



# **IUCN RED LIST CRITERIA REVIEW**

## **PROVISIONAL REPORT**

### **Draft of the Proposed Changes and Recommendations**

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## Draft of the Proposed Changes and Recommendations

July 1999

IUCN/SSC Criteria Review Working Group

### 1. Background to the Criteria Review Process

In 1994, IUCN adopted new criteria for assessing extinction risks to species, and these are now used for evaluating species for inclusion in IUCN Red Lists. Approximately 15,000 species were assessed using the new criteria for *The 1996 IUCN Red List of Threatened Animals*. Of these, 5,205 were listed as threatened with extinction. The relative objectivity of the new listings has made them an excellent tool for observing changes in status over time and for providing a more systematic and transparent approach to listing. The new method has attracted great interest from wildlife agencies and management authorities, as well as the media. Not surprisingly, there are also some difficulties with the new system, including the assessments of harvested species, long-lived species (such as elephants and marine turtles), and the status of some small and very narrowly distributed endemic plants and invertebrates.

At the World Conservation Congress (WCC) in Montreal in October 1996, SSC was mandated under WCC Resolution 1.4 to:

***“within available resources, urgently to complete its review of the IUCN Red List Categories and Criteria, in an open and transparent manner, in consultation with relevant experts, to ensure the criteria are effective indicators of risk of extinction across the broadest possible range of taxonomic categories, especially in relation to:***

- ***marine species, particularly fish, taking into account the dynamic nature of marine ecosystems;***
- ***species under management programmes;***
- ***the time periods over which declines are measured”***

Under the auspices of the IUCN/SSC Red List Programme, SSC set up a Criteria Review Working Group lead by Georgina Mace. The task of this group was to respond to the mandate given to SSC at the World Conservation Congress.

## 2. Outline of Criteria Review Process

The review has been conducted in stages as outlined in the table below.

<u>Dates</u>	<u>Activity</u>
Jan - Dec 1997	Correspondence and seeking input from the members of IUCN and SSC
Jan - Feb 1998	Planning for Scoping Workshop.
March 1998	<b>Scoping Workshop</b> , London, UK. Funded by IUCN.
March - Sept. 1998	Planning and fund-raising for activities outlined by the Scoping Workshop.
October 1998	<b>Regional Assessment Working Group</b> (Montreal, Canada) contributes views on regional assessments. Funding support from Canadian Wildlife Service.
January 1999	<b>Marine Workshop</b> . Tokyo, Japan. Funding from German Government. Also input from Japanese meeting on Risk Assessment.
May 1999	<b>Range Size, Habitat Areas and Dealing with Uncertainty Workshop</b> . Manly, Sydney, Australia. Funding from environment and technical agencies in New South Wales, Australia.
June 1999	<b>Criterion A Workshop</b> . Cambridge, UK. Funding from Finnish Government.
July 1999	<b>Review Workshop</b> . Cambridge, UK. Criteria Review Working Group met to discuss recommendations from all workshop reports, and provide final set of recommendations. Funding from Finnish Government.
August 1999	<b>Publication in <i>Species</i></b> . Draft of revised criteria prepared and published in <i>Species</i> for circulation to all SSC members and circulated separately to all IUCN members.
Aug - Nov 1999	Correspondence and seeking input from the members of IUCN and SSC.
December 1999	Submission of re-drafted proposals to SSC Executive
February 2000	Submission of revised IUCN Red List Categories and Criteria to IUCN Council for approval
October 2000	Report outcome of Criteria Review to World Conservation Congress

## 3. Structure of the Review

The Criteria Review Working Group consists of 22 members, representing a wide range of animal and plant taxa, and including people with technical expertise in extinction risk assessment, as well as those with experience in applying the criteria. This group first met at the Scoping Workshop.

The workshops from January to July 1999 followed directly from specific issues outlined by the Scoping Workshop in March 1998. Participants at these workshops were selected to reflect technical and practical expertise in the areas being discussed. All workshops addressed specific issues and attempted to deliver recommended courses of action through analysis and discussion. In order to provide continuity and coherence to the process, at least 4-5 members of the Criteria Review Working Group attended each topic-based workshop. In addition, each member of the group was requested to attend at least one of the workshops.

Written reports on the workshops provide all the supporting arguments and documentation for the final outcome of the review as presented here. All the workshop reports adhere to a common standard, are comprehensive and will be available as a package along with the final report from the Criteria Working Group. Copies of all these reports will be made available via the IUCN web site (<http://www.iucn.org/themes/ssc/siteindx.htm>) or they can be ordered directly from the IUCN Red List Programme Officer (see address below).

Please note that the changes to the system recommended below are draft proposals. They probably require more work and, in some cases, testing. In particular, *they need constructive suggestions and input from you, especially those who have used the 1994 Red List Categories and Criteria*. Your comments along the following lines would be most helpful:

- Please indicate whether species you have assessed would have their status altered by the changes proposed. Is the change good or bad? Please indicate which species, under what criteria they were assessed, and what the specific problems were.
- Can you name any species where the criteria are not effective despite the revisions? Please state why it is that these species cannot be classified appropriately, and what changes would be needed in the criteria so that they could be .
- Are you unhappy or unclear about any of the proposed changes to the definitions or criteria, if so which ones?

Please send your comments on the revised Red List Categories and Criteria by October 31, 1999 to: Craig Hilton-Taylor, Red List Programme Officer, IUCN/SSC UK Office, 219c Huntingdon Road, Cambridge, CB3 0DL, United Kingdom. Fax: +44-1223-277845, Email: [redlist@ssc-uk.org](mailto:redlist@ssc-uk.org) OR [craig.hilton-taylor@ssc-uk.org](mailto:craig.hilton-taylor@ssc-uk.org)

#### **4. Recommendations from the Criteria Review Working Group**

The Criteria Review Working Group examined all the recommendations put forward by each workshop including a number of issues that were only raised at the Scoping Workshop. After much discussion, and sometimes compromise, a final set of recommendations was agreed. A number of these recommendations relate to issues that are best dealt with by means of adequate guidelines for applying the criteria, referred to as 'guidelines' throughout this document. The suggested contents of the 'guidelines' are not presented here. The recommendations that will involve changes to the *IUCN Red List Categories* booklet (IUCN 1994), especially to the Categories and Criteria, are presented in this section. The issues are dealt with in the order in which they appear in the red booklet. A brief outline of each issue is presented, followed by the current wording in the red booklet and then the proposed new wording.

## **I. Introduction**

### **Issue**

There is a need for a more explicit account of the role and purpose of the Red List (including the background and history to the current listing procedure). This should include an account of how a listing status should be interpreted, the relationship of the criteria to one another, their background in theoretical biology, and what they are and are not intended to indicate. The difference between measuring threats and assessing conservation priorities also needs to be expanded, as there are many people who interpret the Red List as a means of priority setting. The introduction was identified as one place where some of these issues should be dealt with in more detail; the remainder will be covered in the detailed guidelines.

### **Current version**

1. The threatened species categories now used in Red Data Books and Red Lists have been in place, with some modification, for almost 30 years. Since their introduction these categories have become widely recognised internationally, and they are now used in a whole range of publications and listings, produced by IUCN as well as by numerous governmental and non-governmental organisations. The Red Data Book Categories provide an easily and widely understood method for highlighting those species under higher extinction risk, so as to focus attention on conservation measures designed to protect them.
2. The need to revise the categories has been recognised for some time. In 1984, the SSC held a symposium, 'The Road to Extinction' (Fitter & Fitter 1987), which examined the issues in some detail, and at which a number of options were considered for the revised system. However, no single proposal resulted. The current phase of development began in 1989 with a request from the SSC Steering Committee to develop a new approach that would provide the conservation community with useful information for action planning.

In this document, proposals for new definitions for Red List categories are presented. The general aim of the new system to provide an explicit, objective framework for the classification of species according to their extinction risk.

The revision has several specific aims:...

3. The proposals presented in this document result from a continuing process of drafting,...

### **Final Version**

This final document, which incorporates changes as a result of comments from IUCN members, was adopted by the IUCN Council in December 1994.

4. In the rest of this document the proposed system is outlined... It is important for the effective functioning of the new system that all sections are read and understood, and the guidelines followed.

## **Recommendation**

1. *The IUCN Red List Categories aim to provide an easily and widely understood method for highlighting those species under higher extinction risk, so as to focus attention on conservation measures necessary for their protection. The general aim of the system is to provide an explicit, objective framework for the classification of species according to their extinction risk. The system is meant to flag extinction risk across the broadest range of species. Although the system places species into the threatened categories with a high degree of consistency, it is acknowledged that the criteria cannot take into account the life histories of every species. In certain cases, the risk of extinction of a species may be under- or over-estimated.*

2. *This new Red List system was adopted in 1994, and it marked a major shift from a purely subjective to a more quantitative objective approach. Prior to 1994, the threatened species categories used in Red Data Books and Red Lists had been in place, with some modification, for almost 30 years. The need to revise the categories had been recognised since 1984, when SSC held a symposium, 'The Road to Extinction (Fitter & Fitter 1987) which examined the issues in some detail. The current phase of development began in 1989 with a request from the SSC Steering Committee to develop a new approach that would provide the conservation community with useful information for action planning.*

*Since their adoption by IUCN Council in 1994 the IUCN Red List Categories have become widely recognised internationally, and they are now used in a whole range of publications and listings, produced by IUCN as well as by numerous governmental and non-governmental organisations. Such broad and extensive use revealed the need for a number of improvements and SSC was mandated by the 1996 World Conservation Congress (WCC Res. 1.4) to conduct a review of the system. This document presents the proposed revisions as recommended by the SSC Criteria Review Working Group. The revision has several specific aims: (as listed previously).*

3. *The proposals presented in this document result from a continuing process of drafting, ...*

### **Version 2.3: IUCN (1994)**

*The IUCN Council adopted this version, which incorporates changes as a result of comments from IUCN members, in December 1994. The initial version of this document was published without the necessary bibliographic details such as ISBN number, etc., but these were included in the subsequent reprints in 1998 and 1999.*

### **Proposed Version 3.0 IUCN/SSC Criteria Review Working Group**

*Following comments received, a series of workshops were convened to look at the Red List Criteria following which, changes were proposed.*

### **Under References add:**

*Gärdenfors, U., Rodríguez, J.P., Hilton-Taylor, C., Hyslop, C., Mace, G., Molur, S. and Poss, S. 1999. Draft Guidelines for the Application of IUCN Red List Criteria at National and Regional Levels. Species 31/32: 58-70.*

*IUCN (1994) IUCN Red List Categories. Prepared by the IUCN Species Survival Commission. IUCN, Gland, Switzerland.*

*IUCN (1998) Guidelines for Re-introductions. Prepared by the IUCN/SSC Re-introduction Specialist Group. IUCN, Gland, Switzerland and Cambridge, UK.*

4. *In the rest of this document the proposed system is outlined....It is important for the effective functioning of the new system that all sections are read and understood, and that the definitions and 'rules' are followed.*

## **II. Preamble**

### **1. Taxonomic Level and Scope of the Categorisation Process**

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#### **Issue**

Update this section as the Re-introductions Guidelines have been published.

#### **Current version**

The criteria can be applied.... The categorisation process should only be applied to wild populations inside their natural range, and to populations resulting from benign introductions (defined in the draft IUCN Guidelines for Re-introductions as "...an attempt to establish a species, for the purpose of conservation, outside its recorded distribution, but within an appropriate habitat and eco-geographical area").

#### **Revised version**

*The criteria can be applied.... The categorisation process should only be applied to wild populations inside their natural range, and to populations resulting from benign introductions (defined in the IUCN Guidelines for Re-introductions (IUCN 1998) as "...an attempt to establish a species, for the purpose of conservation, outside its recorded distribution, but within an appropriate habitat and eco-geographical area. This is a feasible conservation tool only when there is no remaining area left within a species' historic range").*

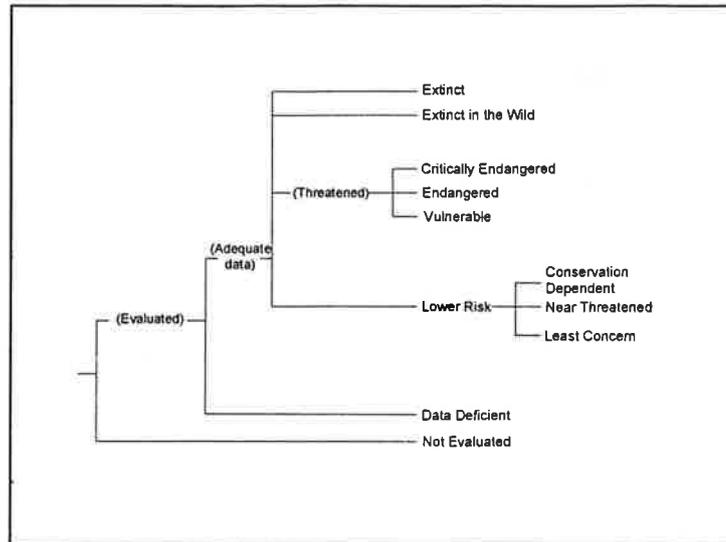
### **Figure 1. Structure of the Categories**

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#### **Issue**

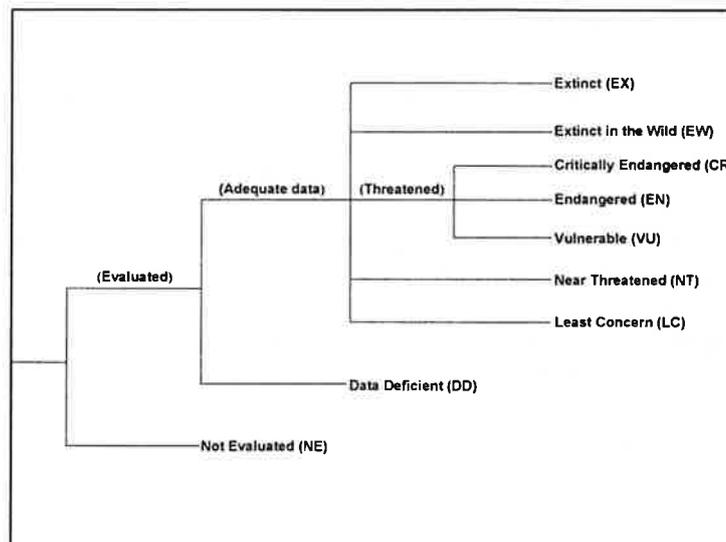
The use of the Lower Risk subcategories is optional according to the rules. In reality, most assessors have recognised and used Near Threatened (LRnt) and Conservation Dependent (LRcd). A decision has been made to remove the LRcd subcategory altogether (see under Conservation Dependent below), and to simplify the system by making near threatened and least concern into categories. Consequently, these subcategories should be recognised as individual independent categories, and the tree showing the structure of the categories drawn accordingly. The tree it is also argued, although not strictly a hierarchy, should be redrawn to reflect the relative importance of the categories.

**Current version**



**Recommended version**

*It is recommended that the current figure be replaced with something along the lines of that below. However, a final decision on the exact layout has yet to be reached.*



**7. Uncertainty**

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**Issue**

Despite the fact that the notes accompanying the current criteria recognise the problem of data uncertainty, there is no clear guidance on how to deal with it in either the assessment of species or the interpretation of listings. This is an important problem that constrains the use and interpretation of the Red List Criteria and

Categories, and leads to irresolvable debates over particular issues. Many other problems with the criteria are related to this issue, e.g. the use of Data Deficient, the lack of criteria for Near Threatened, and the assessment of species whose status is known only from one small part of its range. New methods and approaches provide a better understanding of uncertainty and offer a way forward.

#### **Current version**

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. Given that data are rarely available for the whole range or population of a taxon, it may often be appropriate to use the information that is available to make intelligent inferences about the overall status of the taxon in question. In cases where a wide variation in estimates is found, it is legitimate to apply the precautionary principle and use the estimate (providing it is credible) that leads to listing in the category of highest risk.

Where data are insufficient to assign a category (including Lower Risk), the category of 'Data Deficient' may be assigned. However, it is important to recognise that this category indicates that data are inadequate to determine the degree of threat faced by a taxon, not necessarily that the taxon is poorly known. In cases where there are evident threats to a taxon through, for example, deterioration of its only known habitat, it is important to attempt threatened listing, even though there may be little direct information on the biological status of the taxon itself. The category 'Data Deficient' is not a threatened category, although it indicates a need to obtain more information on a taxon to determine the appropriate listing.

#### **Recommended version**

##### *The nature of uncertainty*

*The criteria should be applied to a taxon based on the available evidence on its numbers, trend and distribution, making due allowance for statistical and other uncertainties. These uncertainties arise from natural variability (resulting from the fact that species life histories and the environments in which they live are changing over time), measurement error (i.e. the variability in parameter values that results from inaccuracies in estimating them) and semantic uncertainty (i.e. a lack of precision in the definition of terms or a lack of consistency in different assessors usage of them). In cases where there are evident threats to a taxon through, for example, deterioration of its only known habitat, it is important to attempt threatened listing, even though there may be little direct information on the biological status of the taxon itself.*

##### *Estimating uncertainty*

*One of the simplest ways to represent uncertainty is to specify a best estimate and a range of plausible values. The best estimate itself might be a range, but in any case, the best estimate should always be nested within (included in) the plausible range. When data are very uncertain, the range for the best estimate may coincide with the range of plausible values. The plausible range might be based on confidence intervals, the opinion of a single expert, or the consensus opinion of a group of experts, and should be justified.*

### Attitudes to uncertainty

*When interpreting and using uncertain data, preferences and attitudes towards risk and uncertainty may play an important role. Attitudes have two components. First, assessors need to consider whether they will include the full range of plausible values in assessments, or whether they will exclude extreme estimates from consideration (this is known as dispute tolerance). Second, assessors need to consider whether they have a precautionary or evidentiary attitude to risk (this is known as risk tolerance). A precautionary attitude will classify a taxon as threatened unless we are certain that it is not threatened. An evidentiary attitude will not classify a taxon as threatened unless there is strong evidence to support a threatened classification. Assessors should always apply a precautionary but realistic attitude to uncertainty when applying the criteria. All preferences and attitudes should be explicitly documented.*

*The assessment against the best estimate should lead to a single Red List Category. However, when the plausible range for each parameter is used in assessments against the criteria, the resulting range of categories will reflect the uncertainties in the data. The single category should always be listed, optionally accompanied by the plausible range of categories in the documentation.*

*Where data are so uncertain that any category is plausible, the category of Data Deficient may be assigned. Data Deficient should be used only rarely, in cases when almost nothing is known about a taxon or its habitat. However, it is important to recognise that this category indicates that data are inadequate to determine the degree of threat faced by a taxon, not necessarily that the taxon is poorly known. The category Data Deficient is not a threatened category, although it indicates a need to obtain more information on a taxon to determine the appropriate listing.*

## **8. Conservation Actions in the Listing Process**

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### **Issue**

Requires revision because of removal of Conservation Dependent category.

### **Current version**

The criteria for the threatened categories are to be applied to a taxon whatever the level of conservation action affecting it. In cases where it is only conservation action that prevents the taxon from meeting the threatened criteria, the designation of 'Conservation Dependent' is appropriate. It is important to emphasise here that a taxon require [sic] conservation action even if it is not listed as threatened.

### **Revised version**

*The criteria for the threatened categories are to be applied to a taxon whatever the level of conservation action affecting it. It is important to emphasise here that a taxon may require conservation action even if it is not listed as threatened.*

## 11. Use at Regional Level

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### Issue

Although the IUCN Red List Categories and Criteria were designed for global species assessments, many people are interested in applying the system at regional, national or local scales. IUCN is addressing this through a separate process.

### Recommendation

The paragraph under this should be replaced by the following:

*The criteria are most appropriately applied to entire taxa at the global scale, however, they may be used at national or other regional levels following the 'Draft Guidelines' prepared by the IUCN/SSC Regional Applications Working Group (Gärdenfors et al. 1999).*

## III. Definitions

### 1. Populations

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#### Issue

The Red List Categories do not use the generally understood definition for a population. Instead the term population is used (and defined) to refer to the entire set of individuals under evaluation, whether this is a species, sub-species or any other biological unit below the species level.

#### Current definition

Population is defined as the total number of individuals of the taxon. For functional reasons, primarily owing to differences between life-forms, population numbers are expressed as numbers of mature individuals only. In the case of taxa obligately dependent on other taxa for all or part of their life cycles, biologically appropriate values for the host taxon should be used.

#### Recommended definition

In the absence of any other suitable term, the current definition is slightly revised.

*Population is defined as the total number of individuals of the taxon to be assessed. For functional reasons..., population size is measured as numbers of mature individuals only. Note that the term population is used in a specific sense in the Red List Criteria that is different to its common biological usage.*

### 2. Subpopulations

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#### Issue

The Red List Categories do not use the generally understood definition for subpopulation. What are termed subpopulations here, are generally referred to as populations.

### **Current definition**

Subpopulations are defined as geographically or otherwise distinct groups in the population between which there is little exchange (typically one successful migrant individual or gamete per year or less).

### **Recommended definition**

*Subpopulations are defined as geographically or otherwise distinct groups in the population to be assessed between which there is little demographic or genetic exchange.*

## **3. Mature Individuals**

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### **Issue**

There are a number of life history variants which are not taken into account under the current definition, e.g. the case where there are extant mature individuals but no recruitment and the case where sex ratio is biased and the less common sex is the limiting one.

### **Current definition**

The number of mature individuals is defined as the number of individuals known, estimated or inferred to be capable of reproduction. When estimating this quantity, the following points should be borne in mind:

- Where the population is characterised by natural fluctuations the minimum number should be used.
- Four other bullet points follow (see booklet).

### **Recommended definition**

*The number of mature individuals is the number of individuals known, estimated or inferred to be capable of producing offspring that reach reproductive age. When estimating this quantity, the following points should be borne in mind:*

- *Where the population is characterised by natural fluctuations use a lower estimate. In most cases this will be much less than the mean.*
- *Mature individuals that cannot produce new recruits should not be counted (e.g., densities are too low for fertilisation or reproductive conditions are not met)*
- The other four bullet points remain the same.

## **4. Generation**

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### **Issue**

Generation length is used as a surrogate for turnover in the assessment of taxa. All time-based measures in the criteria need to be scaled for the different rates at which taxa survive and reproduce and generation time is used to provide this scaling. The current definition has been widely misunderstood, and there are also difficulties when dealing with very long-lived species and with variation in generation length under harvesting, with environmental changes and between the sexes. When this issue was discussed it became clear that the different methods for estimating generation

length were too complex to include in the definition but these have been drafted for inclusion in the 'guidelines'.

**Current definition**

Generation may be measured as the average age of parents in the population. This is greater than the age at first breeding, except in taxa where individuals breed only once.

**Recommended definition**

*Generation length reflects the turnover rate of breeding individuals in a population i.e. the average age of parents of the current cohort (e.g. newborn individuals in the population). Generation length is greater than the age at first breeding, except in taxa that breed only once. Where generation length varies under threat, the more natural, i.e. pre-disturbance, generation length should be used. Generation length can be estimated in many ways.*

## **5. Continuing Decline**

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**Issue**

The current definition does not take into account episodic or catastrophic declines.

**Current definition**

A continuing decline is a recent, current or projected future decline whose causes are not known or not adequately controlled and so is liable to continue unless remedial measures are taken. Natural fluctuations will not normally count as a continuing decline, but an observed decline should not be considered to be part of a natural fluctuation unless there is evidence for this.

**Recommended definition**

*A continuing decline is a recent, current or projected future decline (which may be smooth, irregular or sporadic) whose causes are not known or not adequately controlled and so is liable to continue unless remedial measures are taken. Fluctuations will not normally count as continuing declines, but an observed decline should not be considered as a fluctuation unless there is evidence for this.*

## **11. Location**

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**Issue**

Assessors are using location to be equivalent to the place where a taxon is found. However, this may not be appropriate as the intention behind the use of the term in the criteria was for location to define a set of individuals facing the same threat.

**Current definition**

Location defines a geographically or ecologically distinct area in which a single event (e.g. pollution) will soon affect all individuals of the taxon present. A location usually, but not always, contains all or part of a subpopulation of the taxon, and is typically a small proportion of the taxon's total distribution.

**Recommended definition**

*Location defines a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a species is affected by more than one threatening event, location should be defined by considering the most serious plausible threat.*

**12. Quantitative Analysis**

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**Issue**

Users have generally interpreted a quantitative analysis (in Criterion E) to mean a population viability analysis (PVA), which for most species is not feasible. However, the current definition does allow for a broader interpretation and the analysis of risk of extinction even when little is known about the biology of the species concerned. Sometimes, especially when the threats are of large effect but unpredictable, it may be preferable to make an assessment using Criterion E, rather than Criterion A2. The definition should be rephrased to make it clearer what is permitted.

**Current definition**

A quantitative analysis is defined here as the technique of population viability analysis (PVA), or any other quantitative form of analysis, which estimates the extinction probability of a taxon 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.

**Recommended definition**

*A quantitative analysis is defined here as a form of analysis which estimates the extinction probability of a taxon based on known life history, habitat requirements, threats and any specified management options. Population viability analysis (PVA) is one such technique. Quantitative analyses should make full use of all relevant available data. In a situation in which there is limited information, such data as are available can be used to provide an estimate of extinction risk (for instance, estimating the impact of stochastic events on habitat). In presenting the results of quantitative analyses, the assumptions (which must be appropriate) and the data used must be documented.*

**IV. The Categories**

**Issue**

The qualitative definitions for the threatened categories tend to overstate the predictive accuracy of the system. They also do not adequately convey to the general reader the fact that it is the criteria that determine listing in the threatened categories and that this evaluation requires a scientifically based assessment. The difficulty is how to phrase them without using quantitative terms but still convey a sense of urgency.

## **Critically Endangered (CR)**

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### **Current definition**

A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future, as defined by any of the criteria (A to E)...

### **Recommended definition**

*A taxon is Critically Endangered when available scientific evidence indicates that it meets any of the criteria A to E (below), and it is therefore considered to be facing an extremely high risk of extinction in the wild.*

## **Endangered (EN)**

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### **Current definition**

A taxon is Endangered when it is not Critically Endangered, but is facing a very high risk of extinction in the wild in the near future, as defined by any of the criteria (A to E)...

### **Recommended definition**

*A taxon is Endangered when available scientific evidence indicates that it meets any of the criteria A to E (below), and it is therefore considered to be facing a very high risk of extinction in the wild.*

## **Vulnerable (VU)**

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### **Current definition**

A taxon is Vulnerable when it is not Critically Endangered or Endangered but is facing a high risk of extinction in the wild in the medium-term future, as defined by any of the criteria (A to E)...

### **Recommended definition**

*A taxon is Vulnerable when available scientific evidence indicates that it meets any of the criteria A to E (below), and it is therefore considered to be facing a high risk of extinction in the wild.*

## **Lower Risk (LR)**

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### **Issue**

The system is made unnecessarily complicated by having this as a category with three sub-categories, two of which should logically not be placed here.

### **Recommendation**

*It is proposed that this category be dropped, but that the wording under it should be incorporated into the definitions of the Near Threatened and Least Concern categories.*

## 1. Conservation Dependent (cd)

### Issue

The current use of Conservation Dependent as an independent Red List Category of Lower Risk is not logically consistent as a taxon can also be both threatened and conservation dependent. In addition assessors have used this category in a variety of sometimes subjective contexts making it less useful than was hoped. Two logical options were discussed. First, Conservation Dependent could be used as a flag under all the threatened categories but this did not appear a satisfactory solution as it would require many difficult judgements to be made about the effectiveness of conservation programmes. Second, to remove this category.

### Recommendation

*Remove Conservation Dependent as a category, but encourage assessors to provide information in the documentation to indicate where continuing specific conservation actions are improving the status of a taxon.*

## 2. Near Threatened (NT)

### Issue

This category is increasingly being used more formally than was intended. At present it is very loosely defined so better guidance is required on when and how to use it. The development of criteria has been suggested, but this option would create many difficulties. The 'guidelines' will provide practical and more consistent methods for determining when a species should be listed as Near Threatened. This might be where a taxon meets only some sub-criteria or where the range of plausible assessments includes a threatened category and Least Concern. In addition this category would include some taxa that previously would have been listed as Conservation Dependent.

### Current definition

Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.

### Recommended definition

*Taxa which have been assessed against the criteria but do not qualify for Critically Endangered, Endangered or Vulnerable now, but are close to qualifying for or are likely to become Vulnerable in the near future. Also included here are taxa which are the focus of a continuing taxon-specific or habitat-specific conservation programme targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years. Such conservation programmes must be described as part of the documentation requirements.*

## 3. Least Concern (LC)

### Issue

This category was provided to differentiate species that had been evaluated, and found not to be threatened. This gives the impression that one is required to conduct a formal assessment for blatantly common (weedy) taxa. From basic observations it

can be easily seen that most of these extremely common taxa would not qualify for listing even though they have not been put through a formal assessment.

**Current definition**

Taxa which do not qualify for Conservation Dependent or Near Threatened.

**Recommended definition**

*Taxa which have been assessed against the criteria and do not qualify for Critically Endangered, Endangered or Vulnerable and which also do not qualify for Near Threatened. Based on casual observation, extremely common taxa can be included in this category without having undergone a formal assessment against the criteria, provided the justification for this is fully documented.*

## **V. The Criteria for Critically Endangered, Endangered and Vulnerable**

### **Criterion A**

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#### **Issue**

The current quantitative thresholds in the criterion do not scale well across all organisms and the rate under Vulnerable is thought to be too inclusive. In addition, the rates of decline do not take into account managed populations that are being harvested down to levels at which higher yield is attained, or dramatic declines that occurred in the distant past but are now halted or even reversed. Modeling also shows quantitative differences in extinction risk between types of decline that are irreversible e.g. through habitat loss, and reversible e.g. through density dependent responses to harvesting. The criterion also does not provide guidance on projecting into the future, especially for long-lived species, where such assessments may be both unreliable and irrelevant. Greater clarity is also required on whether the criterion allows the use of a shifting time window for species where only small amounts of data are available.

#### **Current version**

#### **Vulnerable**

- A. Population reduction in the form of either of the following:
1. An observed, estimated, inferred or suspected reduction of at least 20% over the last 10 years or three generations, whichever is the longer, based on (and specifying) any of the following:
    - (a) direct observation
    - (b) index of abundance appropriate for the taxon
    - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
    - (d) actual or potential levels of exploitation
    - (e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.
  2. A reduction of at least 20%, projected or suspected to be met within the next ten years or three generations, whichever is the longer, based on (and specifying) any of (b), (c), (d) or (e) above.

The reduction thresholds change to 50% and 80% under Endangered and Critically Endangered respectively.

#### **Recommendation**

*To change the sub-criteria under Criterion A. The proposed wording given here is for Vulnerable but it is the same for Critically Endangered and Endangered using different quantitative thresholds (see table below).*

#### **Vulnerable**

- A. Reduction in population size based on any of the following:

1. An observed, estimated, inferred or suspected population size reduction of  $\geq 30\%$  over the last 10 years or three generations, whichever is longer, where the causes of the reduction are not demonstrably reversible, OR not clearly understood, OR may not have ceased, OR could recur, based on (and specifying) any of the following:
  - (a) direct observation
  - (b) an index of abundance appropriate for the taxon
  - (c) a decline in area of occupancy, extent of occurrence and/or quality of habitat
  - (d) actual or potential levels of exploitation
  - (e) the effects of introduced taxa, hybridisation, pathogens, pollutants, competitors or parasites.
  
2. An observed, estimated, inferred or suspected population size reduction of  $\geq 50\%$  over the last 10 years or three generations, whichever is longer, where the causes of the reduction are: demonstrably reversible AND understood AND ceased AND unlikely to recur, based on (and specifying) any of (a) to (e) under A1.
  
3. A population size reduction of at least 30%, projected or suspected to be met within the next ten years or three generations, whichever is the longer (up to a maximum of 100 years), based on (and specifying) any of (b) to (e) under A1.
  
4. An observed, estimated, inferred, projected or suspected population size reduction of  $\geq 30\%$  over any 10 year or three generation period, whichever is longer (up to a maximum of 100 years), where the time period includes both the past and the future, AND the causes of reduction are not demonstrably reversible OR not clearly understood OR may not have ceased OR could recur, based on (and specifying) any of the (a) to (e) under A1.

## Thresholds:

Sub-criteria	VU	EN	CR
A1, A3, A4	$\geq 30\%$	$\geq 50\%$	$\geq 80\%$
A2	$\geq 50\%$	$\geq 70\%$	$\geq 90\%$

## Criterion B

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### Issue

There is a logical conflict between having fixed range thresholds and the necessity of measuring range at different scales for different species. Estimates of Area of Occupancy (AOO) are especially dependent on the scale of estimation. The current definition directs that AOO should be measured at a scale that is appropriate to biological aspects of the taxon. However, the AOO thresholds are fixed at a level that is too inclusive for groups of taxa in which a fine scale of range estimation is biologically appropriate. This could lead to over-listing of taxa within these groups. No solution has yet been found, but work is continuing on this issue.

## Criterion C

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### Issue

Few taxa have data on both population size and decline rates at the necessary resolution to apply sub-criterion C1. There is also some overlap between Criterion A and C1. Removal of C1 would simplify the criteria and enhance parity with Criterion B, however, no resolution on this was reached and work is continuing. A second issue is that under sub-criterion C2b, all individuals have to be in a single subpopulation. This is too exclusive and does not allow the listing of very skewed populations where a small number of mature individuals exist outside the main population. Criterion C also does not explicitly take into account extreme fluctuations in small populations.

### Current version

- C. Population estimated to number...and either:
  - 1. An estimated continuing decline...
  - 2. A continuing decline, observed, projected or inferred, in numbers of mature individuals and population structure in the form of either:
    - (a) severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals)
    - (b) all individuals are in a single subpopulation.

### Recommendation

*To change the opening statement of the criterion and sub-criterion C2 under Critically Endangered, Endangered and Vulnerable to read as follows:*

- C. *Population size estimated to number...and either:*
  - 1. *An estimated continuing decline...*
  - 2. *A continuing decline, observed, projected or inferred, in numbers of mature individuals and population structure in the form of either:*
    - (a) severely fragmented (i.e. no subpopulation estimated to contain more than 50 mature individuals) OR at least 95% of mature individuals are in one subpopulation*
    - (b) show extreme fluctuations.*

## Criterion D

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### Issue:

Sub-criterion D2 under Vulnerable was intended to be used for species with very small distributions. However, the thresholds for area of occupancy and number of locations, although given as indicators, are frequently interpreted too literally. Some people have argued that the sub-criterion is too inclusive and results in massive over-listing, whereas others argue that it is too exclusive (for many marine species)

and so is under-listing. The threats aspect needs to be emphasised more than the restricted distribution.

**Current version:**

- D 2. Population is characterised by an acute restriction in its area of occupancy (typically less than 100 km<sup>2</sup>) or in the number of locations (typically less than 5). Such a taxon would thus be prone to the effects of human activities (or stochastic events whose impact is increased by human activities) within a very short period of time in an unforeseeable future, and is thus capable of becoming Critically Endangered or even Extinct in a very short period.

**Recommended version:**

- D 2. *Population with a very restricted area of occupancy such that it is prone to the effects of human activities or stochastic events within a very short time period in an uncertain future, and is thus capable of becoming Critically Endangered or even Extinct in a very short time period. Typically such taxa would have areas of occupancy in the lower 10% of those for comparable taxa.*

## Criterion E

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**Issue**

The thresholds for extinction probability and the time period for which such analyses should be done are not appropriate for all organisms. There is also an inconsistency in giving generation times for CR and EN but not for VU. There is no guidance given on how to deal with projected extinction risks, as extinction rates may change over time.

**Recommendation**

*A cap of 100 years should be placed under Endangered and Critically Endangered i.e. the latter would read: Quantitative analysis showing the probability of extinction in the wild is at least 50% within 10 years or 3 generations, whichever is the longer up to a maximum of 100 years).*

## 5. List of participants at the Criteria Review Workshop, Cambridge, UK.

The following people attended the Criteria Review Working Group Workshop held in Cambridge, UK, on July 1-2, 1999. Those marked with an asterisk (\*) are members of the Criteria Review Working Group:

Alberto Abreu, Resit Akçakaya\*, Jonathan Baillie\*, Nigel Collar\*, Ulf Gärdenfors\*, Kevin Gaston\*, Craig Hilton-Taylor, Elodie Hudson, Bob Irvin\*, David Keith\*, Russell Lande\*, Nigel Leader-Williams\*, Charlotte Lusty\*, Georgina Mace\*, Larry Master\*, Hiroyuki Matsuda, EJ Milner-Gulland\*, Sanjay Molur\*, Howard Powles\*, André Punt\*, Jon Paul Rodríguez\*, Mary Seddon\*, Alison Stattersfield\*, Simon Stuart, John Wang, and Tetsukazu Yahara\*.

## **6. Acknowledgements**

Although this is not the final word on the Criteria Review Process, this is an opportune moment to acknowledge and thank the many external sponsors who have made the review possible. The Marine Workshop was sponsored by the German Ministry of the Environment and the Global Guardian Trust; the New South Wales National Parks and Wildlife Service and the New South Wales Scientific Committee sponsored the Range Areas and Uncertainty Workshop; the Criterion A and Criteria Review Workshops were sponsored by the Ministry for the Environment of Finland; and the Regional Applications Working Group meeting was funded by the Canadian Wildlife Service. We also thank all the SSC members, scientists and conservationists who have participated in the workshops and/or submitted comments on the Red List Categories and Criteria.