The Proposed New Criteria For CITES

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Introduction

It is now generally accepted that the management of protected areas, flora and fauna is often most effective when it is integrated closely with rural development. The protection of endangered species of fauna and flora has been for years a focus of the International Union for Conservation of Nature and Natural Resources I.U.C.N. (now the World Conservation Union, a global federation of governments and non-governmental organizations working on conservation issues. Many of IUCN's member governments are also Parties to the Convention on International Trade on Endangered species of Wild Fauna and Flora (CITES), or the Washington Convention.

The Convention is composed of general provisions and appendices on which species (or higher taxa) are listed. Appendix I includes species threatened with extinction for which international commercial trade is prohibited (e.g., rhinos, sea turtles, some orchids, and some cacti). Appendix II includes species which could be threatened with extinction without controls aimed at avoiding use incompatible with their survival. Their trade is only authorized with official export permit (e.g., some cats, some birds of prey, black coral, etc.).

The Union Conservation (State members) of the Convention may propose transfer of named species from one appendix to another, or their addition to or deletion from appendices, on the basis of fully documented reports.

The success of CITES implementation has been very varied. Much of this has centred around weaknesses in the implementation of Article IV.3, which instructs the national Scientific Authority to make a non-detriment finding before advising the national Management Authority to issue an export permit for any specimens of an Appendix II species.

There have been some spectacular examples of non-enforcement of Article IV.3, perhaps the most publicised being the African elephant, which declined spectacularly through most countries in its range when it was listed on Appendix II.

As a result, the species was transferred to Appendix I, and the decline has been arrested. However, these countries that were managing their elephant populations well when the species was on Appendix II consider that the loss of revenue from legitimate sustainable trade has reduced the total amount of funds available for conservation.
These countries wish to transfer their elephant populations back to Appendix II in order to resume sustainable trade. The elephant debate has not surprising by increased discussion on the criteria by which Parties assign species to the Appendices, though problems with the existing Berne Criteria has been recognized for many years (and indeed for crocodilians, the Berne Criteria have largely been bypassed by various ranching criteria and short-term export quotas).

The CITES Standing Committee, at its meeting in June 1992, requested IUCN to assist in developing new criteria for listing species in the CITES appendices. The specific charge to IUCN is as follows:

"Within the requirements of Article II and to the extent possible, to provide simple, pragmatic, scientific and objective criteria to determine in which appendix, if any, it would be appropriate to list species."

The terms of reference provided by the CITES Standing Committee arise from dissatisfaction with the existing Berne Criteria. There probably needs to be a box, containing the Berne Criteria.

At a small workshop held in January 1992, before the Eight Meeting of the Conference of the Parties, IUCN carried out its own evaluation of the Berne Criteria, and found them to be deficient in the following respects:

1. They in fact contain no clear criteria against which individual species can be tested for either addition to, deletion from, or transfer between, appendices.

2. They lack definitions of the terms used, thus permitting a wide, and confusing, spectrum of interpretation.

3. They appear to contain an assumption that trade is always negative for conservation, which, although undoubtedly often true, is by no means always the case (as agreed by the Conference of the Parties in Resolution Conf. 8.3).

4. They require evidence of a recovery in the population of a species before downlisting can take place, which might be appropriate in certain circumstances, but is impossible to demonstrate if the status of the species was not known at the time of initial listing.

There is little doubt that the Conference of the Parties was correct to agree that the Berne Criteria "do not provide an adequate basis for amending the appendices."
It must be emphasised that the IUCN recommendations are based on the two workshops and a subsequent review process carried out among selected members of IUCN's Species Survival Commission (SSC) and other interested individuals. As much as possible, the report provides the best

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consensus that the workshop participants have been able to reach, though some additional elements that emerged during the review process have also been added. Where consensus was not reached, this is indicated in the report. On some issues, especially those on which consensus was very hard to achieve, a set of options is presented to the Standing Committee. However, for the most part, consensus was achieved. In the final analysis, though, this report represents the recommendations of IUCN as the best advice that it can provide the CITES Standing Committee at the present time. Throughout the process, there has been a conscious attempt to keep to the middle ground as regards conservation philosophy. The criteria have been developed from objective, scientific principles, and cannot, and should not, be interpreted as being representative of either "pro-trade" or "anti-trade" stances. Over the next few months, IUCN will be subjecting these draft criteria to a validation process with a wide range of species. As a result of this learning process, IUCN will be able to suggest further improvements to the criteria, and expects to be able to do so at the joint meeting of the CITES Animals and Plants Committees being held later in 1993. The validation process will also provide the Parties with the information they need to evaluate the proposed criteria from the perspective of their own conservation philosophies (i.e., pro-trade or anti-trade). The criteria are designed so they can be modified relatively easily to achieve the balance that is acceptable to most Parties. Further details of the validation process are included later in this report.
The criteria presented are, in IUCN's opinion, "simple, pragmatic, scientific and objective". The development of the new criteria must not be seen in isolation from the procedures, guidelines and safeguards that the Parties will need to adopt to ensure their effective implementation. It has very much been IUCN's intention to provide CITES with what might be considered an ideal system for the operation of the Convention. In so doing, we might have strayed a little beyond the terms of reference in a few places, but we felt it irresponsible not to touch on the broader issues associated with the listing criteria.

The criteria

The development of criteria to define the term "threatened with extinction" proved to be a complex task. This is so for three basic reasons:

1. Species differ enormously in reproductive strategies, and it is not easy to generalise across broad taxonomic groupings (such as plants, insects, fish, birds and mammals) in a way that is both scientifically defensible as practically applicable.

2. Several different approaches exist as to how levels of threat of extinction can be assessed. These include population-based approaches, distribution-based approaches, and management-based approaches. The integration of very different approaches into a single set of criteria is not a simple task.

3. Criteria have to be able to deal with many species that are very poorly known. The challenge is to permit some inference of the status of such species withouth letting the criteria themselves become too subjective.

To achieve the product requested by the CITES Standing Committee, and to ensure that the complexities itemized above could be overcome, the following approach was taken:

1. Contracts were placed with a number of key experts to prepare papers exploring the different options for developing listing criteria. These papers were circulated to all workshop participants in advance of the meeting. Additional relevant papers were also circulated.

2. An additional set of papers was prepared exploring some of the issues relating to the application of the criteria like
   a) "utilization incompatible with the survival of a species"
   b) "detrimental" and "beneficial trade"
   c) extinction
   d) ranching criteria
   e) "affected by trade"; ...

3. Using the background papers as a starting point, the Technical Workshop proceeded to develop criteria to define various levels of threat with extinction. It was decided to develop the IUCN criteria first, since these will be applied by scientists and possibly need to be more detailed.
   To develop the IUCN criteria, four different working groups were formed to cover four major taxonomic groupings: plants; invertebrates; lower vertebrates (fish and amphibians); and higher vertebrates (reptiles, birds and mammals). For all groups, criteria were developed to define four different categories of decreasing threat: Critical; Endangered; Vulnerable; and Susceptible. The biological criteria for Appendix I were than taken to match the IUCN criteria Critical and Endangered.

For Appendix I and Appendix II, the criteria that are recommended for use in assigning species to categories are presented below. Guidance in the interpretation of terms and their application is found in the section "Definitions of, and Notes on, Terms Used in the Criteria", and this must be consulted before applying the criteria. It should be noted that IUCN is recommending these criteria in conjunction with certain requirements for management programmes. The criteria and the management programmes should be considered as one coherent new system under which CITES can operate, and IUCN would not support either being implemented in the absence of the other.

Criteria for Appendix I

According to the text of CITES, "Appendix I shall include all species threatened with extinction which are or may be affected by trade". Appendix I is therefore defined by biological criteria (i.e., threatened with extinction) and trade criteria (i.e., affected by trade).

The proposed biological criteria, which define "threatened with extinction", are as follows. A species needs to meet any one (or more) of these criteria:

A) Population estimated to number less than 250 mature individuals.

B) Population estimated to number less than 2500 mature individuals and to have both of the following characteristics:
   1) Population structure in the form of either of the following:
      a) severely fragmented, i.e., no sub-population is known or estimated to contain more than 250 mature individuals.
      b) found only at a single location.
   2) Continuing decline, observed, inferred or projected, in either of the following:
      a) number of mature individuals
      b) area, extent, and/or quality of habitat.

C) Geographic extent estimated to be less than 5000 km² or range area estimated to be less than 500 km², and estimates indicating any two of the following:
   1) Severely fragmented or found only at no more than two locations.
   2) Continuing decline, observed, inferred or projected, in any of the following:
      a) geographic extent
      b) range area
      c) area, extent and/or quality of habitat
      d) number of locations
      e) number of mature individuals
   3) Extreme and rapid fluctuations in any of the following:
      a) geographic extent
      b) range area
      c) number of locations.

D) Decline in population in the form of either of the following:
   1) An observed marked and continuing decline in the number of mature individuals (typically more than 50% in total within 5 years or two generations, whichever is the longer).
   2) A continuing decline as specified in D1 inferred or projected from any of the following:
      a) a decline in area, extent and/or quality of habitat
      b) levels of exploitation
      c) the effects of introduced species, pathogens, competitors, parasites.

E) Quantitative analysis showing the probability of extinction in the wild is at least 20% within 20 years or 5 generations, whichever is the longer.

The above biological criteria must be met before application of the trade criteria. The trade criteria for including species in Appendix I depend on the interpretation of "are or may be affected by trade". A species is "affected by trade" if it meets any one of the following criteria (note that the words "species" and "trade" are used here in the sense defined in Article I of the Convention):

A) The species is known to be in trade.
B) The species is probably in trade, but conclusive evidence is lacking.
C) There is a significant probability that the species will enter trade.

These trade criteria are applicable in the case of trade in specimens that are of wild origin. When trade is entirely in specimens that are of captive origin, and there is no reason that there is any risk of trade in specimens of wild origin, then the trade criteria are not satisfied. Any species that satisfies both the biological and trade criteria listed above should be included in Appendix I under the provisions of Article II.1.

Criteria for Appendix II

According to IUCN report "Appendix II shall include 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". It is clear from this that to qualify for Appendix II, species need not currently be threatened with extinction, but there should be some indication that they might become so.

Appendix II shall include all species that may become threatened with extinction if trade is not adequately regulated. Such species shall be considered to be those which are known or believed to be, or have been actually or are potentially, subject to trade that could result in utilization incompatible with survival (as defined by the trade criteria below) and which meet any of the following biological criteria:

A) The species has a very small total population size (typically less than 2500 mature individuals)

B) The species has a small total population size (typically less than 10.000 mature individuals) and is fragmented with few large sub-populations (e.g., no sub-population numbering more than 2000 mature individuals)

C) The species has a wide geographical extent (typically greater than 5000 km²) or range area (typically greater than 500 km²) but occupies restricted habitats and has a limited population size (typically less than 10.000 mature individuals)

D) either
   1. The species is known or suspected to be in continuing decline (typically up to a 50% total decline in numbers over the past 5 years, or two generations, whichever is the longer)
   or
   2. A similar decline is inferred or projected from levels of exploitation, habitat alteration, or reduction in geographical area and/or range extent, or from the effects of predators, diseases, parasites and competition.

E) Quantitative analysis showing the probability of extinction in the wild is at least 5% within 100 years.

Strictly speaking, Article II.2.(a) does not require the adoption of any biological criteria for species to be included in Appendix II. However, guidance is needed to help define those species that may become threatened with extinction, and the above biological criteria are designed to do that. It should be noted that criterion D above could be met by species that do not meet any of the draft IUCN criteria (see Annex 3). The biological criteria should be considered as guidelines; it would be legitimate to list species on Appendix II if they satisfy the trade criteria outlined below, but do not satisfy the biological criteria. However, it is IUCN's view that most species proposed for listing on Appendix II are likely to satisfy the biological criteria, in particular D above.

The trade criterion for Appendix II is referred to in the Convention text, indicating that the species concerned need to be listed "in order to avoid utilization incompatible with survival". Utilization incompatible with the survival of a species is defined as that conforming to one or more of the following three descriptions:

1. The average number removed from the wild each year, over an extended period (typically greater than 5 years), exceeds the maximum sustained yield of the species.
2. The average percentage removed from the wild each year, over an extended period (typically greater than 5 years), exceeds the intrinsic rate of increase of the species.
3. The harvesting reduces the species to a level at which it is vulnerable to other influences on its survival.

The maximum sustained yield is the annual offtake which cannot be exceeded without detriment to the population. Harvesting continually in excess of the maximum sustained yield will drive the population to extinction. Sustainable use can be defined in the context of CITES as harvesting at a level that can be continued in perpetuity.

Species should be listed on Appendix II if their exclusion from the appendices could result in "utilization incompatible with survival", as defined by the trade criteria above. This should especially be the case when a species satisfies the biological criteria outlined above (in other words, preventing "utilization incompatible with survival" from taking place). Parties should not, therefore, wait until these trade criteria are satisfied before proposing a listing; such proposals should be made once there is good evidence that lack of listing will result in the trade criteria being satisfied.

According to IUCN report, "Appendix II shall (also) include other species which must be subject to regulation in order that trade in specimens of certain species referred to in subparagraph (a) of this paragraph may be brought under effective control." Species should be included in Appendix II under the provisions of Article II.2.(b) if they are in trade and if they satisfy any one (or more) of the following criteria:

A) The specimens primarily in demand of the species closely resemble specimens of a species included in Appendix II under the provisions of Article II.2.(a), such that a non-expert, with reasonable effort, is unlikely to be able to distinguish between the two species.

B) Harvests of the species involve significant incidental takes or bycatches of species included in Appendix II under the provisions of Article II.2.(a).

C) The species is essential for the survival of a species included in Appendix II under the provisions of Article II.2.(a), either by forming part of the habitat structure, providing a source of food, acting as a pollinator or seed disperser, or providing some other essential ecological function for which there is very little or no substitute.

D) The species is a member of a genus or family of which all but a few of the species are (or should be) included in Appendix II under the provisions of Article II.2.(a). In such cases, it can be argued that inclusion of the few remaining non-threatened species would help bring trade in specimens of the others under effective control.

Criteria for Listing Species that "Look Like" Appendix I Species

It is recommended that the criteria for inclusion of species in Appendix II should also be applied in relation to species listed on Appendix I. This would provide for the listing of species if they are in trade, and:
either their specimens look very similar to Appendix I species;
or their harvesting programmes involve significant incidental takes or bycatches of Appendix I species;
or they are ecologically essential for the survival of Appendix I species;
or they are members of genera or families of which all but a few species are included in Appendix I.

Definitions of, and Notes on, Terms Used in the Criteria

1. **Continuing Decline.** A continuing decline is a clear downward trend measured over a period appropriate to the taxon or its habitat. In the case of population estimates and changes in habitat a continuing decline will transcend (i.e., be over and above) normal fluctuations. Normal fluctuations are found in those species populations and habitats that are characterised by regular or irregular cycles in abundance or extent. Where evidence of continuing decline is sought it is necessary to have evidence for believing that an observed decline is not simply part of such a normal fluctuation. Population declines that are the result of a planned harvesting programme that reduces the population to a level at which the maximum sustained yield is reached are not covered by the term "continuing decline".

2. **Extreme and Rapid Fluctuations.** Extreme and rapid fluctuations occur in a number of species, and can be defined as a variation in total number of greater than an order of magnitude on either side of the mean population size.

3. **Geographic extent.** Geographic extent is defined as the minimum area encompassing the known, inferred or projected sites of occurrence of a taxon, excluding cases of vagrancy. This can sometimes be measured by a minimum convex polygon.

4. **Generation length.** Generation length can be calculated as the average age of parents in the population. In the case of dormant or non-breeding individuals it will equal the lifespan.

5. **Location.** Location defines a geographically distinct group of individuals.

6. **Mature individuals.** Mature individuals refers to the number of individuals known, estimated or inferred to be physiologically capable of reproduction. Where the population is characterized by normal or extreme fluctuations, the minimum number should be used. (Note: This measure is intended to count individuals physiologically capable of reproduction and should therefore include, for example, plants which have lost their pollinators or animals which are behaviourally or otherwise reproductively suppressed. Reproducing units within a clone should be counted as individuals).

7. **Population.** Population is defined as the total number of individuals of the taxon. For functional reasons, primarily due to differences between life-forms, population numbers are expressed as numbers of mature individuals only in the criteria.

8. **Quantitative analysis.** A quantitative analysis refers here to the technique of population viability analysis, or any other quantitative form of analysis, which estimates the extinction probability of a species or population based on the known life history and specified management or non-management options. In presenting the results of quantitative analyses the structural equations and the data should be explicit.

9. **Range area.** Range area is the total area occupied by a taxon within its geographic extent excluding cases of vagrancy. The criteria state specific cutoff points in km^2, but clearly this presents problems in scale of measurement. To avoid errors in classification, the range area should be measured on grid squares of an appropriate scale.

10. **Restricted habitat.** A species can be said to occupy a restricted habitat if it is dependent on two or fewer distinct habitat types.

11. **Severely Fragmented.** Severely fragmented refers to the case where increased extinction risks to the taxon result from the fact that most individuals within a taxon are found in small and relatively isolated sub-populations. This results in an increased probability that these small sub-populations will go extinct, with a reduced probability of recolonisation.

12. **Sub-populations.** Sub-populations are defined as groups of individuals in the population between which there is little exchange (typically equal to, or less than, 1 successful migrant individual or gamete per generation).

13. **Uncertainty.** The criteria should be applied on the basis of the available evidence on taxon numbers, trend and distribution, making due allowance for statistical and other uncertainties. The choice of Appendix shall always be made conservatively (i.e., Appendix I rather than Appendix II, and Appendix II rather than no listing at all).

The recommendations to the CITES standing Committee dealt also with other topics like the effects of the new criteria on conservation programmes in range States, the application of the criteria, the case of extremely rare and extinct species, ... One paragraph of the report is reproduced here:

Ranching Criteria

The CITES Standing Committee requested IUCN to "examine ranching criteria with a view to the possibility of broadening their applicability". The ranching criteria, as originally set out in Resolution Conf. 3.15, have become unnecessarily complex and contain insufficiently rigorous safeguards against excessive wild harvest. The attempts to correct this with Resolution Conf. 8.22 (for crocodilians) have made the whole ranching procedure virtually unworkable. IUCN therefore considers that ranching would, paradoxically, best be encouraged by abolishing the ranching criteria, and including ranching as one of the options for a management programme approved by the Animals or Plants Committees, or a special "management programmes committee", in the context of longterm export quotas. Species or populations already in Appendix II under the ranching criteria should be retained in Appendix II under quotas established by the range States, subject to the management programmes (i.e., ranching) being approved.

The present paper is a synthesis of the IUCN report prepared for the Kyoto meeting which took place in March 1992. The highly technical parts of the report have been summarized when possible, but specialists interested by the full paper may call upon the IUCN secretariat and the Species Survival Programme.