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# I. INTRODUCTION

The IUCN Red List Categories and Criteria (IUCN 2001; see also <http://www.iucn.org/themes/ssc/redlists/rlicategories2000.html>) were developed for classifying species at high risk of global extinction, i.e. for assessment at the global level. At regional, national and local levels (hereafter referred to as regional level) there are essentially two options: (1) To publish an unaltered subset of the global Red List encompassing those species that reproduce in the region or at any stage regularly visit the region. This may be a feasible option, particularly when the region has a high number of endemics or threatened near endemics, or when there is currently a pronounced overall deficiency of data pertaining to species status within the region. (2) To assess species' extinction risk and publish Red Lists within the specific region. For the purposes of regional conservation assessments there are important reasons to assess species' extinction risk and publish Red Lists within specific geographically defined areas.

While the first option is straightforward, the second involves a number of issues not encountered at the global level, including the assessment of populations across geopolitical borders, non-breeding phases of populations and non-indigenous taxa. When making assessments at regional levels it is also particularly important to recognize that while IUCN Red List Categories reflect the relative extinction risk of species, the process of setting priorities for conservation actions may require several additional considerations. As a consequence, the following guidelines were produced to assist in the application of the IUCN Red List Categories and Criteria at regional levels.

Recognizing the need for coherent guidelines for the application of Red List Categories at regional levels, the First World Conservation Congress held in Montreal in 1996, adopted a resolution (WCC Res. D. 1.25) that "Requests the SSC, within available resources, to complete the development of guidelines for using the IUCN Red List Categories at the regional level as soon as it is practicable...".

As part of the process to resolve these issues, the Regional Application Working Group (RAWG) was formed under the auspices of the Species Survival Commission's (SSC) Red List Programme. The membership of RAWG included people with technical experience in the development of the IUCN Red List Criteria, as well as those with practical experience of producing Red Lists at

regional levels. The group has consulted many different regional and national groups, participated in regional Red List assessment workshops, published draft versions of the guidelines (Gärdenfors *et al.* 1999, 2001) and undertaken a process of ongoing modification and improvement to the earlier drafts.

The final guidelines are presented here. Some issues have proved especially difficult to resolve to everyone's satisfaction. The users of these guidelines will deal with a wide diversity of natural systems and taxa, within different political and social contexts. We have encountered many of these during the drafting phases and have tried to take into account these diverse circumstances. Following much deliberation, the guidelines presented here are based on sound general principles and we recommend them to anyone who wishes to undertake Red List assessments at the regional level.

## II. PREAMBLE

### 1. Application of the guidelines

Any country or region using the IUCN Red List Categories and Criteria for listing species must follow these guidelines if they wish to state that their assessment follows the IUCN system.

### 2. The regional concept

The word *regional* is used here to indicate any subglobal geographically defined area, such as a continent, country, state, or province.

Within any region there will be taxa with different distribution histories, ranging from those that are indigenous (native to the area), and have been there since pre-human settlement, to those introduced more recently. There may also be breeding and non-breeding taxa. The latter are those that do not reproduce in the region but may still be dependent upon its resources for their survival. There may also be formerly native taxa that are now extinct in the region, but which are still extant in other parts in the world.

### 3. IUCN Red List Criteria versus Regional Guidelines

All the rules and definitions in the IUCN Red List Categories and Criteria Version 3.1 (IUCN 2001) apply at regional levels, unless otherwise indicated here. Similarly, the 'Guidelines for using the IUCN Red List Categories and Criteria' (Standards and Petitions Subcommittee of the IUCN SSC Red List Programme Committee 2003) as well as the *IUCN Guidelines for Re-introductions* (IUCN 1998) also apply at regional levels. Consequently, a careful study of all these documents is highly recommended before application of the regional guidelines, and they should be constantly referred to when using this document. The guidelines for regional application are hereafter referred to as the Guidelines.

### 4. Scale applicability

Provided that the regional population to be assessed is isolated from conspecific populations outside the region, the IUCN Red List Criteria (IUCN 2001) can be used without modification within any geographically defined area. The extinction risk for such an isolated population is identical to that of an endemic taxon. However, when the criteria are applied to part of a population defined by a geopolitical border, or to a regional population where individuals move to or from other populations beyond the border, the threshold values listed under each criterion may be inappropriate, because the unit being assessed is not the

same as the whole population or subpopulation. As a result, the estimate of extinction risk may be inaccurate. These guidelines present methods for adjusting the results from the first step in the assessment process to obtain a Red List Category that adequately reflects a taxon's risk of extinction within the region.

Although the Guidelines may in principle be applied at any geographical scale, application within very restricted geographical areas is strongly discouraged. The smaller the region, and the more wide-ranging the taxon under consideration, the more often the regional population will interchange individuals with neighbouring populations. Therefore the assessment of extinction risk becomes increasingly unreliable. It is not possible to provide any specific guidance on the precise lower limit for sensible application as this depends on the nature of the region, and especially the barriers to dispersal that exist.

## **5. Regionally determined applications and modifications**

Certain definitions and applications of the Guidelines are left to the discretion of regional Red List authorities. For example, the delimitation of natural range, time limits for regional extinction, and the nature of an initial filter for breeding and/or non-breeding taxa, are left open for the regional Red List authorities to decide. Such regional decisions must be clearly recorded and documented, for example as part of an introductory text to the listings.

## **6. Taxonomy**

Regional Red List authorities are encouraged to follow the same taxonomic checklists as used by the global IUCN Red List (see [http://www.redlist.org/info/info\\_sources\\_quality.html](http://www.redlist.org/info/info_sources_quality.html)). For other taxonomic groups or any deviations from the recommended lists, the differences and the taxonomic authorities followed should be specified.

## **7. Scaling up assessments**

Red List assessments from several smaller regions, such as countries on a continent, cannot be combined or scaled-up in any way to provide Red List Categories for the entire larger region. Assessments of extinction risk for the larger region require new evaluations using the pooled data from across the entire region. Data collected from individual smaller regions may be essential for the assessment of the larger region, and are often important for conservation planning.

## **8. Red List versus priority for conservation action**

Assessment of extinction risk and setting conservation priorities are two related but different processes. Assessment of extinction risk, such as the assignment of IUCN Red List Categories, generally precedes the setting of priorities. The purpose of the Red List categorization is to produce a relative estimate of the likelihood of extinction of the taxon. Setting conservation priorities, on the other hand, which normally includes the assessment of extinction risk, also takes into account other factors such as ecological, phylogenetic, historical, or cultural preferences for some taxa over others, as well as the probability of success of conservation actions, availability of funds or personnel to carry out such actions, and legal frameworks for conservation of threatened taxa. In the context of regional risk assessments, a number of additional pieces of information are valuable for setting conservation priorities. For example, it is important to consider not only conditions within the region but also the status of the taxon from a global perspective and the proportion of the global population that occurs within the region. Consequently, it is recommended that any publication that results from a regional assessment process should include at least three measures: (1) the regional Red List Category, (2) the global Red List Category, and (3) an estimate of the proportion (%) of the global population occurring within the region (see section V. Documentation and Publication).

Decisions on how these three variables, as well as other factors, are used for establishing conservation priorities is a matter for the regional authorities to determine. The authorities may also wish to consider other variables in setting priorities, which are to a large degree region-specific and therefore not covered by the Guidelines. However, one particular situation merits special attention. The application of the Red List Criteria, particularly criterion A, may under some circumstances result in a taxon qualifying for listing in a higher category at the global level than the regional level. This may be the case when the regional population is more or less stable but constitutes only a small percentage of the global population, which is experiencing a net decline. Such species should be given particular attention at the regional level because of their significance for global status.

Regional Red List authorities should be aware that the view that a Red List based on the IUCN criteria is not automatically a list of priorities for conservation actions, may conflict with current legislation in some regions.

### **III. DEFINITIONS**

#### **1. Benign introduction**

An attempt to establish a taxon, for the purpose of conservation, outside its recorded distribution but within an appropriate habitat and ecogeographical area; a feasible conservation tool only when there is no remaining area left within a taxon's historic range (IUCN 1998).

#### **2. Breeding population**

A (sub)population that reproduces within the region, whether this involves the entire reproductive cycle or any essential part of it.

#### **3. Conspecific population**

Populations of the same species; here applied to any taxonomic unit at or below the species level.

#### **4. Downgrading and upgrading**

The process for adjusting the Red List Category of a regional population according to a decreased or increased risk of extinction; downgrading refers to a reduced extinction risk and upgrading to an increased extinction risk.

#### **5. Endemic taxon**

A taxon naturally found in any specific area and nowhere else; this is a relative term in that a taxon can be endemic to a small island, to a country, or to a continent.

#### **6. Global population**

Total number of individuals of a taxon. (See 10. Population.)

#### **7. Metapopulation**

A collection of subpopulations of a taxon, each occupying a suitable patch of habitat in a landscape of otherwise unsuitable habitat. The survival of the metapopulation is dependent on the rate of local extinctions of occupied patches and the rate of (re-)colonization of empty patches (Levins 1969, Hanski 1999).

#### **8. Natural range**

Range of a taxon, excluding any portion that is the result of an introduction to a region or neighbouring region. The delimitation between wild and introduced

populations within a region may be based on a preset year or event, but this decision is left to the regional Red List authority.

### **9. Not Applicable (NA)**

Category for a taxon deemed to be ineligible for assessment at a regional level. A taxon may be NA because it is not a wild population or not within its natural range in the region, or because it is a vagrant to the region. It may also be NA because it occurs at very low numbers in the region (i.e., when the regional Red List authority has decided to use a “filter” to exclude taxa before the assessment procedure) or the taxon may be classified at a lower taxonomic level (e.g., below the level of species or subspecies) than considered eligible by the regional Red List authority. In contrast to other Red List categories, it is not mandatory to use NA for all taxa to which it applies; but is recommended for taxa where its use is informative.

### **10. Population**

This term is used in a specific sense in the IUCN Red List Criteria (IUCN 2001), different from its common biological usage. *Population* is defined as the total number of individuals of the taxon. Within the context of a regional assessment, it may be advisable to use the term *global population* for this. In the Guidelines the term population is used for convenience, when reference is made to a group of individuals of a given taxon that may or may not interchange propagules with other such entities. (See 15. Regional population and 18. Subpopulations.)

### **11. Propagule**

A living entity capable of dispersal and of producing a new mature individual (e.g., a spore, seed, fruit, egg, larva, or part of or an entire individual). Gametes and pollen are not considered propagules in this context.

### **12. Region**

A subglobal geographical area, such as a continent, country, state, or province.

### **13. Regional assessment**

Process for determining the relative extinction risk of a regional population according to the Guidelines.

### **14. Regionally Extinct (RE)**

Category for a taxon when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or has disappeared from the wild in the region, or when, if it is a former visiting taxon, the last

individual has died or disappeared in the wild from the region. The setting of any time limit for listing under RE is left to the discretion of the regional Red List authority, but should not normally pre-date 1500 AD.

### **15. Regional population**

The portion of the global population within the area being studied; which may comprise one or more subpopulations.

### **16. Rescue effect**

Process by which immigrating propagules result in a lower extinction risk for the target population.

### **17. Sink**

An area where the local reproduction of a taxon is lower than local mortality. The term is normally used for a subpopulation experiencing immigration from a source where the local reproduction is higher than the local mortality (see Pulliam 1988).

### **18. Subpopulations**

Geographically or otherwise distinct groups in the (global) population between which there is little demographic or genetic exchange (typically one successful migrant individual or gamete per year or less; IUCN 2001); a subpopulation may or may not be restricted to a region.

### **19. Taxon**

A species or infraspecific entity whose extinction risk is being assessed.

### **20. Vagrant**

A taxon that is currently found only occasionally within the boundaries of a region. (See 21. Visitor.)

### **21. Visitor (also, visiting taxon)**

A taxon that does not reproduce within a region but regularly occurs within its boundaries either now or during some period of the last century. Regions have several options on how to decide the boundaries between visitors and vagrants, e.g., using a preset percentage of the global population found in the region or predictability of occurrence.

## **22. Wild population**

A population within its natural range in which the individuals are the result of natural reproduction (i.e., not the result of human-mediated release or translocation); if a population is the result of a benign introduction that is now or has previously been successful (i.e., self-sustaining), the population is considered wild.

## IV. THE ASSESSMENT

### 1. Taxa to be assessed

The categorization process should be applied only to wild populations inside their natural range and to populations resulting from benign introductions (IUCN 1998, 2001). Taxa only marginally within the region should also enter the assessment process (unless excluded by an optional filter, see below). But a taxon that occasionally breeds under favourable circumstances in the region but regularly becomes (regionally) extinct should not be considered. Similarly, a taxon that is currently expanding its distributional range outside the region and appears to be in a colonization phase within the region should not be considered for regional assessment until the taxon has reproduced within the region for several years (typically for at least 10 consecutive years).

Taxa formerly considered Regionally Extinct (RE) that naturally re-colonize the region may be assessed after the first year of reproduction. Re-introduced, formerly RE taxa may be assessed as soon as at least a part of the population successfully reproduces without direct support and the offspring are shown to be viable.

Visiting taxa may be assessed against the criteria, but vagrant taxa should NOT be assessed.

The regional Red List authority may decide to apply a filter, e.g., a preset threshold of global or continental population share, to the assessment of breeding and/or visiting taxa. For instance, a region may decide that they will not assess species that occur or have occurred within the last century in the region with less than 1% of the global population. All filters applied must be clearly specified in the supporting documentation.

### 2. The categories

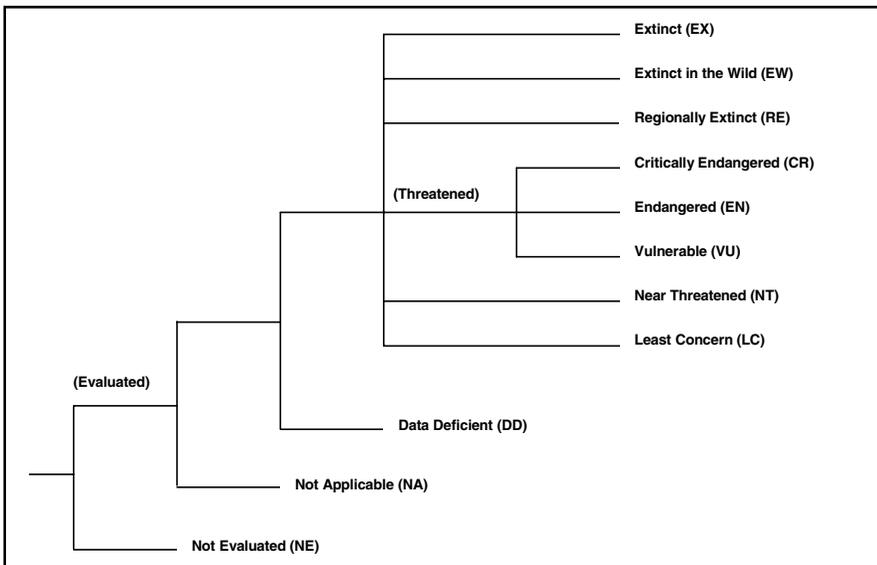
The IUCN Red List Categories (IUCN 2001) should be used unaltered at regional levels, with three exceptions or adjustments.

1. Taxa extinct within the region but extant in other parts of the world should be classified as *Regionally Extinct* (RE). A taxon is RE when there is no reasonable doubt that the last individual potentially capable of reproduction within the region has died or disappeared from the region or, in the case of a former visiting taxon, individuals no longer visit the region. It is not possible to set any general rules for a time period since the last observation before species are classified as

RE. This will depend on how much effort has been devoted to searches for the taxon, which in turn will vary, both with organism and region. If the regional authority decides to adopt any time frames for RE assessments, these should be clearly specified.

Populations of long-lived individuals that have ceased to reproduce within the region (for example, as a result of a deteriorating environment) should be regarded as potentially capable of reproduction and consequently should not be classified as RE. On the other hand, vagrant individuals of a formerly regionally breeding taxon that reach the region should not be regarded as potentially capable of reproduction.

2. The category of *Extinct in the Wild* (EW) should be assigned only to taxa that are extinct in the wild across their entire natural range, including the region, but that are extant in cultivation, in captivity, or as a naturalized population (or populations) outside the past range. If a taxon is (globally) EW but extant as a naturalized population within the region, the regional population should be treated as being the result of a benign introduction and consequently should be assessed according to the Red List Criteria. The rationale for the latter exception



**Figure 1.** Structure of the categories at regional level.

is that if a taxon is extinct over its entire natural range the presence of the taxon within the region must be considered important to highlight and preserve even though the region is not part of the taxon’s natural range.

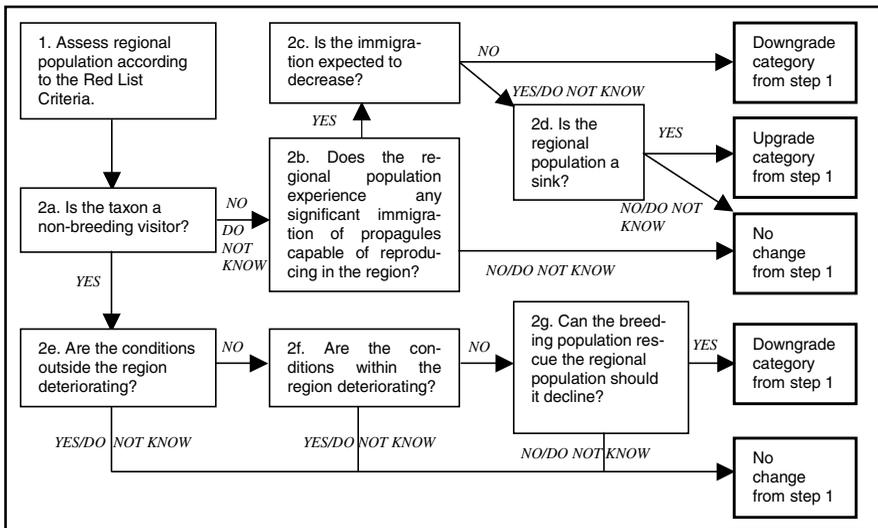
3. Taxa not eligible for assessment at the regional level (mainly introduced taxa and vagrants) should be assigned the category *Not Applicable* (NA).

### 3. The Assessment Procedure

Regional assessments should be carried out in a two-step process that is slightly different for breeding and non-breeding populations (Table 1; Fig. 2).

#### Breeding populations

In step one, the IUCN Red List Criteria are applied to the regional population of the taxon (as specified by IUCN 2001), resulting in a preliminary categorization. All data used in this initial assessment – such as number of individuals and



**Figure 2.** Conceptual scheme of the procedure for assigning an IUCN Red List Category at the regional level. In step 1 all data used should be from the regional population, not the global population. The exception is when evaluating a projected reduction or continued decline of a non-breeding population, in such cases conditions outside the region must be taken into account in step 1. Likewise, breeding populations may be affected by events in, e.g., wintering areas, which must be considered in step 1. See Table 1 for further details on the procedures to follow, especially for the second step.

parameters relating to area, reduction, decline, fluctuations, subpopulations, locations, and fragmentation – should be from the regional population, NOT the global population. However, it must be noted that taxa migrating to other regions during part of the year may be affected by conditions there. It may be essential to take such conditions into account, particularly when applying criteria pertaining to decline and area (A, B and C).

In step two, the existence and status of any conspecific populations outside the region that may affect the risk of extinction within the region should be investigated. If the taxon is endemic to the region or the regional population is isolated, the Red List Category defined by the criteria should be adopted unaltered. If, on the other hand, conspecific populations outside the region are judged to affect the regional extinction risk, the regional Red List Category should be changed to a more appropriate level that reflects the extinction risk as defined by criterion E (IUCN 2001). In most cases, this will mean downgrading the category obtained in step one, because populations within the region may experience a “rescue effect” from populations outside the region (Brown and Kodric-Brown 1977, Hanski and Gyllenberg 1993). In other words, immigration from outside the region will tend to decrease extinction risk within the region.

Normally, such a downgrading will involve a one-step change in category, such as changing the category from Endangered (EN) to Vulnerable (VU) or from VU to Near Threatened (NT). For expanding populations, whose global range barely touches the edge of the region, a downgrading of the category by two or even more steps may be appropriate. Likewise, if the region is very small and not isolated by barriers from surrounding regions, downgrading by two or more steps may be necessary.

Conversely, if the population within the region is a demographic sink (Pulliam 1988) that is unable to sustain itself without immigration from populations outside the region, AND if the extra-regional source is expected to decrease, the extinction risk of the regional population may be underestimated by the criteria. In such exceptional cases, an upgrading of the category may be appropriate. If it is unknown whether or not extra-regional populations influence the extinction risk of the regional population, the category from step one should be kept unaltered.

### **Visiting populations**

The distinction between a visitor and a vagrant should be noted because the latter cannot be assessed.

**Table 1.** Checklist for judging whether extra-regional populations may affect the extinction risk of the regional population (the question numbers refer to the boxes in Fig. 2).

Questions	Comments
<p><b>2a. Is the taxon a non-breeding visitor?</b> Is the taxon reproducing within the region, or is it a visitor utilizing resources within the region?</p>	<p>If the answer to the headline question is both yes and no, then there are two distinct subpopulations, with one being a non-reproducing migrant and the other being a reproducing subpopulation. In such cases each subpopulation should be treated as different taxa and should be assessed separately.</p>
<p><b>2b. Likelihood of propagule migration</b> Are there any conspecific populations outside the region within a distance from which propagules could reach the region? Is the regional population part of a larger metapopulation involving extra-regional patches? Are there any effective barriers preventing dispersal to and from neighbouring populations? Is the taxon capable of long-distance dispersal? Is it known to do so?</p>	<p>If there are no conspecific populations in neighbouring regions or if propagules are not able to disperse to the region, the regional population behaves as an endemic and the category should be left unchanged.</p>
<p><b>2b. Evidence for the existence of local adaptations</b> Are there any known differences reflecting local adaptations between regional and extra-regional populations (i.e., is it probable that individuals from extra-regional populations are adapted to survive within the region)?</p>	<p>If it is unlikely that individuals from extra-regional populations would be able to survive and reproduce within the region, the category should be left unchanged.</p>
<p><b>2b. Availability of suitable habitat</b> Are current conditions of habitats and/or other environmental (including climatological) requirements of the taxon in the region such that immigrating propagules are able to establish themselves successfully (i.e., are there habitable areas?), or has the taxon disappeared from the region because conditions were not favourable?</p>	<p>If there is not enough suitable habitat and if current conservation measures are not leading to an improvement in the habitat within the foreseeable future, immigration from outside the region will not decrease extinction risk and the category should be left unchanged.</p>
<p><b>2c. Status of extra-regional populations</b> How abundant is the taxon in neighbouring regions? Are the populations there stable,</p>	<p>If the taxon is relatively common outside the region and there are no signs of population</p>

**Table 1. ...cont'd.**

Questions	Comments
<p>increasing, or decreasing? Is it Red Listed in any of those regions? Are there any important threats to those populations? Is it probable that they produce an appreciable amount of emigrants and will continue to do so for the foreseeable future?</p>	<p>decline, and if the taxon is capable of dispersing to the region and there is (or soon will be) available habitat, downgrading the category is appropriate. If the taxon is currently decreasing in neighbouring regions, the “rescue effect” is less likely to occur, so downgrading the category may not be appropriate.</p>
<p><b>2d. Degree of dependence on extra-regional sources</b>            Are extant regional populations self-sustaining, showing a positive reproductive rate over the years, or are they dependent on immigration for long-term survival, i.e., are the regional populations sinks?</p>	<p>If there is evidence that a substantial number of propagules regularly reach the region and the population still has a poor chance of survival, the regional population may be a sink. If so, AND if there are indications that the immigration will soon cease, upgrading the category may be appropriate.</p>
<p><b>2e. Environmental conditions outside the region</b>            Are the habitat or other conditions of the taxon deteriorating, or projected to do so, in the breeding area or in other areas that the taxon utilizes resources?</p>	<p>If yes, the taxon will experience a reduction or continuing decline, either current or projected, which will affect the classification in step one. Consequently, such conditions should not be accounted for once again in the second step, thus leaving the category unchanged.</p>
<p><b>2f. Environmental conditions inside the region</b>            Are the habitat or other conditions of the taxon deteriorating, or projected to do so, within the region?</p>	<p>If yes, the taxon will experience a reduction or continuing decline, either current or projected, which will affect the classification in step one. Consequently, such conditions should not be accounted for once again in the second step, thus leaving the category unchanged.</p>
<p><b>2g. Plausible rescue effect?</b>            Is the taxon globally very sparse, e.g., classified as threatened according to criterion D; or Near Threatened because it almost meets VU D; or globally Not Evaluated but judged to meet criterion D?</p>	<p>If the breeding population is very restricted, the regional population visiting the region cannot expect a rescue, thus leaving the category unchanged. If, on the other hand, the breeding population is quite substantial and the conditions are not deteriorating neither within nor outside the region, the probability of regional extinction is less likely than suggested by the criteria in step one, consequently, a downgrading may be appropriate.</p>

As with breeding populations, data used in the initial step (box 1, Fig. 2) – such as number of individuals and parameters relating to area, reduction, decline, fluctuations, subpopulations, and locations – should be from the regional population, not the global population. To be able to correctly project a population reduction (criteria A3 and A4) or a continued decline (criteria B and C) it may, however, be necessary to examine the conditions outside the region, and particularly in the population’s breeding area. It is also essential to distinguish true population changes and fluctuations from transient changes, which may be due to unsuitable weather or other factors and may result in visitors temporarily favouring other regions. Observed population numbers will expectedly fluctuate more in non-breeding than in breeding populations. This must be carefully considered when evaluating the parameters of reduction, continuing decline and extreme fluctuations.

In the second step, the environmental conditions outside (box 2e, Fig. 2) and inside (box 2f) the region should be examined. Because past or projected population reductions outside the region, as well as deteriorating environmental conditions inside the region, have already been accounted for in the first step, such changes will not lead to any adjustments in the second step. There may be reasons to downgrade the category met in step one only when environmental conditions are stable or improving. Note that taxa which are globally very rare, for example if Red Listed under criterion D, should not be downgraded because a very small global population would not be expected to produce any notable rescue effect within the region.

### **Adjustments to categories**

Adjustments can be made to all the categories except for Extinct (EX), Extinct in the Wild (EW), Regionally Extinct (RE), Data Deficient (DD), Not Evaluated (NE), and Not Applicable (NA), which cannot logically be up- or downgraded.

## V. DOCUMENTATION AND PUBLICATION

1. IUCN Red List Criteria and guidelines must be followed in order to facilitate the exchange of information between assessors in different regions and between regional and taxonomic Red List Authorities, it is recommended that all regional (and global) assessment exercises should follow global documentation standards (IUCN 2001 Annexes 2–3). See Annex 1 for shortened examples.
2. The introductory sections should include a list of the taxonomic groups that have been evaluated against the Red List Criteria as well as what taxonomic standards have been followed. It should also clearly report any regionally determined settings, filters, etc.
3. Taxa that have been up- or downgraded in the regional Red List should be clearly indicated, for example by a dot after the category (VU<sup>.</sup>). The category of such a species should be interpreted as being equivalent to the same category that has not been changed (i.e., VU<sup>.</sup>=VU). The dot is comparable to a footnote and is merely to flag the special history of the categorization process. Any up- or downgrading must be fully accounted for in the documentation, where the number of steps up or down also must be stated.
4. A printed regional Red List should present at least the scientific name and the authorship of the taxon, the regional Red List Category (using the English abbreviated forms) and criteria met, the global IUCN Red List Category and Criteria, and the proportion (%) of the global population occurring within the region (Table 2). If the proportion of the global population is unknown, this should be noted with a question mark. The region may also wish to present the proportion (%) of other geographical scales (e.g., a continent), or any other additional data fields; this is up to the regional Red List authority to decide. It should be noted that the taxonomic classification level of a taxon, i.e., whether an entire species or a single subspecies with a more restricted distribution is under consideration, will influence the proportion occurring within a region. If possible, the vernacular name (in the national language) and a short summary of the supporting documentation for each taxon should also be included. Visiting taxa should preferably be listed in a separate section, but if they are included in a list of breeding taxa, it should be clearly indicated that they are visitors.

<b>Taxon name</b>	<b>Breeder Visitor</b>	<b>Regional Red List Category</b>	<b>Global Red List Category</b>	<b>Proportion (%) of Global Population</b>
<i>Aus australis</i> (Linnaeus, 1759) Eastern angel	B	CR D	VU D1	7
<i>Bus borealis</i> Smith, 1954 Northern boxer	V	NT*	–	?
<i>Cus communis</i> (Alvarez, 1814) Common clipper	B	EN A3c; B1ab(iii)+2ab(iii)	NT	15
<i>Dus domesticus</i> Liu, 1888 Native delta	B	NT	–	2
<i>Dus domesticus</i> Liu, 1888 Native delta	V	VU A2bc	–	6

**Table 2.** Example of a regional Red List, presenting fictive species. The region may wish to present additional information, like proportion at other geographical scales or conditions pertaining to legislation or international conventions. Visiting taxa should preferably be listed in a separate section; if, as in this example, they are included in the same list as the breeding taxa, it should be clearly indicated that they are visitors. The data and rationale behind each listing should be fully documented according to IUCN 2001, Annex 3. Such documentation can easily be presented for example on the World Wide Web.

- The global Red List Category should follow published IUCN Red Lists (for the current *IUCN Red List of Threatened Species* see <http://www.redlist.org>; and for plants also refer to Walter and Gillett 1998). If a globally Red Listed taxon is endemic to the region and the regional assessors have come to a different conclusion about the category than the global assessors, then the appropriate authority on the global Red List should be contacted and the status of the taxon re-examined (contact details are available from <http://www.iucn.org/themes/ssc/sgs/sgs.htm> or contact the Red List Programme Office at [redlist@ssc-uk.org](mailto:redlist@ssc-uk.org)). If agreement is reached to change the global assessment, the new global category may be used in the regional Red List even if it will be published before the next update of the global IUCN Red List (updated annually from 2002). If no agreement is reached, the regional authority may submit an appeal based on the Red List Criteria (to [redlist@ssc-uk.org](mailto:redlist@ssc-uk.org)) for judgment by the SSC Red List Programme Standards and Petitions Subcommittee (for further details see [18](http://www.iucn.org/themes/</a></li>
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ssc/redlists/petitions.html). If no conclusion is reached before the finalization of the regional Red List, the category determined by the regional assessment may be used as the regional category, and the IUCN global Red List category should be used as the global category. In all three cases, the issues must be documented under the listing for the taxon concerned.

6. The application of the Red List Criteria, particularly criterion A, may under some circumstances result in a taxon qualifying for listing at the global but not at the regional level (see Preamble, point 8). Such taxa should be included (in the main list or in an annex) in the regional Red List, and their regional category should be denoted as LC. The inclusion of globally Red Listed taxa is important, not the least, in the process of setting priorities for conservation action at the regional level.
7. In addition to a printed Red List, which is normally written in the national language(s), publication on the World Wide Web in English (and the national language) is recommended. The web version could include the full documentation (according to IUCN 2001, Annex 3 and information about up- and downgrading), which could be difficult in the printed version unless it is published as a full Red Data Book. A web version may also include the extensive listing and documentation of taxa assessed as LC. A publication on the web may be a particularly important tool in the process of transferring information from the regional to the global scale (Rodríguez *et al.* 2000).

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## Annex 1: Examples

### ***Sterna sandvicensis* – Sandwich Tern (Sweden)**

450 pairs in Sweden (1999). Generation time is roughly 8 years. 65% population reduction in Sweden during the last 3 generations. Meets the criteria A2ac and C1 under EN, but is downgraded to VU due to good immigration possibilities from the south. There is, a large and stable population in Germany and an increasing population in Holland.

**VU\* A2ac; C1**

### ***Sterna caspia* – Caspian Tern (Sweden)**

415 pairs in 9 colonies, and 80 solitary breeding pairs in Sweden (1999). Generation time 8–10 years. Continuous population decline in Sweden and a 65% reduction over the last 3 generations. A decrease in the entire Baltic Sea area (Sweden, Finland and Estonia) by 39% in 3 generations. In the event of extinction from Sweden and the Baltic area, the probability of re-colonization from the nearest populations in the Black Sea is very low. Consequently, no change in the category met in step 1.

**EN A2ac; C1+2a(i)**

### ***Grus antigone* – Sarus Crane (Viet Nam)**

A migrant species that spends the winter months in Viet Nam. It occurs in 2 locations: In Tram Chin it remains for 3 months each year; there has been >90% population decline since 1990 (1990–128 individuals; 2003–2 individuals). Logo Samat is used as a stopover point for individuals heading towards Cambodia – they remain here for 1 week each year, though their occurrence is very irregular. However, there appears to be an overall decline (1992–7 individuals; 1998–48 individuals; 2003–0 individuals). Population sizes are recorded by direct observation and by satellite tracking. The total extent of occurrence is 700–900 km<sup>2</sup>, and the total area of occupancy is estimated at 400 km<sup>2</sup>. Main threats to the population are habitat loss and degradation in Tram Chin due to the construction of an irrigation channel, pollution, and fire; habitat loss and degradation in Logo Samat due to encroachment from farmland, human disturbance, and hunting. Meets the criteria for CR A2ac; C2a(ii). Conditions are deteriorating within Viet Nam but there is uncertainty about conditions outside the region (e.g., in Cambodia), therefore the category met in step 1 is unchanged.

**CR A2ac; C2a(ii)**

***Locustella fluviatilis* – River Warbler (Sweden)**

Estimated at 50 pairs in Sweden and 352,000–449,000 pairs in Europe outside Russia. The Russian population is estimated at 100,000–1 million pairs. The species has recently begun to breed in Sweden and the population is still expanding. The Swedish population size meets EN D. Because the species is still obviously expanding its range the threat category is downgraded by two steps.  
**NT\***

***Pipistrellus nathusii* – Nathusius' Pipistrelle (Sweden)**

Swedish population is believed to encompass less than 1,000 mature individuals. A migrating species. No observations of population decline and no immediate threat. Meets the criteria for VU D1. It is downgraded because possibilities for immigration are good.  
**NT\***

***Paramesotriton deloustali* – Vietnamese Salamander (Viet Nam)**

This species was first recorded on Tam Dao mountain in 1934. It is now known from five severely fragmented locations in northern Viet Nam. Habitat is freshwater streams in hill evergreen forest above 300 m asl. It is also found in small natural and artificial impoundments. Area of occupancy is estimated at less than 2,000 km<sup>2</sup>. It was common before the 1990s, but it is now believed to be declining due to over-exploitation; the species is used for medicinal purposes and is collected for the pet trade. During surveys carried out in 2001 and 2002, population densities in streams were observed to have reduced. There is continuing decline due to habitat loss and degradation through infrastructure development. No known immigration from neighbouring regions.

**VU B2ab(iii,v)**

***Amolops cremnobatus* – a frog (Viet Nam)**

Viet Nam has a breeding population of *A. cremnobatus*, known from only two locations (Ha Tinh and Quang Binh). Area of occupancy (estimated from maps based on survey information) is 1,400 km<sup>2</sup> and extent of occurrence is estimated as 4,000 km<sup>2</sup>. Population size is unknown. There is continuing decline due to direct exploitation and habitat loss and degradation through water pollution, development and possibly logging activities. One subpopulation occurs inside a National Park area. Meets the criteria for EN B1ab(iii). There is no known immigration from neighbouring regions, therefore there is no change to the initial assessment.

**EN B1ab(iii)**

### ***Lampetra fluviatilis* – River Lamprey (Sweden)**

Occurs along most of the Swedish coasts but particularly in the Gulf of Bothnia. Spawns in running water. Generation length is 6–9 years. Has overall decreased by 80–90% in northern Sweden the past 25–30 years, but maybe not as much as 80% over the last 3 generations over the entire country. As an example, in county Västerbotten, it occurred in 40 water bodies during the 1960s, now it only remains in 2 or 3. Has also decreased strongly in the rest of Europe. Meets the criteria for EN A2bcde. There could be a possibility of immigration from neighbouring countries but is not downgraded because the observed population reduction is probably due mainly to habitat degradation within the country. Furthermore, the species is also decreasing in the potential source areas.

**EN A2bcde**

### ***Pangasianodon gigas* – Mekong Giant Catfish (Cambodia)**

*P. gigas* is a Mekong endemic, growing to a colossal size. It is known from two locations in Cambodia: Tonle Sap Great Lake and upstream in the Mekong River. It is believed that the species migrates from Tonle Sap Lake upstream to spawning grounds in the Mekong River. At least one spawning site is known in northern Thailand/Laos, with a further possible spawning area in northeast Cambodia. In Cambodia, the extent of occurrence is estimated as 3,000 km<sup>2</sup>. Population size is unknown, although low catch rates in recent years suggests that there are fewer than 2,500 mature individuals left in the wild. In Cambodia, only 11 giant catfish were caught in 2000 and only 8 were caught in 2001. There is continuing decline due to exploitation (it is caught with seines and gill-nets and is marketed fresh). In an attempt to preserve the species, most giant catfish that were caught in Cambodia in 2000 and 2001 were bought, tagged and released alive. Actual distances travelled and destinations of individuals are unknown. However there is loss and degradation of spawning habitat upstream, outside Cambodia, therefore there is no change from step 1.

**EN B1ab(v); C1**

### ***Oreochromis esculentus* – a fish (East Africa)**

A shoreline and bottom-dwelling freshwater fish, originally endemic to Lakes Victoria and Kyoga and their satellite lakes. However, after the introduction of the Nile Perch (*Lates niloticus*) in 1959, the population declined and disappeared from Lakes Victoria and Kyoga in the late 1970s. In Uganda, it is still present in two satellite lakes. It is estimated that the population within the species' natural range in Uganda, has declined by approx. 95% over the last three generations, mainly due to predation by the Nile Perch, eutrophication and exploitation. As the species is endemic to the region there is no need for an evaluation in a second

step. The species has also been introduced into areas outside its natural range into several lakes in Uganda and Tanzania for commercial purposes. According to the IUCN Red List Criteria, the categorization process should only be applied to wild populations inside their natural range, and to populations resulting from benign introductions, therefore only the wild stock is evaluated here. If, on the other hand, the species became Extinct in the Wild (i.e., it disappeared from all of its former natural range), but still exists as a naturalized population within the region, the extant population should be viewed as a “benign introduction” even if the introduction was for commercial rather than conservation purposes. Then, the introduced population in East Africa should be evaluated against the Red List Criteria (this applies only to regional assessments not the global assessment). National lists may include separate assessments for both the wild population and the introduced stock.

**CR A2acde** (Ugandan wild stock)

***Somatochlora sahlbergi* – a dragonfly (Sweden)**

Known from only one Swedish location in the northern mountainous area, not far from Finland. There might be other unknown locations in Sweden. No observations of population decline. No evident immediate threat, but would probably be negatively affected by an increase in temperature. Meets the criteria for VU D2, but due to immigration possibilities from Finland, it is downgraded by one step.

**NT\***

***Botrychium simplex* – Small Grape Fern (Sweden)**

Currently known from 6–7 locations, of which all except one have been discovered during the past 5 years. AOO c. 30 km<sup>2</sup>. 500–1000 individuals at most. Formerly known from a substantial number of locations. Has decreased successively during the 1900s, and, despite the new finds, is judged to be in continuous decline. Numbers undergo extreme fluctuations and the population is severely fragmented. Even though the spores may be easily dispersed, the possibility of any rescue from neighbouring countries is unknown.

**EN B2ab(v)c(ii,iii,iv); C2b**

***Collema curtisporum* – a lichen (Sweden)**

Grows primarily on middle-aged aspens in semi-open mixed forest with high humidity in the boreal zone. A few thousand trees harbouring the lichen are known. The extent of suitable habitat has decreased greatly and is continuing to decline. The population has most probably, judging from habitat destruction, decreased by over 50% during the last three generations. Lack of fire-regenerated

deciduous trees is a long-term threat, thus the reduction is likely to continue. The probability of immigration from neighbouring countries is judged to be extremely low.

**EN A2c+3c+4c**

