trophies \(\*Ovis ammon\*\)](#) is available in Russian, the one on [seahorses](#) in Vietnamese and Thai, and the 9-step guidance on [timber](#) and [perennial plants](#) were translated into several languages, including Georgian, Korean, Mandarin and Portuguese.

	English		French		Spanish	
	NDF	Guidance	NDF	Guidance	NDF	Guidance
<b>Mammals</b>	6	3	0	0	1	0
<b>Birds</b>	0	1	0	0	1	0
<b>Reptiles and Amphibians</b>	2	3	1	0	1	0
<b>Fish</b>	7	3	1	3	0	2
<b>Invertebrates</b>	1	2	0	0	1	1
<b>Trees</b>	4	8	4	5	4	4
<b>Succulents and Cycads</b>	2	1	0	1	0	1
<b>Geophytes and Epiphytes</b>	0	1	0	1	0	1
<b>Perennials</b>	1	2	0	2	0	2
<b>Various / all</b>	0	4	0	2	0	3
<b>TOTAL</b> (exceeds the number of available materials, since some are translated into several languages)	<b>23</b>	<b>28</b>	<b>6</b>	<b>14</b>	<b>8</b>	<b>14</b>
	<b>51</b>		<b>20</b>		<b>22</b>	

20. Identified gaps include the lower number of NDF guidance available in French and Spanish, in particular for taxa other than fish, trees and perennial plants. Most of those NDFs available in French or Spanish are for

trees and resulted from various CITES tree projects, there are only six NDFs in French or Spanish available for all other taxa groups combined (two in Spanish, four in French). The Secretariat also notes that for countries in which none of the three CITES languages are spoken, the very limited availability of materials in languages other than English, French and Spanish poses additional barriers.

*Review of NDF materials for taxa that dominate trade*

21. The table shows available NDF materials in relation to recorded trade volumes in CITES-listed species. The trade data covers the years 2011 to 2014, after which several important taxa were included in CITES Appendices, such as sharks and rosewoods. However, the Secretariat is not aware of a more recent, comparable analysis. The table further specifies major taxa groups and the main sources of specimens in trade (wild: source codes W, U, X, R; captive/artificially propagated: source codes C, D, A, F). According to *Harfoot and colleagues*<sup>2</sup>, two thirds (65%) of trade volumes in whole organism equivalents of CITES-listed species are from captive or artificially propagated sources, while one third (35%) are from wild sources.

	NDF	Guidance	Approx. trade in Whole Organism Equivalent (WOE)	
			Wild	Captive / art. prop.
Mammals	7	3	<b>0.27</b> (0.85)	<b>0.05</b> (0.15)
Birds	1	1	<b>0.12</b> (0,375)	<b>0.48</b> (1.5)
Reptiles	4	3	<b>2.25</b> (7)	<b>1.92</b> (6)
Amphibians			<b>0.01</b> (0.045)	<b>0.05</b> (0.165)
Fish	8	4	<b>0.1</b> (0.3)	<b>0.51</b> (1.6)
Invertebrates	2	2	<b>2.89</b> (9)	<b>1.2</b> (3.75)
Trees	11	8	<b>29.83</b> (93)	<b>60.31</b> (188)
Succulents and Cycads	2	1		
Geophytes and Epiphytes	0	1		
Perennials	1	2		
Various / all	0	4		
<b>TOTAL</b>	<b>36</b>	<b>29</b>	<b>35.47</b> (110.57)	<b>64.52</b> (201.17)
			<b>100</b> (311.74)	

22. According to *Harfoot and colleagues*, 90% of the 'whole organism equivalent' trade concerns plants, and 10% trade in terrestrial and marine animal species combined. For animal specimens taken from the wild, trade in reptiles and invertebrates is the highest, each with 1-3% of the total trade volume. Trade in mammals, birds, amphibians, and fish ranges between 0.01% and 0.5% per group.
23. Compared to the relative importance of volumes in trade, there is little NDF guidance available for trade in (non-tree) plants. For fauna, it seems that materials to assist Parties in making NDFs for trade in invertebrates are missing, noting that those that are available to the Secretariat all relate to a single species, *Strombus gigas*.

<sup>2</sup> Harfoot et al.: Unveiling the patterns and trends in 40 years of global trade in CITES-listed wildlife. *Biological conservation*. 2018:223;47-57, also available as information document AC30/PC24 Inf. 4. The Secretariat notes that the study aggregates data to Whole Organism Equivalents, which is challenging for certain taxa groups, such as trees and some marine species. The Secretariat nevertheless considers the overall conclusions drawn in paragraphs 21 to 23 to be reliable.

Review of NDFs for taxa called for in Resolutions or Decisions

24. In addition to [Resolution Conf. 16.7 \(Rev. CoP17\)](#) on *Non-detriment findings*, various Resolutions and Decisions contain specific provisions concerning the making of NDFs for particular species or situations.

Resolution / Decision		Mandate (summarized)
Res. Conf. 17.9	Trade in hunting trophies of species listed in Appendix I or II	URGES exporting countries to take into account the concepts and non-binding guiding principles on NDFs; such as distribution, status and trends of populations; and mortality from all sources, including illegal killing.
Res. Conf. 17.10	Conservation of and trade in pangolins	URGES range States to develop and implement <i>in situ</i> management and conservation programmes, including population assessments, the making of NDFs, monitoring, and management and conservation measures.
Res. Conf. 17.12	Conservation, sustainable use of and trade in snakes	ENCOURAGES range States to use the NDF guidance and to share experiences. URGES Parties and the Secretariat to use the NDF guidance in Res. Conf. 16.7 (Rev. CoP17) and further guidance in capacity-building workshops and training materials.
Res. Conf. 16.10	Implementation of the Convention for agarwood-producing taxa	ENCOURAGES range States to make use of the agarwood NDF guidance. DIRECTS Parties and the Secretariat to use the agarwood NDF guidance in capacity-building workshops and relevant training materials.
Res. Conf. 11.11 (Rev. CoP18)	Regulation of trade in plants	ADOPTS a definition of a new source code for plants obtained through 'assisted production' and AGREES that exports of plants derived from 'assisted production' still require NDFs.
Dec. 18.88-93	Wildlife crime enforcement support in West and Central Africa	Support scientific studies that facilitate NDFs, consider including <i>Pterocarpus erinaceus</i> in all range States in the RST process.
Dec. 18.94-99	Malagasy palisanders and rosewoods ( <i>Dalbergia</i> spp.) and ebonies ( <i>Diospyros</i> spp.)	Continue making progress in NDFs for <i>Dalbergia</i> and <i>Diospyros</i> .
Dec. 18.165-170	Quotas for leopard ( <i>Panthera pardus</i> ) hunting trophies	Exchange information and lessons learnt and develop guidance on sustainable export quotas for <i>Panthera pardus</i> .
Dec. 18.186-192	West African vultures ( <i>Accipitridae</i> spp.)	Include NDFs for trade in African vultures in possible NDF workshop.
Dec. 18.197-202	Eels ( <i>Anguilla</i> spp.)	Develop NDF guidance for trade in European eel.
Dec. 18.218-225	Sharks and rays ( <i>Elasmobranchii</i> spp.)	Develop NDF guidance for trade in sharks, in particular in data-poor, multi-species, small-scale/artisanal, and non-target (bycatch) situations.
Dec. 18.234-237	Rosewood tree species ( <i>Leguminosae</i> ( <i>Fabaceae</i> ))	Gather information, hold a workshop and make recommendations on NDFs for trade in rosewood.
Dec. 18.244-250	African lions ( <i>Panthera leo</i> ) and the CITES Big Cats task force	Support NDF making and capacity-building.
Dec. 18.275-280	Queen conch ( <i>Strombus gigas</i> )	Support NDF making, pertinent research and capacity-building.
Dec. 18.296-298	Marine ornamental fishes	Collect information and hold a workshop on marine ornamental fishes' biology; conservation status; trade and management; applicable trade regulations; and enforcement.
Dec. 18.300-302	Trade in medicinal and aromatic plant species	Examine case studies involving local and traditional knowledge, and participatory assessments, monitoring and management of medicinal and aromatic plant

		species; and develop recommendations to complement pertinent tools.
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25. The table below contains all CITES-listed taxa and use categories that featured on the CoP18 agenda or were the subject of successful CoP18 listing proposals for species previously not listed under CITES. These were matched against NDF materials available to the Secretariat. Columns three and four are marked green if dedicated guidance (or NDFs) exist for the same or very similar taxa (at least at the family level), or for the specific use category. It should be noted that there is guidance from the 2008 workshop in Mexico for all taxonomic groups defined at that workshop (column 1 of the table below), and some guidance is very generic and covers large groups of CITES-listed taxa. Examples are the IUCN guidance, the NDF guidance for “CITES species” developed by Spain (2017), and the guidance for “Aquatic species” developed by Japan (2015). Therefore, additional to the materials relating to the same taxa or use categories (columns three and four), there exists guidance of more ancillary specificity, which is not considered in this table.

Taxon specified in CITES Resolutions and Decisions, or on the CoP18 agenda		Specific materials available (at least family level, or directed to specific use categories)	
		Guidance	NDF
Mammals	Big cats		
	Hunting trophies		
	Leopard		
	African lion		
	Jaguar		
	Cheetahs		
	African carnivores		
	Bears		
	Elephants		
	Rhinoceroses		
	Great apes		
	Tibetan antelope		
	Saiga antelope		
	Musk deer		
	Vicuna		
	Giraffe		
	Pangolins		
	Cetaceans		
	Black Sea bottlenose dolphin		
Birds	Songbirds		
	African grey parrots		
	Helmeted hornbill		
	Vultures		
Reptiles	Snakes		
	Tortoises and freshwater turtles		
	Hawksbill turtle		
	Iguanas, lizards and geckos		
Amphibians	Amphibians		
	Titicaca water frog		
	Newts		
Fish	Sharks and rays		
	Sturgeons, paddlefish		
	Eels		
	Humphead wrasse		
	Totoaba		
	Ornamental fish		
	Banggai cardinal fish		
	Seahorses		
	Guitarfish and wedgefish		

Invertebrates	Queen conch		
	Corals		
	Teatfish		
	Spiders		
Trees	Timber species		
	Neotropical trees		
	Rosewood		
	Malagasy ebonies ( <i>Diospyros</i> spp.) and palisanders and rosewoods ( <i>Dalbergia</i> spp.)		
	Agarwood-producing taxa		
	African cherry		
Other plants	Orchids		
Other	Traditional medicines		

26. The table illustrates that many NDF materials available to the Secretariat are focused on taxa that do not necessarily dominate trade (see paragraph 21), for instance hunting trophies and big cats. For some Decisions and Resolutions, such as those addressing trees, a variety of materials exist that address closely related taxa (columns tree and four). For other broad taxa, such as non-carnivore mammals, birds, or bony and jawless fish (fish that are not sharks or rays), there are no dedicated materials available.
27. NDF materials available to the Secretariat seem poor or non-existent for invertebrates (other than queen conch), mammals that are not hunting trophies, birds, and fish that are not sharks or rays. It should be noted that the overview table does not distinguish between the number or quality of available materials.

#### *Review of comprehensiveness*

28. The review of comprehensiveness of the available NDF materials against the concepts and non-binding guiding principles for making NDFs mentioned in paragraph 1 of Resolution Conf. 16.7 (Rev. CoP17) (see paragraph 5) was the most extensive aspect of the Secretariat's review. Annex 2 details how these concepts and principles were applied for the purpose of the analysis. The full analysis of the NDF materials is presented in Annex 3. A summary table is presented in Annex 4.
29. The summary table illustrates that many of the concepts and principles that [Resolution Conf. 16.7 \(Rev. CoP17\)](#) recommends are well implemented in many, if not most, NDF materials (Annex 4, column 2, with positive examples highlighted in column 4). Examples of well implemented concepts and principles are vulnerability, threats, population trends, trade, and the precautionary principle. Other concepts and principles are well implemented for most, though not all, of their aspects, such as conservation status, management and monitoring, inclusive knowledge and information transparency. As such, Parties wishing to draw on guidance and example materials available from the CITES website should be able to find valuable materials on these aspects.
30. The analysis also emphasises gaps (Annex 4, column 3) in the available NDF guidance. Major gaps that the Secretariat considers worth addressing in the context of the implementation of Decisions 18.132-134 are:
- the concept, definition and implementation of assessing a species' role in its ecosystem as part of the assessment of its conservation status;
  - the meaning and implementation of adaptive management processes;
  - requirements and examples for NDFs in low-risk situations or that require little or no specific research;
  - NDF guidance for circumstances where little data exists, or where capacity for making an NDF is restricted;
  - specific guidance and example materials for incorporating expert knowledge and local and traditional knowledge for terrestrial and non-hunting trophy species;
  - example materials that illustrate how lacking or contradictory information, and trade-offs between different considerations can be transparently integrated by balanced discussions;

- g) specific guidance and examples of participatory monitoring, management and decision-making;
- h) examples of how the comparison of results from different methods, or information from different sources, peer review or stakeholder consultations can enhance the robustness of NDF advice; and
- i) specific guidance for making NDFs for ranched specimens and 'assisted production'.

*Review of form, format, practicality and accessibility*

31. All materials reviewed are available on the CITES website in written form. Most are understandable, well formatted, and technically complete in the sense that no sections seem to have been lost during file transformation processes, or similar issues. However, it seems possible to improve form, format, accessibility and understandability.
32. In terms of form and format, there is no requirement for NDFs to be lengthy or complex. Quite to the opposite, [Resolution Conf. 16.7 \(Rev. CoP17\)](#), as well as much NDF guidance, explicitly recommend to adapt effort and data requirements to the risk that a proposed trade has for a species, i.e. a 'low-risk' situation requires a simple NDF. Yet, almost all the NDFs available to Parties from the CITES website are 20 to 120 pages long, and examples of 'simple' NDFs are underrepresented. This bias could convey a message to Parties that the making of NDFs requires considerable resources, data, research investment and capacity, because pragmatic examples or guidance for making NDFs in low resource, low data, low capacity, and low risk situations are largely unavailable from the CITES website. The Secretariat believes that Parties would best be served by providing a realistic and varied suite of guidance and model NDFs that are appropriate and pragmatically adapted to a wide range of contexts and situations.
33. The NDF-related content on the CITES website could be better streamlined and interlinked, and connected to other sites, such as species-specific or topic-specific ones. The Secretariat intends to review the NDF database itself, and its mechanism for automatically uploading materials to ensure a well-organized, searchable and accessible content.

Summary: Gaps and needs identified in the gap analysis and stipulated by CoP18 decisions

34. Based on the review and analysis, the Secretariat identified the following gaps as priorities:

<b>Criterion</b>	<b>Gap or need</b>	<b>Reference paragraph</b>
Taxonomic coverage	<ul style="list-style-type: none"> <li>• Guidance for invertebrates (except queen conch), mammals (except hunting trophies and big cats), fish (except sharks and rays), birds</li> <li>• Example NDFs for non-tree plant species</li> </ul>	15-16
Geographic coverage	<ul style="list-style-type: none"> <li>• Guidance that incorporates non-European perspectives</li> <li>• Example NDFs for Asian species, and for terrestrial species from industrialized regions</li> </ul>	17, 18
Languages	<ul style="list-style-type: none"> <li>• Guidance for terrestrial animal species and model NDFs for non-tree plants in French and Spanish</li> </ul>	19, 20
Trade volumes	<ul style="list-style-type: none"> <li>• NDF materials for non-tree plants and for invertebrates (except queen conch)</li> </ul>	21-23
Resolutions and Decisions	<ul style="list-style-type: none"> <li>• Guidance for invertebrates (except queen conch)</li> <li>• Guidance for mammals</li> <li>• Guidance for fish (except sharks and rays)</li> <li>• Guidance for birds</li> </ul>	24-27

Sources, comprehensiveness	<ul style="list-style-type: none"> <li>• NDF guidance that illustrates the concept, definition and implementation of assessing a species' role in its ecosystem</li> <li>• Guidance for ranched specimens and 'assisted production'</li> <li>• NDF guidance that illustrates the meaning and implementation of adaptive management processes</li> <li>• Requirements and model NDFs for low risk situations</li> <li>• Requirements and model NDFs for low data situations</li> <li>• Requirements and model NDFs for low capacity situations</li> <li>• Specific guidance and model NDFs for incorporating expert knowledge and local and traditional knowledge for terrestrial species (except hunting trophies)</li> <li>• Model NDFs that demonstrate transparent integration of various considerations and balancing of trade-offs</li> <li>• Specific guidance and examples of participatory monitoring, management and decision making</li> <li>• Examples of triangulation of information and methods, and peer review or stakeholder consultations to ensure robustness of NDF advice</li> </ul>	28-30, Annex 3
Form, format, practicality, accessibility	<ul style="list-style-type: none"> <li>• Update and revise NDF-related contents of the CITES website, and the NDF database</li> </ul>	31-33

Priorities for additional or improved NDF guidance materials, and addressing gaps or needs

35. Based on the analysis, the Secretariat identified the following priorities for additional or improved NDF guidance, and for addressing gaps or needs:

- a) refine existing NDF guidance, or develop additional NDF guidance that addresses existing gaps and needs for the following:
  - i) guidance for making NDFs in low risk situations;
  - ii) guidance for making NDFs in low data situations;
  - iii) guidance for making NDFs in low capacity situations;
  - iv) guidance for incorporating expert knowledge and local and traditional knowledge in NDFs;
  - v) guidance for implementing participatory species monitoring, management and decision-making;
  - vi) guidance illustrating the concept, definition and implementation of assessing a species role in its ecosystem;
  - vii) guidance for ranched specimens of animal species and 'assisted production' specimens of plant species; and
  - viii) guidance for making NDFs for trade in the following taxonomic groups:
    - A. terrestrial mammals;
    - B. birds (including vultures);
    - C. fish (except sharks or rays);
    - D. invertebrates (except queen conch); and
    - E. rosewoods and palisanders; and
- b) Translate existing NDF guidance from English to French and Spanish.

## Implementation of Decision 18.132

36. For implementing paragraphs b), c), d) and e) of Decision 18.132, the Secretariat has the following suggestions:

- a) Prior to AC31 and PC25, the Secretariat intends to consult the members of the Animals and Plants Committees to identify or confirm the NDF guidance gaps and priorities described in this document. The outcomes of these consultations are to be made available in a revised version of the present document prior to the meetings.
- b) Similar to the arrangements that were made for the first international workshop on NDFs [Cancun, 2008; document [AC23 Doc. 10 \(Rev. 1\)](#)], the Secretariat proposes to establish, at the joint session on AC31 and PC25, an intersessional working group consisting of members of the Animals and Plants Committees, the Secretariat and a balanced representation of Parties, intergovernmental organizations (IGOs) and non-governmental organizations (NGOs). The following terms of reference are proposed for the working group:
  - i) The working group is to be co-chaired by the Chairs of the Animals and Plants Committees and be composed of at least one or two Parties from each CITES region, and relevant IGOs and NGOs.
  - ii) The working group is to advise the Secretariat, as needed, on:
    - A. the content and conduct of the second international expert workshop on non-detriment findings;
    - B. the most appropriate ways to address the established gaps or needs; and
    - C. the draft guidance materials on NDFs that are prepared for the workshop for review, advancement or completion.

The working group should contribute to the finalization of the workshop outputs.

- c) Prior to AC31 and PC25, the Secretariat intends to issue a Notification to the Parties to:
  - i) invite Parties, IGOs and NGOs to express interest in participating in the intersessional working group described above; and
  - ii) invite Parties to provide comments and views on priorities for additional or improved NDF guidance materials, and for addressing apparent gaps or needs, taking into account the revised version of the present document, and any help and information regarding methodologies, tools, scientific information, expertise and any other resources used to formulate NDFs that can contribute to the workshop.

The responses to the Notification are to be presented in an information document.

- d) At the joint session of AC31 and PC25, it is hoped that agreements can be reached on the gaps in NDF guidance to be addressed, and on the terms of references and composition of the intersessional working group.
- e) Pending the availability of external funding, the Secretariat would initiate research to address identified gaps.
- f) The second international workshop on NDFs ("Cancun II") could be organized in 2021 or 2022, pending the availability of external funding.
- g) The Secretariat would present the results of the work to the Animals and Plants Committees for their review and make suggestions on how best to use the outputs to assist Scientific Authorities in the making of NDFs. The Animals and Plants Committees would review and make recommendations concerning the outcomes of the international workshop on NDFs; the final draft guidance materials on NDFs; the use of these outputs in support of the making of NDFs by Scientific Authorities; and their publication on the CITES website, and report on these activities at the 19th meeting of the Conference of the Parties.

- h) The Secretariat would make available to Parties on the CITES website the NDF guidance materials resulting from the implementation of Decision 18.132.

#### Recommendations

37. The Animals and Plants Committee are invited to:

- a) comment on the Secretariat's suggestions for the implementation of paragraphs b), c), d) and e) of Decision 18.132, as outlined in paragraph 36;
- b) as per Decision 18.133, paragraph b), review the Secretariat's gap analysis of NDF materials and guidance, and assist in identifying priorities for additional or improved NDF guidance materials, and for addressing apparent gaps or needs;
- c) as per Decision 18.133, paragraph c), and in support of the implementation of Decision 18.132, paragraphs c), and d), establish an intersessional working group on NDF guidance, with the terms of reference and composition suggested in paragraph 36;
- d) as per Decision 18.133, paragraph d), review and make recommendations concerning the outcomes of the interdisciplinary expert workshop on NDFs; the final draft guidance materials on NDFs; the use of these outputs in support of the making of NDFs by Scientific Authorities; and their publication on the CITES website; and
- e) as per Decision 18.133, paragraph e), formulate recommendations and report to the Conference of the Parties at its 19th meeting.

### Inventory of available NDF materials

The following table lists all example NDFs, guidance (G), and case studies from the 2008 workshop in Mexico (CS) that were inventoried on the CITES website. NDFs and guidance were included in the subsequent review. All weblinks were checked on 7 August 2019.

Type	Name	Party / Institution	Region	Year	Link
NDF	<i>Aniba rosaeodora</i>	Peru	CSAC	2015	<a href="#">weblink</a>
NDF	<i>Aquilaria malaccensis</i>	Indonesia	Asia	2009	<a href="#">weblink</a>
NDF	<i>Bulnesia sarmientoi</i>	Paraguay	CSAC	2013	<a href="#">weblink</a>
NDF	<i>Brookesia minima</i> , <i>B. peyrierasi</i>	Madagascar	Africa	2018	<a href="#">weblink</a>
NDF	<i>Carcharinus falciformis</i>	New Zealand	Oceania	2017	<a href="#">weblink</a>
NDF	<i>Alopias vulpinus</i> , <i>Alopias superciliosus</i>	United States of America	North America	2017	<a href="#">weblink</a>
NDF	<i>Cycas thouarsii</i>	Mozambique	Africa	2012	<a href="#">weblink</a>
NDF	<i>Dalbergia cochinchinensis</i>	Vietnam	Asia	2018	<a href="#">weblink</a>
NDF	<i>Dalbergia retusa</i>	Nicaragua	CSAC	2018	<a href="#">weblink</a>
NDF	<i>Anguilla anguilla</i>	Morocco	Africa	2018	<a href="#">weblink</a>
NDF	<i>Furcifer angeli</i>	CITES Secretariat	International	2013	<a href="#">weblink</a>
NDF	<i>Sphyrna lewini</i> , <i>Sphyrna mokarran</i> , <i>Sphyrna zygaena</i>	United States of America	North America	2015	<a href="#">weblink</a>
NDF	<i>Hoodia gordonii</i>	South Africa	Africa	2017	<a href="#">weblink</a>
NDF	<i>Nardostachys grandiflora</i>	Nepal	Asia	2017	<a href="#">weblink</a>
NDF	<i>Lamna nasus</i>	New Zealand	Oceania	2014	<a href="#">weblink</a>
NDF	<i>Lamna nasus</i>	United States of America	North America	2017	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	Mozambique	Africa	2018	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	Namibia	Africa	2018	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	South Africa	Africa	2018	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	United Republic of Tanzania	Africa	2018	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	Zambia	Africa	2018	<a href="#">weblink</a>
NDF	<i>Panthera pardus</i>	Zimbabwe	Africa	2018	<a href="#">weblink</a>
NDF	<i>Mantella viridis</i>	CITES Secretariat	International	2013	<a href="#">weblink</a>
NDF	<i>Pericopsis elata</i>	Democratic Republic of the Congo	Africa	2014, 2015, 2018	<a href="#">weblink 1</a> , <a href="#">weblink 2</a> , <a href="#">weblink 3</a>
NDF	<i>Pericopsis elata</i>	Cameroon	Africa	2018	<a href="#">weblink</a>
NDF	<i>Podocnemis unifilis</i>	Peru	CSAC	2015	<a href="#">weblink</a>
NDF	<i>Prunus africana</i>	Democratic Republic of the Congo	Africa	2013, 2017	<a href="#">weblink 1</a> , <a href="#">weblink 2</a>
NDF	<i>Prunus africana</i>	Cameroon	Africa	2014	<a href="#">weblink 1</a> , <a href="#">weblink 2</a>
NDF	<i>Arantiga waglen</i> , <i>Arantiga mitrata</i> , <i>Aratinga weddellii</i> , <i>Aratinga leucophtalma</i> , <i>Brotogeris cyanoptera</i> , <i>Brotogeris sanctithomae</i> , <i>Brotogeris versicolurus</i>	Peru	CSAC	2014	<a href="#">weblink</a>
NDF	<i>Pterocarpus santalinus</i>	India	Asia	2012	<a href="#">weblink</a>
NDF	<i>Sphyrna zygaena</i>	New Zealand	Oceania	2014	<a href="#">weblink</a>
NDF	<i>Mobula japonica</i>	New Zealand	Oceania	2017	<a href="#">weblink</a>
NDF	<i>Strombus gigas</i>	Honduras	CSAC	2017	<a href="#">weblink</a>
NDF	<i>Strombus gigas</i>	Netherlands	Europe	2014	<a href="#">weblink</a>
NDF	<i>Swietenia macrophylla</i>	Peru	CSAC	2015	<a href="#">weblink</a>
NDF	<i>Vicugna vicugna</i>	Peru	CSAC	2014	<a href="#">weblink</a>

G	9 Step guidance for timber	Germany	Europe	2018	<a href="#">weblink</a>
G	9-step guidance for perennial plants	Germany	Europe	2016	<a href="#">weblink</a>
G	Agarwood	CITES Secretariat	International	2013	<a href="#">weblink</a>
G	Agarwood-producing taxa	Various	International	2008	<a href="#">weblink</a>
G	Aquatic invertebrates	Various	International	2008	<a href="#">weblink</a>
G	Aquatic species	Japan	Asia	2015	<a href="#">weblink</a>
G	Birds	Various	International	2008	<a href="#">weblink</a>
G	IUCN guidance	IUCN	International	2002	<a href="#">weblink</a>
G	CITES Species	Spain	Europe	2017	<a href="#">weblink</a>
G	<i>Anguilla anguilla</i>	Tunisia	Africa	2018	<a href="#">weblink</a>
G	Fish	Various	International	2008	<a href="#">weblink</a>
G	Geophytes and epiphytes	Various	International	2008	<a href="#">weblink</a>
G	<i>Gonystylus</i> spp.	Indonesia	Asia	2010	<a href="#">weblink</a>
G	Hunting trophies	European Union	Europe	2017	<a href="#">weblink</a>
G	Mammals	Various	International	2008	<a href="#">weblink</a>
G	Medicinal plants	Various	International	2008	<a href="#">weblink</a>
G	<i>Ovis ammon</i> , hunting trophies	CITES Secretariat	International	2013	<a href="#">weblink</a>
G	Perennial plants	Various	International	2008	<a href="#">weblink</a>
G	<i>Pericopsis elata</i>	Belgium	Europe	2014	<a href="#">weblink</a>
G	Reptiles and amphibians	Various	International	2008	<a href="#">weblink</a>
G	Seahorses	Canada	International	2013	<a href="#">weblink</a>
G	Sharks	Germany	Europe	2014	<a href="#">weblink</a>
G	Snakes	IUCN	International	2017	<a href="#">weblink</a>
G	<i>Strombus gigas</i>	Honduras	CSAC	2017	<a href="#">weblink</a>
G	Succulents and cycads	Various	International	2008	<a href="#">weblink</a>
G	Timber species and <i>Prunus africana</i>	Various	International	2008	<a href="#">weblink</a>
G	Tree species	Guatemala, Spain	International	2015	<a href="#">weblink</a>
G	Trees	Various	International	2008	<a href="#">weblink</a>
G	Turtles and tortoises	IUCN	International	2015	<a href="#">weblink</a>
CS	<i>Acepenser</i> spp., <i>Husa</i> spp.	Romania	Europe	2008	<a href="#">weblink</a>
CS	<i>Aloe</i> spp.	Kenya	Africa	2008	<a href="#">weblink</a>
CS	<i>Amazona auropalliata</i>	Nicaragua	CSAC	2008	<a href="#">weblink</a>
CS	<i>Anguilla anguilla</i>	Sweden	Europe	2008	<a href="#">weblink</a>
CS	<i>Ansellia</i>	Kenya	Africa	2008	<a href="#">weblink</a>
CS	Anthipatharia	United States of America	North America	2008	<a href="#">weblink</a>
CS	<i>Aquilaria malaccensis</i>	Malaysia	Asia	2008	<a href="#">weblink</a>
CS	<i>Cacatua galerita</i>	New Zealand	Oceania	2008	<a href="#">weblink</a>
CS	<i>Cacatua sulphurea</i>	Indonesia	Asia	2008	<a href="#">weblink</a>
CS	<i>Caesalpinia echinata</i>	Brazil	CSAC	2008	<a href="#">weblink</a>
CS	<i>Carnegiea gigantea</i>	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Ceratozamia mirandae</i>	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Cheilinus undulates</i>	Indonesia	Asia	2008	<a href="#">weblink</a>
CS	<i>Cibotium barometz</i>	China	Asia	2008	<a href="#">weblink</a>
CS	Coral	Australia	Oceania	2008	<a href="#">weblink</a>
CS	<i>Crocodilus niloticus</i>	Kenya	Africa	2008	<a href="#">weblink</a>
CS	<i>Cuora amboinensis</i>	Malaysia	Asia	2008	<a href="#">weblink</a>
CS	<i>Cuora amboinensis</i>	Indonesia	Asia	2008	<a href="#">weblink</a>
CS	<i>Cycas circinalis</i>	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Dioon edule</i>	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Encephalartos</i> spp.	South Africa	Africa	2008	<a href="#">weblink</a>
CS	<i>Falco cherrug</i>	United Arab Emirates	Asia	2008	<a href="#">weblink</a>
CS	<i>Galanthus elwelsii</i>	Turkey	Asia	2008	<a href="#">weblink</a>
CS	<i>Galanthus woronowii</i>	Georgia	Europe	2008	<a href="#">weblink</a>
CS	<i>Gonystylus bancanus</i>	Malaysia	Asia	2008	<a href="#">weblink</a>

CS	<i>Guaiacum sanctum</i>	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Hippocampus</i> spp.	Canada	North America	2008	<a href="#">weblink</a>
CS	<i>Hoodia gordonii</i>	South Africa	Africa	2008	<a href="#">weblink</a>
CS	<i>Macaca fascicularis</i>	China	Asia	2008	<a href="#">weblink</a>
CS	<i>Macaca mulata</i>	China	Asia	2008	<a href="#">weblink</a>
CS	<i>Malacochersus tornieri</i>	Kenya	Africa	2008	<a href="#">weblink</a>
CS	<i>Monodon monoceros</i>	Greenland	Europe	2008	<a href="#">weblink</a>
CS	<i>Nardostachys grandiflora</i>	Denmark	Europe	2008	<a href="#">weblink</a>
CS	Orchids	Ecuador	CSAC	2008	<a href="#">weblink</a>
CS	<i>Panax quinquefolius</i>	USA, Canada	North America	2008	<a href="#">weblink</a>
CS	<i>Panthera leo</i>	Tanzania	Africa	2008	<a href="#">weblink</a>
CS	<i>Panthera pardus</i>	South Africa	Africa	2008	<a href="#">weblink</a>
CS	Parrots	Mexico	North America	2008	<a href="#">weblink</a>
CS	<i>Pelargonium sidoides</i>	Lesotho	Africa	2008	<a href="#">weblink</a>
CS	<i>Pericopsis elata</i>	Cameroon	Africa	2008	<a href="#">weblink</a>
CS	<i>Platycercus eximius</i>	New Zealand	Oceania	2008	<a href="#">weblink</a>
CS	<i>Prunus africana</i>	Equatorial Guinea	Africa	2008	<a href="#">weblink</a>
CS	<i>Psittacus erithacus</i>	Guinea	Africa	2008	<a href="#">weblink</a>
CS	<i>Ptyas mucosus</i>	Indonesia	Asia	2008	<a href="#">weblink</a>
CS	Rare orchids	United Kingdom of Great Britain and Northern Ireland	Europe	2008	<a href="#">weblink</a>
CS	Stony corals	Indonesia	Asia	2008	<a href="#">weblink</a>
CS	<i>Strombus gigas</i>	Colombia	CSAC	2008	<a href="#">weblink</a>
CS	<i>Swietenia macrophylla</i>	IUCN	CSAC	2008	<a href="#">weblink</a>
CS	<i>Taxus</i> spp.	Canada	North America	2008	<a href="#">weblink</a>
CS	<i>Tillandsia xerographica</i>	Guatemala	CSAC	2008	<a href="#">weblink</a>
CS	<i>Tridacnidae</i>	Palau	Oceania	2008	<a href="#">weblink</a>
CS	<i>Tursiops aduncus</i>	Solomon Islands	Oceania	2008	<a href="#">weblink</a>
CS	<i>Uromastyx</i> spp.	Israel	Europe	2008	<a href="#">weblink</a>
CS	<i>Ursus arctus</i>	Canada	North America	2008	<a href="#">weblink</a>
CS	<i>Vanda coerulea</i>	Thailand	Asia	2008	<a href="#">weblink</a>
CS	<i>Vicugna vicugna</i>	Peru	CSAC	2008	<a href="#">weblink</a>

**Methodology used to analyse the comprehensiveness  
of available NDF guidance and example NDFs**

[Resolution Conf. 16.7 \(Rev. CoP17\)](#) on *Non-detriment findings*, paragraph 1, recommends that Scientific Authorities take into account a series of concepts and non-binding guiding principles in considering whether trade would be detrimental to the survival of a species. These were condensed into a manageable number of criteria, for which all materials were reviewed, as described in the table below. The resolution's generic recommendation that NDFs be science-based was operationalized through five specific criteria. Finally, the use of the precautionary principle was added as an additional criterion, since it is referred to in most NDFs.

<b>Criterion</b>	<b>Mandate</b>	<b>Definition</b>
Species identification	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)v	Stipulates / applies reliable species identification and verification according to up-to-date nomenclature and identification guides.
Source	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)vi	Stipulates consideration of / considers relevant source codes to determine NDF procedures.
Conservation status	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)ii, ix(B, C, H)	Stipulates consideration of / considers conservation status throughout the species' range in relation to a level consistent with its role in the ecosystems in which it occurs.
Population trends	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)ix(C)	Stipulates consideration of / considers population trends.
Threats	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)ix(D)	Stipulates consideration of / considers overall threats to the survival of the species.
Vulnerability	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)iii, iv, ix(A)	Stipulates consideration of / considers factors that increase species' vulnerability, including species' biology and life-history traits.
Harvest and mortality	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)ix(E)	Stipulates consideration of / considers historical and current levels and patterns of harvest and mortality (e.g. age, sex) from all sources combined.
Monitoring and management	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)viii, ix(F, G)	Stipulates consideration of / considers the implementation of adaptive management, including monitoring.
Levels of trade	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)iii	Stipulates the consideration of / considers the volume of legal and illegal trade.
Flexibility / balance effort and risk	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)iv, vii	Stipulates / reflects flexible methodology and data requirements that are proportionate to the specific and individual characteristics and the vulnerability of the species.
Inclusive knowledge	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)x	Stipulates / uses a variety of information sources, including scientific and grey literature, ecological risk assessments, surveys and relevant trade information, expert knowledge, local and traditional knowledge.
Science-based: transparent information	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)i	Stipulates / ensures traceability of information (through quotations, footnotes, links, reference sections), and provides cues for assessing information quality.
Science-based: transparent analysis	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)i	Stipulates / ensures transparency of the applied methods, including methods sections, and referring to the use of specific, and documented approaches.
Science-based: transparent integration	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)i	Stipulates / ensures transparent integration of considerations, balancing diverse factors and stipulates a reflective judgement.

Science-based: participation	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)i	Stipulates / reflects inclusive and adaptive learning processes in management and monitoring, in particular through participatory approaches [see Resolution Conf. 13.2 (Rev. CoP14) on <i>Sustainable use of biodiversity: Addis Ababa Principles and Guidelines</i> ].
Science-based: robustness	<a href="#">Conf. 16.7 (Rev. CoP17)</a> , paragraph 1(a)i	Stipulates / ensures robustness of conclusions through 1) good data, 2) use of multiple indicators, 3) triangulation, 4) peer review or stakeholder consultation.
Precautionary principle	Considered in CITES listing criteria and emerged as common practice in CITES.	Stipulates consideration of / considers uncertainties in the applied methods and used data, and the use of a precautionary principle, where required.

**Detailed review results by comprehensiveness sub-criterion**

The following tables present detailed results of all criteria relating to the comprehensiveness of NDF materials.

<b>Species identification</b>		
Stipulates / applies reliable species identification and verification according to up-to-date nomenclature and identification guides.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	5	17
Partially – look-alike issues are mentioned	4	0
Partially – a physiognomic description is provided / requested	14	0
Not addressed	13	12
<b>Resumé:</b> Many guidance address this criterion. Many NDFs provide descriptions of the species they address, some address look-alike issues. Yet, few NDFs report on identification and verification.		

<b>Source</b>		
Stipulates consideration of / considers relevant source codes to determine NDF procedures.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	11	11
Partially – mentions incomplete set of sources (mostly focused on wild vs. art. prop.)	NA	8
Partially – mentions sources, but it remains unclear what it means for NDF process	NA	7
Not addressed (in case of NDFs presumably all is wild?)	25	3
<b>Resumé:</b> Most guidance address the source of the specimen (though often focused on wild versus captive / artificially propagated). Most NDFs do not explicitly state the source of the specimen, it usually is implicit in the text and at times seems ambiguous.		

<b>Conservation status</b>		
Stipulates consideration of / considers conservation status throughout the species' range in relation to a level consistent with its role in the ecosystems in which it occurs.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed, including an assessment of the role of the species in its ecosystem	1	17*
Partially – some ecosystem relationships are described	10	NA
Partially – the role in its ecosystem is not addressed	17	10
Partially – role in its ecosystem is lacking and its conservation status is superficial	8	2
Does not apply (negative legal acquisition finding, unnecessary due to identification issues)	2	NA
Not addressed	0	0
<b>Resumé:</b> All guidance and NDFs address conservation status to varying degrees. The present population status throughout its range is in most materials well elaborated. Most guidance remain superficial about a species' role in its ecosystem and lack stipulations how to operationalize it. Even at a purely descriptive level, few NDFs address it at all. CITES lacks an approach to assess species' roles in ecosystems.		
*many lack stipulations to operationalize the concept.		

<b>Population trends</b>		
Stipulates consideration of / considers population trends.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	15	22
Partially – makes only general stipulations / comments	11	4
Does not apply (lacking legal acquisition finding)	1	NA
Not addressed	9	3
<b>Resumé:</b> Almost all guidance and most NDFs address population trends. Many NDFs remain unspecific due to lack of data or due to species with long generation times.		

<b>Threats</b>		
Stipulates consideration of / considers overall threats to the survival of the species.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	16	18
Partially – superficial, or selective stipulations / descriptions	15	6
Not addressed	5	5
<b>Resumé:</b> Most guidance and NDFs address this criterion to some degree. The selection of mentioned threats often seems selective. Climate change is rarely mentioned.		

<b>Vulnerability</b>		
Stipulates consideration of / considers factors that increase species vulnerability, including species biology and life-history traits.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	15	22
Partially – stipulations / descriptions superficial or lack conclusion	8	4
Not addressed	13	3
<b>Resumé:</b> Almost all guidance and many NDFs address this criterion. Some NDFs remain superficial, or a description of vulnerability-related extrinsic and intrinsic characteristics remains without overall conclusion.		

<b>Harvest and mortality</b>		
Stipulates consideration of / considers historical and current levels and patterns of harvest and mortality (e.g. age, sex) from all sources combined.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	6	16
Partially – lacks historical perspective	2	2
Partially – lacks consideration of overall causes of mortality	22	7
Partially – lacks both of the above	1	2
Not addressed / not applicable (e.g. zero quota)	5	2
<b>Resumé:</b> Almost all materials address this criterion to some degree, in particular mortality from harvest. Many guidance address it comprehensively. Most NDFs and some guidance do not address mortality from causes other than harvest.		

<b>Monitoring and management</b>		
Stipulates consideration of / considers the implementation of adaptive management, including monitoring.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	25	18
Partially – lacks adaptation	4	10
Partially – lacks monitoring	4	1
Not addressed	3	0
<b>Resumé:</b> Almost all materials address this criterion extensively. Some guidance do not address <u>adaptive management</u> , or its meaning remains unclear.		

<b>Levels of trade</b>		
Stipulates the consideration of / considers the volume of legal and illegal trade.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	20	20
Partially – lacks illegal trade	12	3
Not applicable / not addressed	4	6
<b>Resumé:</b> Almost all materials address this criterion extensively. Several NDFs do not mention illegal trade.		

<b>Flexibility / balance effort and risk</b>		
Stipulates / reflects flexible methodology and data requirements that are proportionate to the specific and individual characteristics and the vulnerability of the species.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	30*	14
Partially – without guidance on flexibility	NA	11
Not addressed – method / effort not adapted / -able to species / specimen	NA	4
Not addressed – method / effort disproportionate to vulnerability / risk level	6	NA
<b>Resumé:</b> Many guidance propose step-wise analysis, dependent on initial risk assessment indicators. Almost all NDFs represent high-risk situations, in which NDFs were made with high effort, and / or led to restrictive NDF advice. Hardly any represent simple, efficient and straightforward NDFs.		
* assuming that restrictive NDF decisions justify low effort		

<b>Inclusive knowledge</b>		
Stipulates / uses a variety of information sources, including scientific and grey literature, ecological risk assessments, surveys and relevant trade information, expert knowledge, local and traditional knowledge.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed, including local and traditional knowledge	12	10
Partially – concrete stipulations for / evidence from several forms of knowledge	7	5
Partial – general / limited stipulations for / evidence from some forms of knowledge	8	10
Not applicable / not addressed	9	4
<b>Resumé:</b> Many NDFs and guidance use scientific sources, as well as surveys, ecological risk assessments, trade information and/or grey literature. Stakeholder knowledge used in several NDFs for marine or hunting trophy species, but hardly at all for other species. Many guidance mention such knowledge but not a single provides specific support for the inclusion of such knowledge.		

<b>Science-based: transparent information</b>		
Stipulates / ensures traceability of information (through quotations, footnotes, links, reference sections), and provides cues for assessing information quality.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	13	7
Partially – lacks information traceability	3	2
Partially – lacks assessment of information quality	10	4
Not addressed – lacks both	10	16
<b>Resumé:</b> Most NDFs quote scientific literature, and several assess the quality of the available information. Some guidance stipulate records of used information and confidence in information. Many guidance do not stipulate information transparency. Many NDFs provide incomplete sources, some lack bibliographies and several are not transparent about the information quality.		

<b>Science-based: transparent analysis</b>		
Stipulates / ensures transparency of the applied methods, including methods sections, and referring to the use of specific, and documented approaches.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	13	4
Partially – unspecific, selective or limited to some aspects	11	12
Not addressed	12	13
<b>Resumé:</b> Many NDFs provide some explanations of the applied research and analysis methods. Few NDFs provide complete or thorough descriptions of applied research methods. Guidance make few, if any, provisions on methods transparency.		

<b>Science-based: transparent integration</b>		
Stipulates / ensures transparent integration of considerations, balancing diverse factors and stipulates a reflective judgement.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	11	12
Partially – partially, selective, or limited to some aspects	11	6
Not addressed	14	11
<b>Resumé:</b> Some guidance support the integration of information and the balancing of judgements. Some NDFs contain strong discussion sections. The integration of information and the balancing of different considerations is in many materials not transparent.		

<b>Science-based: participation</b>		
Stipulates / reflects inclusive and adaptive learning processes in management and monitoring, in particular through participatory approaches (Conf. 13.2 (Rev. CoP14)).		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed – joint decision making, monitoring and management	11	4
Partially – only information input into decision-making	4	12
Partially – only livelihood benefits	3	0
Not addressed	18	13
<b>Resumé:</b> Some NDFs (mainly marine and hunting trophy species) report stakeholder input to, or participation in decision-making in species monitoring and management. Some guidance contains unspecific provisions for stakeholder input in decision-making, but hardly any address joint decision-making. This could be linked to a lack of know-how.		

<b>Science-based: robustness</b>		
Stipulates / ensures robustness of conclusions through 1) good data, 2) use of multiple indicators, 3) triangulation, 4) peer review or stakeholder consultation.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed – stipulates / uses at least three sources of robustness	0	0
Partially – stipulates / uses at least two sources of robustness	4	10
Partially – stipulates / uses one source of robustness	18	11
Not addressed – lacks all sources of robustness	14	8
<b>Resumé:</b> Most NDFs use one source of robustness, and many guidance propose one or two sources of robustness (most often the use of high-quality information multiple indicators). No single material uses or proposes all four sources of robustness. Only few apply or propose triangulation, peer review or stakeholder consultations.		

<b>Precautionary principle</b>		
Stipulates consideration of / considers uncertainties in the applied methods and used data, and the use of a precautionary principle, where required.		
	<b>NDF (36)</b>	<b>Guidance (29)</b>
Addressed	13	20
Partially – mentioned but not discussed / use is unclear	6	3
Partially – not mentioned, but apparently used	10	NA
Not addressed – unclear whether it is considered	7	6
<b>Resumé:</b> The precautionary principle is mentioned in almost all guidance and many NDFs. In some NDFs, it remains unclear how uncertainties were considered and how the precautionary principle was implemented.		

**Summary results by comprehensiveness sub-criterion**

<b>Criterion</b>	<b>Main strengths</b>	<b>Main gaps in NDF guidance</b>	<b>Positive examples</b>
Stipulates reliable species identification and verification according to up-to date nomenclature and identification guides.	Guidance frequently addresses this criterion. Many NDFs provide descriptions of the species they address; some also address look-alike issues.		Madagascar 2018 ( <i>Brookesia minima</i> , <i>B. paypierasii</i> ) describes identification guides and capacity-building activities for customs and enforcement authorities.
Stipulates consideration of relevant source codes to determine NDF procedures.	Most guidance addresses the source of the specimen (mostly focused on wild versus captive / artificially propagated).	The is little or no guidance on source codes other than 'wild' that require NDFs, in particular ranched specimens and 'assisted production'	Peru 2015 ( <i>Podocnemis unifilis</i> ) makes clear that it is about ranched specimens.
Stipulates consideration of conservation status throughout the species' range in relation to a level consistent with its role in the ecosystems in which it occurs.	All guidance and NDFs address conservation status to varying degrees. The present population status throughout its range is thoroughly described in most materials.	Most guidance remains superficial about the species' role in its ecosystem, and generally lacks approaches to assess species' roles in ecosystems.	Peru 2014 (Psitacidos) analyses geographic distribution and population status by species. Potential habitat extension is analysed with models.
Stipulates consideration of population trends.	Almost all guidance and most NDFs address population trends.		Peru 2014 (Vicuña) qualitatively describes historic population trends over 500 years.
Stipulates consideration of overall threats to the survival of the species.	Most guidance and NDFs address this criterion to some degree.	The inclusion of mentioned or suggested threats often seems selective. Climate change is rarely mentioned.	Mozambique 2018 (Leopard) discusses threats extensively and precisely.
Stipulates consideration of factors that increase species vulnerability, including species biology and life-history traits.	Almost all guidance and many NDFs address this criterion.		Spain 2017 (hunting trophies guidance) focuses on specimen and hunting methods with less impact on populations.
Stipulates consideration of historical and current levels and patterns of harvest and mortality from all sources combined.	Almost all materials address this criterion to some degree, in particular mortality from harvest. Many guidance address it comprehensively.	Mortality from causes other than harvest is not always addressed.	Cameroon 2014 ( <i>Prunus africana</i> ) describes influence of harvest techniques on mortality, mortality from bushfires, and harvest permissions over several decades.
Stipulates consideration of the implementation of adaptive management, including monitoring.	Almost all materials address management and monitoring extensively.	Some guidance does not address adaptive management, or its meaning remains unclear.	Indonesia 2010 ( <i>Gonystylus</i> spp.) ensures adaptiveness through collaborative annual quota setting and field visits by experts.

Stipulates the consideration of the volume of legal and illegal trade.	Almost all materials address legal trade extensively.	Illegal trade is not always considered.	Peru 2015 ( <i>Aniba rosaedora</i> ) describes international trade over several decades and states that illegal and national trade seem non-existing.
Stipulates flexible methods and data requirements that are proportionate to the specific and individual characteristics and the vulnerability of the species.	Guidance frequently proposes step-wise analysis, dependent on initial risk assessment indicators.	Almost all NDFs represent high-risk situations, in which NDFs were made with high effort, and / or led to restrictive NDF advice. Hardly any represent simple, efficient and straightforward NDFs.	New Zealand 2014 ( <i>Sphyrna zygaena</i> ) is a relatively straightforward example that allows current practice to continue despite limited data.
Stipulates inclusive information sources, including scientific and grey literature, ecological risk assessments, surveys, trade information, expert knowledge, local and traditional knowledge.	Many materials use or recommend scientific sources, as well as surveys, ecological risk assessments, trade information and/or grey literature.	Materials frequently mention stakeholder knowledge, but few are specific, and no guidance provides specific support for its inclusion.	Namibia 2018 (Leopard) draws on information from surveys, population monitoring, skull measures, hunting reports and evidence from multiple stakeholders.
Stipulates transparency of information (through quotations, footnotes, links, reference sections), and provides cues for assessing information quality.	Most NDFs quote scientific literature, and several assess the quality of the available information. Some guidance stipulates records of used information and confidence in information.	Guidance frequently does not stipulate information transparency.	Peru 2015 ( <i>Aniba rosaedora</i> ) references scientific sources as well as legal and management-related sources and describes confidence in this information.
Stipulates transparency of the applied methods, including methods sections, and referring to the use of specific, and documented approaches.	Many NDFs provide some explanations of the applied research and analysis methods.	Guidance makes few, if any, provisions on methods transparency.	Cameroon 2018 ( <i>Pericopsis elata</i> ) provides extensive documentation of methods and analyses in a dedicated methods section and an additional annex.
Stipulates transparent integration of considerations, balancing diverse factors and stipulates a reflective judgement.	Some guidance supports the integration of information and the balancing of judgements. Some NDFs contain strong discussion sections.	The integration of information and the balancing of different considerations is in many materials not transparent.	Germany 2016 (9-step guidance for perennials) provides summary tables and scoring scales to judge trade-offs.
Stipulates inclusive and adaptive learning processes in management and monitoring, in particular through participatory approaches (Conf. 13.2 (Rev. CoP14)).	Some NDFs (mainly marine and hunting trophy species) report stakeholder input to, or participation in decision-making in species monitoring and management.	Some guidance contains provisions for stakeholder input in decision making that are not specific, but hardly any address joint decision making. This could be linked to a lack of know-how.	Nepal 2017 (Jatamansi) describes joint monitoring by forestry staff and local communities. Honduras 2017 ( <i>Strombus gigas</i> guidance) uses co-management and stakeholder collaboration as indicators of information confidence.

<p>Stipulates robustness of conclusions through (1) good data, 2) use of multiple indicators, 3) triangulation, 4) peer review or stakeholder consultation.</p>	<p>Most NDFs use one source of robustness, and guidance frequently proposes one or two sources of robustness (often the use of high-quality information and multiple indicators).</p>	<p>No single material uses or proposes all four sources of robustness. Only few apply or propose triangulation, peer review or stakeholder consultations.</p>	<p>Netherlands 2014 (<i>Strombus gigas</i>) triangulates various data sources. The quality of the report was peer reviewed by a colleague and the head of institute.</p>
<p>Stipulates consideration of uncertainties in the applied methods and used data, and the use of a precautionary principle, where required.</p>	<p>The precautionary principle is mentioned in almost all guidance and many NDFs.</p>	<p>In some materials, it remains unclear how uncertainties were considered and how the precautionary principle was implemented.</p>	<p>Germany 2014 (shark guidance) proposes to record uncertainties in pre-programmed worksheet. Precaution is advised in several steps.</p>