GUIDELINES FOR APPLICATION OF IUCN RED LIST CRITERIA AT REGIONAL AND NATIONAL LEVELS

Version 4.0

The IUCN Red List of Threatened Species™

SSC
Species Survival Commission

GUIDELINES FOR APPLICATION OF IUCN RED LIST CRITERIA AT REGIONAL AND NATIONAL LEVELS

Version 4.0

Prepared by the IUCN Species Survival Commission

Revised by the National Red List Working Group of the
IUCN SSC Red List Committee

January 2010

These guidelines should be used in conjunction with the *IUCN Red List Categories and Criteria: Version 3.1* (IUCN 2001, 2012) and the latest version of the *Guidelines for Using the IUCN Red List Categories and Criteria*. Both documents are freely available to download from the IUCN Red List website (http://www.iucnredlist.org/technical-documents/categories-and-criteria).

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I. INTRODUCTION

The *IUCN Red List Categories and Criteria* (IUCN 2001, 2012; see also www.iucnredlist.org/technical-documents/categories-and-criteria) 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 IUCN 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 currently is a pronounced overall deficiency of data pertaining to species' status within the region; or (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 IUCN 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 producing Red Lists at regional levels. The group consulted many different regional and national groups, participated in regional Red List assessment workshops, published draft versions of the regional guidelines (Gärdenfors *et al.* 1999, 2001) and undertook a process of ongoing modification and improvement to the earlier drafts.

IUCN adopted the guidelines resulting from the above process and these were published in 2003 (Version 3.0: IUCN 2003). Although many of the problems encountered in regional Red Listing (such as dealing with a wide diversity of natural systems and taxa, and different political and social contexts) were taken into account, some issues proved especially difficult to resolve to everyone's satisfaction. Nevertheless, the regional guidelines were based on sound general principles and were recommended to anyone wanting to undertake Red List assessments at the regional level.

In 2003, the National Red List Working Group (NRLWG) was formed to collate the experiences of countries using the regional guidelines and to use these to inform a review process. A questionnaire about existing and planned national Red Lists and use of the regional guidelines document was sent to Convention on Biological Diversity (CBD) focal points around the world, and several countries were selected to test the application of the guidelines. A further workshop discussed the results of these processes and recommended revisions to the guidelines.

The reviewed regional guidelines are presented here. Most of the revisions focus on how the guidelines are presented (e.g. more case studies based on real experiences are included, more guidance on decision-making processes, examples of where to find extra-regional information, etc.) rather than on procedural issues. The majority of assessments that used Version 3.0 (IUCN 2003) therefore should be compatible with assessments using the current version of the guidelines.

II. PREAMBLE

1. Application of the regional guidelines

Any country, or other region, using the IUCN Red List Categories and Criteria for listing species must follow these guidelines without deviation or modification, 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 of 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, 2012) apply at regional levels, unless otherwise indicated here. Similarly, the current version of the *Guidelines for Using the IUCN Red List Categories and Criteria* (available at www.iucnredlist.org/technical-documents/categories-and-criteria; check the IUCN Red List website for regular updates of this document), and 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 Categories and Criteria* (IUCN 2001, 2012) can be used without modification within any geographically defined area. The extinction risk of 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 initial category obtained by evaluating a taxon using the IUCN

Red List Criteria to obtain a final 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

Given the wide range of circumstances encountered in assessing different taxonomic groups in different countries, it is impossible to be prescriptive in every aspect of the Guidelines. Variable interpretation of certain definitions and applications of the Guidelines is inevitable, and these are left to the discretion of regional Red List compilers. 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 www.iucnredlist.org/technical-documents/information-sources-and-quality). 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 (Miller *et al.* 2006, Miller *et al.* 2007). 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 (see Annex 2, Example 8). Such taxa should be given particular attention at the regional level because of their significance for global status.

We do not recommend including a list of taxa of high regional conservation priority in a regional Red List publication, as a Red List indicates extinction risk only while conservation priority setting involves evaluating many other factors, as described above. We encourage regional authorities to establish a list of taxa of high regional conservation priority; however, this list should be published separately from the regional Red List.

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.

9. Data Availability

It is important that no criteria be ignored during the assessment process, even if it is unlikely that data for those criteria exist for the taxon being evaluated. Only one criterion needs to be met to assign a threatened category (although data should be gathered for

as many criteria as possible) and when little or no observed data are available, assessors are encouraged make use of estimation, inference, projection and suspicion (IUCN 2001, 2012). The process of conducting regional assessments can generate data and stimulate data collection in the field. More information on data availability and uncertainty can be found in the *Guidelines for Using the IUCN Red List Categories and Criteria* (available from www.iucnredlist.org/technical-documents/categories-and-criteria; check the IUCN Red List website for regular updates of this document); see also Example 1 (i and ii) in Annex 2.

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. Downlisting and uplisting
The process for adjusting the Red List Category of a regional population according to a decreased or increased risk of extinction; downlisting refers to a reduced extinction risk and uplisting 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 *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, 2012), 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 *Regional population* and *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, 2012); 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 *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. Overview of the assessment process

Regional assessments should be carried out in a three-step process, separate from the establishment of conservation priorities (Figure 1). First, assessors must determine which taxa and which regional populations to assess (step one). Next, the regional population for each taxon is evaluated according to the *IUCN Red List Categories and Criteria* (IUCN 2001, 2012), and a preliminary category is assigned (step two). The effect of populations of the same taxon in neighbouring regions on the regional population is then considered, and the preliminary category is up- or downlisted if appropriate (step three). Thus, the final categorization reflects the extinction risk for the taxon within the region being evaluated, having considered potential interactions with populations outside that region.

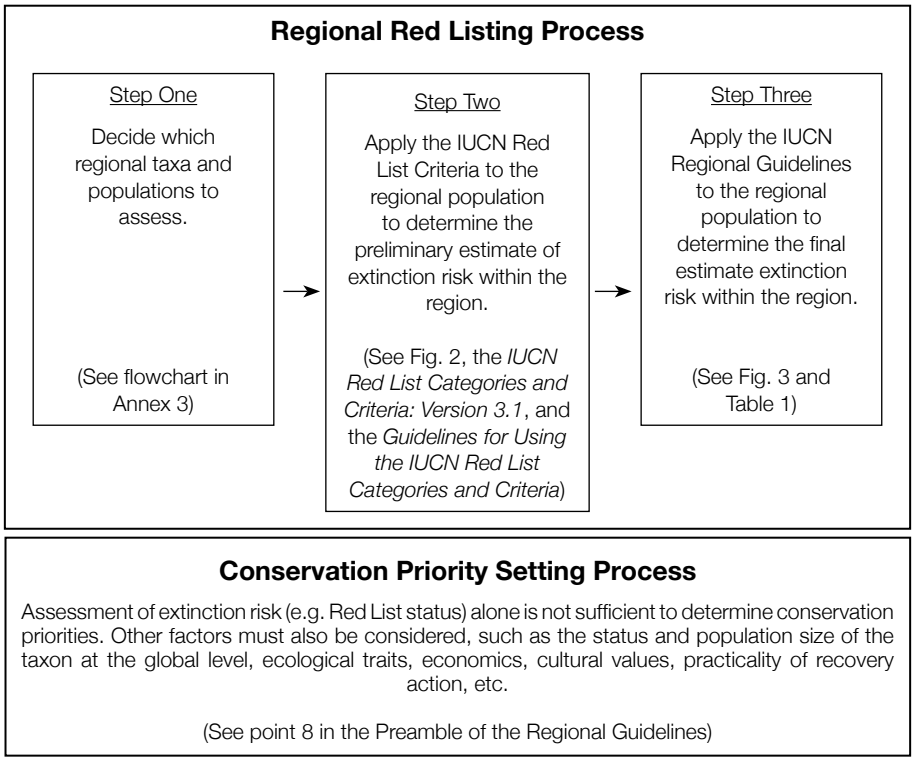

Figure 1. The process of assessing the extinction risk of taxa at the regional level. It is important to follow each step in order, and to refer to all listed documents, to obtain an appropriate regional assessment of extinction risk. Conservation priority setting is a process separate from regional Red Listing.

2. Taxa to be assessed

There are several issues to consider when determining which taxa to include or to exclude from a regional assessment (e.g. is the taxon native to the region, do breeding and non-breeding populations exist in the region, does the taxon occur only marginally within the region, etc). A flowchart to help guide regional Red List authorities through this decision process can be found in Annex 3.

The categorization process should be applied only to wild populations inside their natural range and to populations resulting from benign introductions (IUCN 1998, 2001, 2012). All taxa should be assessed for which an important part of any stage of their life cycle (breeding, wintering, migrating, etc.) takes place in the region. 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). The regional Red List should include all globally red listed taxa present within the region, including those that are Not Applicable (NA) at the regional level, and the global category should be displayed alongside the regional assessment.

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.

Assessors are encouraged to assess visiting taxa. The definition of a visitor for purposes of this assessment must be explicitly defined within the documentation prepared for the regional Red List. Vagrant taxa should NOT be assessed.

If breeding and visiting (non-breeding) populations can be distinguished, they should be assessed separately. Breeding and visiting populations may be distinguishable because they:

- are clearly separated by range or habitat use;
- are isolated temporally (e.g. the breeding population is migratory, and so is absent when the visiting population is present);
- are clearly identifiable based on phenotype;

- differ greatly in population size. For example, if the breeding population is very small compared to the visiting population, the two populations can be assessed separately. Although data collected on the visiting population may still include individuals from the breeding population, any influence these breeding individuals have on the assessment will be marginal. However, if the visiting population is relatively small compared to the breeding population, it should be filtered from assessment before this stage (see below).

If members of the breeding and visiting populations cannot be differentiated, estimates for the visiting population will have to include information from the breeding population (see Annex 2, Example 2), and vice-versa. Alternately, one assessment could be made for the taxon, without differentiating between breeding and visiting populations.

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 regional Red List authority may decide that they will not assess taxa where less than 1% of the global population occurs, or has occurred within the last century, within the region. All such filters applied must be clearly specified in the supporting documentation. Due to the many different geographic contexts in which regional assessments will be conducted, it is impossible to define a specific recommended filter threshold. It should be kept in mind that if the threshold above which taxa are assessed is set too low, many marginal taxa will be considered highly threatened due to their small population sizes. For examples of how filters have been set for different countries, see Annex 2, Examples 3 and 4.

Once the threshold for assessment of a taxon is determined (e.g. the fraction of the global or continental population of a taxon that is present in the region, predictability that a visiting taxon will be present in any given year, etc.), any taxa falling below that threshold should be assigned the category Not Applicable (see point 3, below), with the global category (if there is one) also shown.

3. The Categories

The IUCN Red List Categories (IUCN 2001, 2012) 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 taxa 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 (e.g. 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 not be evaluated according to the IUCN Criteria, but should still be considered of conservation importance and preserved as a relict of a taxon which is Extinct in the Wild. It may also be considered an important source of individuals for re-introduction efforts within its 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).

The addition of the categories *Regionally Extinct* and *Not Applicable* means that there are 11 possible categories for regional assessments (Figure 2).

4. The assessment procedure

After determining which taxa to assess in step one, there may be distinct breeding and visiting populations to evaluate. The regional assessment process differs slightly for breeding and non-breeding populations (Table 1, Figure 3).

Breeding populations

In step two, the IUCN Red List Criteria are applied to the regional population of the taxon (as specified by IUCN 2001, 2012), resulting in a preliminary categorization. All data used in this initial assessment – such as number of mature individuals and 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 (criteria A, B and C).

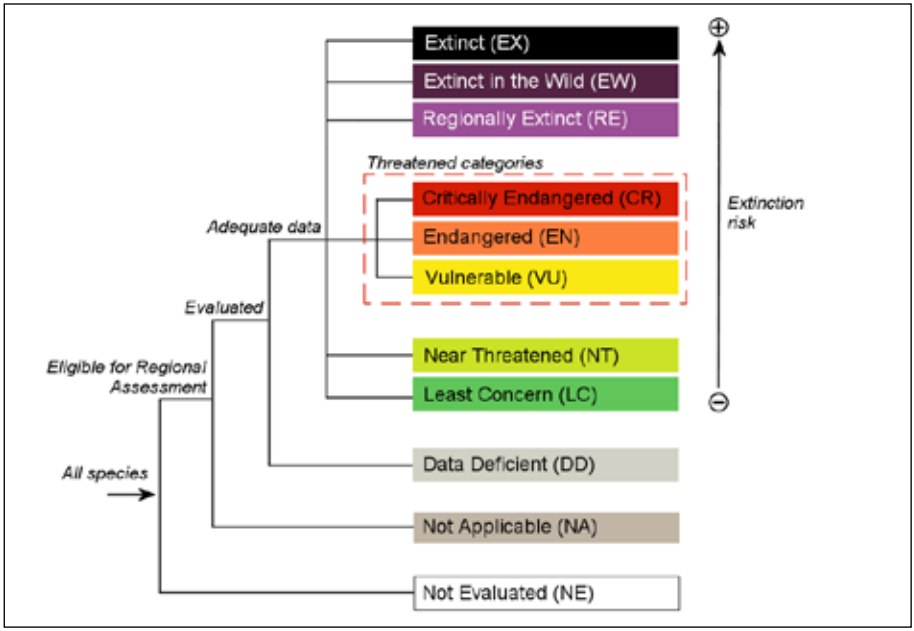

Figure 2. Structure of the categories used at the regional level.

In step three, 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, 2012). In most cases, this will mean downlisting the category obtained in step two, 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 downlisting 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 downlisting of the category by two steps may be appropriate (see Annex 2, Example 7). Likewise, if the region is very small and not isolated by barriers from surrounding

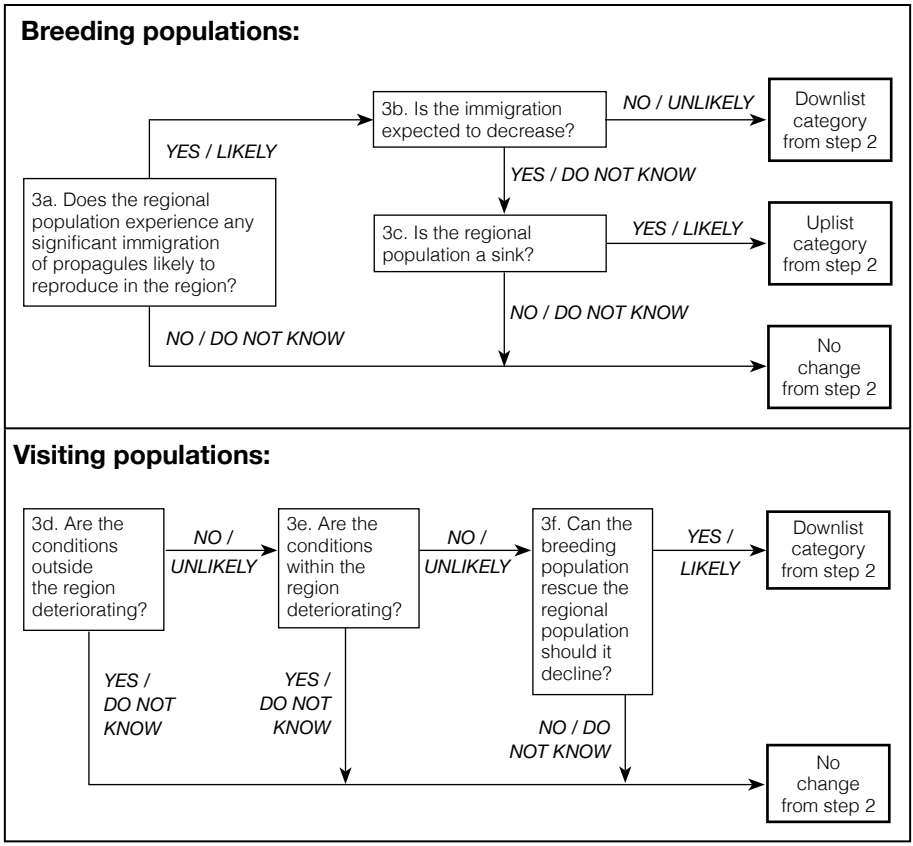

Figure 3. Conceptual scheme of the procedure for adjusting the preliminary IUCN Red List Category to the final regional Red List Category. This refers to step three of the assessment process (see Figure 1); numbers and letters in the diagram represent the different sub-steps within step three. See Table 1 for further details on following the procedure, particularly how to answer the questions and examples of where to find extra-regional information.

regions, downlisting by two steps may be necessary. In extremely rare cases, a taxon may be downlisted by more than two categories, but in most situations this will not be appropriate.

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 uplisting 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 two should be kept unaltered.

Thorough documentation of the reasoning behind such category changes, including all decisions made and the number of categories up- or downlisted, is required. Heterogeneity in the amount and type of data available to inform these decisions is unavoidable; for this reason it is particularly important to be as consistent as possible between taxa when up- and downlisting, and to document thoroughly the decision-making process.

Visiting populations

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

As with breeding populations, data used in step two of the assessment process – 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 step three, the environmental conditions outside (Figure 3, box 3d) and inside (box 3e) 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 second step, such changes will not lead to any adjustments in the third step. There may be reasons to downlist the category met in step two only when environmental conditions are stable or improving. Note that taxa which are globally very rare, for example if assessed on the IUCN Red List under criterion D, should not be downlisted because a very small global population would not be expected to produce any notable rescue effect within the region (see box 3f in both Figure 3 and Table 1).

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 downlisted.

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 Figure 3). In answering the questions in the boxes in Figure 3, refer to each of the points and their accompanying questions below.

Questions to consider	Comments
Breeding populations	
3A. DOES THE REGIONAL POPULATION EXPERIENCE ANY SIGNIFICANT IMMIGRATION OF PROPAGULES LIKELY TO REPRODUCE IN THE REGION? The regional population may experience some immigration from neighbouring regions, but in order to determine if that immigration is "significant", several factors must be considered:	
Likelihood of propagule migration: 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?	If there are no conspecific populations in neighbouring regions or if propagules are unable to disperse to the region, the regional population behaves as an endemic and the category should be left unchanged. If immigration does occur, it is important to consider whether the numbers arriving in the region are sufficient to rescue the regional population, and whether the immigration occurs regularly and over a time period relevant to the threats facing the regional population, such that rescue is feasible (see Annex 2, Example 5).
Evidence for the existence of local adaptations: 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 and/or reproduce within the region?	If regional populations express unique physical, behavioural, genetic, or other adaptations to local conditions that extra-regional populations do not express, it may be unlikely that individuals from outside the region would be able to survive and/or reproduce within the region. The extra-regional population would therefore be unable to rescue the regional population, and the category should be left unchanged (see Annex 2, Example 6).

Questions to consider	Comments
Availability of suitable habitat: 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?	If there is not enough suitable habitat and if current conservation measures are not leading to an improvement in the quality and/or quantity of habitat within the foreseeable future, there will be no sites where immigrating individuals and/or propagules can successfully establish themselves. Thus, immigration from outside the region will not decrease extinction risk and the category should be left unchanged.
3B. IS THE IMMIGRATION EXPECTED TO DECREASE?	
Status of extra-regional populations: How abundant is the taxon in neighbouring regions? Are the populations there stable, increasing or decreasing? Is it Red Listed in any of those regions? Are there any significant 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?	If the taxon is relatively common outside the region and there are no signs of population decline, and if the taxon is capable of dispersing to and likely to establish in the region, and if there is (or soon will be) available habitat, downlisting the category is appropriate. If the taxon is currently decreasing in neighbouring regions, the "rescue effect" is less likely to occur, so downlisting the category may not be appropriate. Information to answer this question can be obtained from a number of sources, including (but not limited to): the *IUCN Red List of Threatened Species* (if information on the status of the taxon in different regions is available in the online documentation); national red lists from neighbouring and nearby countries; regional status or conservation publications such as the Species of European Conservation Concern (SPEC), the NatureServe Explorer website (for information on the plants, animals and ecosystems of the United States and Canada), the InfoNatura website (for information on the animals and ecosystems of Latin America and the Caribbean) and the network of Conservation Data Centres/Natural Heritage Information Centres; proxies from which the status of extra-regional populations can be inferred, such as habitat status, estimates of annual harvest, population trends in neighbouring regions, etc.

Questions to consider	Comments
3C. IS THE REGIONAL POPULATION A SINK?	
Degree of dependence on extra-regional populations: 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)?	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, uplisting the category may be appropriate. In reality, very few populations are known well-enough to be considered obvious sinks dependent on a foreign source for individuals. If there is poor local breeding success or survival AND there is steady and significant immigration, the population may be a sink. If there is sufficient evidence to suggest that the population is a sink AND immigration is expected to decrease, it may be appropriate to uplist the status. All reasoning must be fully explained in the documentation.
Visiting populations	
3D. ARE THE CONDITIONS OUTSIDE THE REGION DETERIORATING?	
Environmental conditions outside the region: Are the population status, habitat or other conditions of the taxon deteriorating, or are they projected to do so, in the breeding area or in other areas outside the region (e.g. are conditions outside the region negatively affecting the number of individuals that are expected to visit the region)?	If yes, the taxon will experience a reduction or continuing decline, either current or projected, which will affect the classification in step two. Consequently, such conditions should not be accounted for once again in the third step, thus leaving the category unchanged. Information to answer this question can be obtained from a number of sources, including (but not limited to): the *IUCN Red List of Threatened Species* (if information on the status of the taxon in different regions is available in the online documentation); national red lists from neighbouring and nearby countries; regional status or conservation publications such as the Species of European Conservation Concern (SPEC), the NatureServe Explorer website (for information on the plants, animals and ecosystems of the United States and Canada), the InfoNatura website (for information on the animals and ecosystems of Latin America and the Caribbean) and the network of Conservation Data Centres/Natural Heritage Information Centres; proxies from which the status of the

Questions to consider	Comments
	taxon outside the region can be inferred, such as habitat status, estimates of annual harvest, population trends in neighbouring regions, etc.
3E. ARE THE CONDITIONS WITHIN THE REGION DETERIORATING?	
Environmental conditions inside the region: Are the population status, habitat or other conditions for the taxon deteriorating, or are they projected to do so, within the region?	If yes, the taxon will experience a reduction or continuing decline, either current or projected, which will affect the classification in step two. Consequently, such conditions should not be accounted for once again in the third step, thus leaving the category unchanged.
3F. CAN THE BREEDING POPULATION RESCUE THE REGIONAL POPULATION SHOULD IT DECLINE?	
Plausibility of a rescue effect: Is the taxon globally very small and/or restricted, e.g. classified as threatened according to criterion D, or as Near Threatened because it almost meets VU D, or globally Not Evaluated but judged likely to meet criterion D?	If the breeding population is very small and/or restricted, it is unlikely that it will be able to rescue the regional population visiting the region, thus leaving the category for the visiting regional population unchanged. If, on the other hand, the breeding population is quite substantial and conditions are not deteriorating within or outside the region, there is a higher chance that the breeding population will be able to rescue the regional population. The probability of regional extinction is therefore less likely than suggested by the criteria in step two; consequently, a downlisting may be appropriate.

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 follow the global documentation standards described in the *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* (regularly updated and available from www.iucnredlist.org/technical-documents/categories-and-criteria), as outlined in Annexes 2 and 3 in IUCN 2012. 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. Any regionally determined settings, filters, etc. should also be clearly reported.

3. Taxa that have been up- or downlisted in the regional Red List should be clearly indicated, for example by a degree sign after the category (VU°). The category of such a taxon should be interpreted as being equivalent to the same category that has not been changed (i.e. VU°=VU). The degree sign is comparable to a footnote and is used merely to flag the special history of the categorization process. Any up- or downlisting 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.

Table 2. Example of a regional Red List, presenting fictional species. The regional Red List authorities may wish to present additional information, such as 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 Annex 3 in IUCN 2012, and updates published on the IUCN Red List website (www.iucnredlist.org). Such documentation can easily be presented for example on the World Wide Web.

Taxon name	Breeder Visitor	Regional Red List Category	Global Red List Category	Proportion (%) of Global Population
Aus australis (Linnaeus, 1759) Eastern Angel	B	CR D	VU D1	7
Bus borealis Smith, 1954 Northern Boxer	V	NT°	–	?
Cus communis (Alvarez, 1814) Common Clipper	B	EN A3c; B1ab(iii)+2ab(iii)	NT	15
Dus domesticus Liu, 1888 Native Delta	B	NT	–	2
Dus domesticus Liu, 1888 Native Delta	V	VU A2bc	–	6

5. The global Red List Category should follow published IUCN Red Lists (for the current *IUCN Red List of Threatened Species* see www.iucnredlist.org; 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 for Red List authorities are available from www.iucn.org/about/work/programmes/species/who_we_are/ssc_specialist_groups_and_red_list_authorities_directory/ or contact the Red List Unit at redlist@iucn.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@iucn.org) for judgment by the Standards and Petitions Subcommittee (SPSC) of the IUCN Species Survival Commission (for further details see www.iucnredlist.org/documents/petitions_process.pdf). 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 regional Red List (in the main list or in an annex), 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 on 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, which might be difficult to include in the printed version unless it is published as a full Red Data Book. Full documentation should follow the *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* (regularly updated and available from www.iucnredlist.org/technical-documents/categories-and-criteria), as outlined in Annexes 2 and 3 in IUCN 2012, plus information about up- and downlisting. 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).

8. If the full documentation is not included in the printed Red List or on a web-based version, this information should be formally recorded for later reference. The reasoning behind each decision in the assessment process should be explained so that the rationale for the final assessment can be understood at a later date. Full documentation should follow the *Documentation Standards and Consistency Checks for IUCN Red List Assessments and Species Accounts* (regularly updated and available from www.iucnredlist.org/technical-documents/categories-and-criteria), as outlined in Annexes 2 and 3 in IUCN 2012, plus information about up- and downlisting.

9. Recording the reasons that taxa change categories between regional Red Lists is recommended, in order to distinguish taxa that change category due to a genuine

change in threat status from those that change category as a result of new information, taxonomic changes, a different interpretation of the available data and/or the IUCN Red List Categories and Criteria, etc. Trends in the status of biodiversity over time can then be evaluated using Red List information from taxa whose threat status has genuinely changed (Butchart *et al.* 2004, 2005).

10. We do not recommend including a list of taxa of high regional priority for conservation action in a regional Red List publication, as a Red List indicates extinction risk only while conservation priority setting involves the consideration of many additional factors (see *Preamble*, point 8 for further information).

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Annex 1: General Examples

The examples given below and in Annex 2 come from a range of sources, including assessments carried out as exercises during IUCN Red List training workshops. Not all examples are up to date. All of the Swedish examples are taken from the *2010 Red List of Swedish Species*. To find the current national assessments for these species, the relevant national Red Lists should be consulted.

***Eptesicus serotinus* – Serotine Bat (Sweden)**

The Serotine Bat was first observed in Sweden in 1982, when a number of individuals were regularly seen in a limited area in northeastern Scania (southern Sweden). The bats apparently disappeared from this specific site in 1987. However, from this time Serotine Bats were observed at several scattered places in Scania, and there were also many observations in four other provinces in southern Sweden. Breeding colonies have not yet been found, but there is no doubt that the species regularly reproduces in Sweden. The Serotine Bat is migratory in Sweden. Based on regular inventories, the number of mature individuals is estimated to be 30 (plausibly ranging form 20-40). The extent of occurrence (EOO) is estimated to be 36,000 km² and the area of occupancy (AOO) is estimated to be 30 km² (plausibly ranging from 20-40 km²). Active searches for the species at a large number of additional localities in southern Sweden have been unsuccessful, indicating a rather low range of uncertainty in the measured parameters (e.g. AOO). There are no indications of population decline or fluctuation, thus the subcriteria under B are not met. Based on the most probable number of mature individuals, the species meets the criterion for CR D. Since there is an obvious probability of recolonisation from neighbouring countries, the category is downlisted to EN° D.

EN° D

***Grus antigone* – Sarus Crane (Viet Nam national assessment, 2003)**

A migrant species that spends the winter months in Viet Nam, where it occurs in two locations: Tram Chin and Logo Samat. The majority of the population is found in Tram Chin, where it remains for three 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 in Logo Samat as well (1992: 7 individuals; 1998: 48 individuals; 2003: 0 individuals). Population sizes are recorded by direct observation and by satellite tracking. The generation length for this species is 15.6 years. The total extent of occurrence is 700-900 km², and the total area of occupancy is estimated at 400 km². The 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. This species meets the criteria for VU D2, EN B1ab(iii,v)+2ab(iii,v); D and CR A2acd; C2a(ii). It is listed preliminarily under the highest category of threat, CR A2acd; C2a(ii). Conditions are deteriorating within Viet Nam but there is uncertainty about conditions outside the region (e.g. in Cambodia); the global population is also in decline. The preliminary assessment category is therefore unchanged.

CR A2acd; C2a(ii)

***Limosa lapponica* – Bar-tailed Godwit (Sweden)**

The Bar-tailed Godwit is a rare breeder in wet, subalpine areas where *Salix* is present, in the northernmost parts of Sweden. The number of mature individuals is estimated by inventories to be 200 (potentially ranging from 140-260). Extent of occurrence (EOO) is estimated to be 30,000 km² and area of occupancy (AOO) to be 200 km². There are no signs of significant population changes. Although the AOO is only 200 km², the species is not severely fragmented and there are no extreme fluctuations or continuing declines, so it does not meet the thresholds for criterion B2. Depending on which values in the plausible population size span are used, the criteria meet the category VU D1 or EN D, of which EN D is the most plausible. Since immigration from neighbouring countries is possible, the risk of extinction is probably less than if the subpopulation were isolated. For instance, the Norwegian subpopulation is stable at 1000-3000 pairs. Accordingly, the category is downlisted to VU° D1.

VU° D1

***Limosa limosa* – Black-tailed Godwit (Sweden)**

The Black-tailed Godwit breeds at large, connected shore meadows or marshlands with grass and sedges. It breeds on the Baltic islands of Öland and Gotland, and very locally in the provinces of Scania, Halland and Östergötland. The number of mature individuals has been estimated through detailed inventories to be 170 (160-180). The area of occupancy (AOO) is estimated to be 250 km² (between 150 and 300 km²). According to monitoring, the population has declined by 65% during the last 20 years (estimates range from 55-75%), and by more than 25% during the last 8 years (8 years = 1 generation). The decline pertains to the AOO, extent and quality of habitat, number of locations, and number of mature individuals. The estimation is based on direct observation, a decline in AOO, quality of habitat and levels of exploitation (substantial hunting in Western Europe, in particular in France), and effects of predators and competitors, in particular by the Hooded Crow, Raven and Red Fox. The highest category of threat this species meets is CR C1. Because the species is decreasing in throughout Western Europe, no substantial rescue effect can be expected and the category is left unchanged.

CR C1

***Oreochromis esculentus* – Singidia Tilapia (East Africa)**

A shoreline and bottom-dwelling freshwater fish, originally endemic to Lakes Victoria and Kyoga and their satellite lakes. After the introduction of the Nile Perch (*Lates niloticus*) in 1959, the population of *O. esculentus* 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 approximately 95% over the last three generations, mainly due to predation by the Nile Perch, eutrophication and exploitation; therefore it is assessed as Critically Endangered under criterion A2. As the species is endemic to the region there are no natural populations existing outside the region to influence the regional assessment. *O. esculentus* has also been introduced outside of its natural range into several lakes in Uganda and Tanzania for commercial purposes. According to the IUCN Red List Criteria, the categorization process only applies to wild populations inside their natural range, and to populations resulting from benign introductions, therefore only the wild stock is evaluated for the East African regional assessment. If the species became Extinct in the Wild (i.e. it disappeared from all of its former natural range), but the introduced population still existed within the region, the introduced population should not be assessed under the IUCN Red List Categories and Criteria; instead it should be considered a relict population of an EW species.

CR A2acde

***Paramesotriton deloustali* – Tam Dao 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^2. It was common before the 1990s, but it is now believed to be declining due to over-exploitation; the species is used for domestic trade 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. This salamander qualifies for Vulnerable B2ab(iii,v). There is no known immigration from neighbouring regions therefore the preliminary assessment is not changed.

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^2 and extent of occurrence is estimated as 4,000 km^2. 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. This frog meets the criteria for VU B1ab(iii,v)+2ab(iii,v) and for EN B1ab(iii,v). There is no known immigration from neighbouring regions, therefore there is no change to the preliminary assessment.
EN B1ab(iii,v)

***Harpalus griseus* – a ground beetle (Sweden)**
This species lives on open, dry ground with sparse vegetation, often on sandy fallow fields inhabited by the grass *Corynephorus canescens*. In Sweden the species is known from several provinces in the southern parts of the country. It has migratory tendencies, and the Swedish population (including the number of subpopulations) exhibits extreme fluctuations. During warm summers this species can spread over a large part of southern Sweden, but stable, reproducing populations are known only from the southernmost provinces (Scania and Halland). This beetle is threatened by changes in agricultural land-use, such as overgrowth of sandy areas and decreased use of fallow fields. The estimated number of locations is 50 (potentially 25-75); the estimated extent of occurrence (EOO) is 101,000 km² (plausible range 75,000-120,000 km²) and the area of occupancy (AOO) is 200 km² (plausibly ranging from 100-300 km²). There is an inferred continuing decline in the area, extent and quality of suitable habitat. All estimated values meet the criteria for EN B2b(iii)c(iii,iv). Because of the possibility of re-colonization from neighbouring countries, the category is downlisted to VU° B2b(iii)c(iii,iv).
VU° B2b(iii)c(iii,iv)

***Entalina tetragona* – a Tusk shell, Scaphopoda (Sweden)**
This species lives in soft sediments in deeper parts of the sea, in particular in Skagerrak, but also closer to the coast in the northern part of Bohuslän province (Koster). It is most commonly encountered between 250-500 m depth (though is occasionally found up to 100 m), in societies characterized by the ophiurid *Amphilepis norvegica* and the clam *Pecten vitreus*. Outside Swedish waters, it occurs along most of the Norwegian coast, and also in deep parts of the Mediterranean Sea and outside the coast of West Africa. It feeds from meiofauna, such as foraminiferans and kinorhynchans.

The species was rather common in Swedish waters until the 1970s, but has thereafter almost disappeared in areas relatively close to the coast. Environmental monitoring data suggest that stable populations still exist in at least one location, at 300 m depth in Skagerrak. It was encountered nine times during the Swedish Taxonomy Initiative marine inventory (carried out from 2006-2009); all except one of these encounters were within an area called Bratten. The number of locations can be estimated to be 3 (plausibly 2-3). The extent of occurrence (EOO) is estimated to be 600 km² (between 300-1000 km²) and the area of occupancy (AOO) is estimated to be 300 km² (between 150-500 km²). There is an inferred continuing decline in the quality of habitat. The available data suggests the

category EN B1ab(iii)+2ab(iii). However, since there are apparently good populations in neighbouring Norwegian waters and some suitable habitat is considered to remain in deeper parts of Swedish waters, and the species is capable of colonizing new areas, the risk of extinction from Sweden is judged to be less than that suggested by the Swedish data in isolation. Consequently, the species is downlisted by one category to VU° B1ab(iii)+2ab(iii).

VU° B1ab(iii)+2ab(iii)

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

The Small Grape Fern is currently known from about eleven locations in the southern provinces in Sweden. The species occurs in meadows or similar habitat by the sea coast, except for a few occurrences in the province of Dalarna where it grows in grass vegetation along old, small roads. The number of mature individuals is estimated to be 1000 (possibly ranging from 100-2000) based on detailed inventories. The extent of occurrence (EOO) is larger than any Red List thresholds. The area of occupancy (AOO) is estimated to be 44 km² (possibly ranging from 40-60 km²). There is an inferred continuing decline in the area of occupancy, quality of habitat and number of locations. There are extreme fluctuations in the number of mature individuals and the distribution is severely fragmented. This results in a categorization of EN B2ab(ii,iii,iv)c(iv). Even though the spores may be easily dispersed, the possibility of any rescue from neighbouring countries is unknown. Consequently, the category is left unchanged.

EN B2ab(ii,iii,iv)c(iv)

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

This species 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 number of mature individuals is estimated to be 4000 (ranging from 2000-6000), the extent of occurrence (EOO) is estimated to be 160,000 km² (plausibly ranging from 150,000-200,000 km²), and the area of occupancy (AOO) is estimated to be 780 km² (plausibly ranging from 700-1000 km²). The population is not severely fragmented and there are no extreme fluctuations. Tree felling is an ongoing threat and lack of fire-regenerated deciduous trees is a threat in a longer perspective. The extent of suitable habitat has decreased greatly and is continuing to decline. The number of suitable trees has decreased by 50% during the last 50 years according to forest inventories, corresponding to a population decrease by 30-50% over the last three generations. This decrease is projected to be 15% (plausible range 10-25%) in the coming three generations (the next 50 years). This results in the categorization VU A2bc; C1. The probability of immigration from neighbouring countries is unknown, thus the category is not up- or downlisted.

VU A2bc; C1

Annex 2: Specific Examples

Example 1: Assessing taxa with very little data available

A lack of high quality data should not deter assessors from attempting an assessment. When the available information is reviewed against the criteria thresholds, it is often possible to justify placing a species into a category other than Data Deficient. For example:

(i) The butterfly *Redonda bordoni* is endemic to Venezuela. Its taxonomy, morphology and habitat requirements have been studied to some extent, but no quantitative population data exist. Anecdotal observations indicate that the species is relatively abundant in the region, especially males; the number of females is difficult to estimate as they remain hidden in low-lying vegetation. The species is known only from the páramos El Batallón and La Negra, from 3,000-3,800 m; it is found in open páramo, and it can also be found in humid páramo in intermontane valleys. These páramos and the areas between them make up the El Batallón and La Negra National Park, which has an area of 952 km^2. The total area inhabited by the species (based on the combined area of the two páramos at the altitude in which the species occurs) has been reported to be around 180 km^2. *R. bordoni* is believed to be very fragile and particularly susceptible to environmental threats present in the páramo. Current threats include habitat loss and degradation due to the loss of host plants, trampling by grazing livestock, agriculture, and fire hazards during the dry season. All of these threaten the larvae, and the females are also particularly vulnerable as they are not very mobile.

Very little data exist by which to evaluate this species against the IUCN Red List Criteria. The lack of population estimates prevents assessment against criteria A, C or D (except VU D2). The effect of agriculture and grazing on the páramo has not been quantified, and the precise response of the species to these threats is not known; therefore, indirect measures of a population decline (using inference or suspicion, criterion A) cannot be made. No quantitative analysis (criterion E) has been conducted. The known area inhabited by the species is around 180 km^2, and the total area of El Batallón and La Negra National Park is 952 km^2. So, although there are insufficient data to precisely estimate the extent of occurrence (EOO) and area of occupancy (AOO), it is highly likely both these areas are within the thresholds for Endangered (EOO < 5,000 km^2 and AOO < 500 km^2). Threats have been identified that indicate a continuing decline in habitat quality, and currently the species is known from only two locations (fire being the threatening event capable of rapidly affecting all individuals in each páramo). Therefore, it is assessed as Endangered based on criterion B (EN B1ab(iii)+2ab(iii)).

Since the species is endemic to Venezuela and there is no potential rescue effect from outside the region, there is no need to consider adjusting the category for the regional Red List.

(ii) The Orinoco Softtail (*Thripophaga cherriei*) is an extremely rare bird endemic to Venezuela. It is known only from the type locality: the Caño Capuana area of the upper Orinoco river basin in Amazonas state. Some experts believe it probably is also present in neighbouring areas of Colombia, but this has not been confirmed. The species is known only from specimens, one sighting of three individuals in 1999, and one sighting of a presumed pair at the type locality in 2002. Other searches for the bird have proven unsuccessful. Even the number of specimens is debatable: reports range from a total of six specimens (a pair taken in February of 1899 and four individuals collected in March 1970), to 24 specimens in total (one collected in February 1890 plus 23 collected from March-April 1970).

Shifting agriculture may be a potential threat, but it is not clear if this practice is actually affecting this species. The proximity of the town of Puerto Ayacucho, 150 km to the north of the type locality and the principle center of development of the Venezuelan Amazon, could contribute to the degradation of the riverside habitats that this species seems to require. Other related species are known to be especially sensitive to forest deterioration, destruction and fragmentation, and *T. cherriei* may exhibit the same sensitivity. Although the known distribution of this species is located within the Sipapo Forest Reserve, the effectiveness of this reserve on the protection of riverside habitats is doubtful; indeed, future logging of the Forest Reserve is a possibility.

There are no population data available for this species other than the few sightings reported and collected specimens, which precludes the evaluation of the species against criteria A, C, D (except VU D2) and E. Based on the available information, its currently known range area is no more than 10 km^2. However, so far there is no evidence of a continuing decline in its range area, habitat, or population size, and extreme fluctuations of any kind are unlikely; it is therefore not considered threatened based on criterion B. However, it is known from only one location with a range area of < 10 km^2, and there are plausible threats from human activities that may negatively affect its habitat in the near future; should these threats occur, the species would immediately qualify for listing as Critically Endangered under criterion B (CR B1ab(iii)). The species therefore is assessed as Vulnerable based on criterion D (VU D2). It is unknown whether the species occurs in neighbouring Colombia, therefore the VU D2 assessment remains unchanged for the regional Red List.

Example 2: Distinguishing between breeding and visiting populations
Many common breeding bird species in the United Kingdom have their winter populations supplemented by non-breeding birds arriving from continental Europe and the Arctic.

Although for these species in the non-breeding season there may be some movement of the breeding population out of the UK, many breeding individuals stay and will contribute to data gathered to assess the non-breeding population. In such cases, it is often impossible to distinguish trends, ranges and population sizes of the breeding population from the non-breeding population.

In this situation, assessors in the UK conducted two separate assessments for (1) the breeding population, and (2) the total population of birds present in the non-breeding season (which includes the visiting individuals and some or all of the breeding population, depending on whether the species is partially migratory or not). In these cases, the non-breeding population must be sufficiently large compared to the breeding population that data collected is largely informed by the status of the non-breeding population rather than the breeding population. For the assessment of birds in the UK, a rule was applied that the population size must at least double in the non-breeding season, hence at least half the individuals contributing towards measures of status belonged to the non-breeding population, in order to prevent the assessment from reflecting changes in the breeding population more than in the non-breeding one.

Example 3: Using a filter to determine which taxa to evaluate
In Sweden, a breeding species (or other taxon) should only be assessed according to the Red List Criteria if it is indigenous to the country. In this context, the definition of an indigenous species is one that has colonized the country unaided by humans, or one that was introduced by humans before 1800 AD and since then has become established and is reproducing. Taxa that have immigrated unaided by humans (i.e. neither intentionally nor unintentionally introduced through, e.g. transport activities) may be assessed as soon as there is a population that has been reproducing continuously for a number of years (usually 10 years).

Visiting (wintering or migrating) taxa may be assessed if the part of the population occurring in Sweden, now or during some period of the 20th century, represents at least 2% of the entire European population.

Example 4: Using a filter to determine which taxa to evaluate
In Canada, the filter applied to determine which visiting taxa to assess is not the size of the visiting population but rather the regularity of the taxon's occurrence in the country and whether Canada provides an important resource, such as wintering habitat or important staging grounds during migrations. For example:

(i) The Leatherback Turtle (*Dermochelys coriacea*) is a migratory sea turtle that breeds in tropical or subtropical waters. After nesting, individuals move to temperate waters in search of food. The species occurs regularly off both the east and west coasts of Canada.

Its regular occurrence and the fact that turtles spend considerable time feeding in Canadian waters makes the species eligible for assessment in Canada.

(ii) The Pink-footed Shearwater (*Puffinus creatopus*) breeds on three islands off the coast of Chile but occurs regularly along the Pacific Coast of British Columbia, Canada, during the boreal spring and summer months (i.e. austral fall and winter). This means that Canadian waters are included in the shearwater's wintering range. The Pink-footed Shearwater is the second most numerous species of shearwater off British Columbia. During the time the shearwaters are in Canadian territory, they occur along the continental shelf and are associated with areas of upwelling and high biological productivity. Again, because Pink-footed Shearwaters regularly come to Canadian waters to spend their winter and feed here, they are assessed.

Another consideration that has been used in filtering species in Canada is the global status of the species. A taxon that is highly threatened globally requires evaluation even if it spends little time in Canada. Although vagrants and occasional visitors are not normally assessed, an exception is often made and they are assessed – as well as protected to some extent – when they are globally threatened. For example:

(iii) The Pink Sand-verbena (*Abronia umbellata*) inhabits coastal sand dunes in western North America and its seeds are most likely dispersed by ocean currents. The plant is not common anywhere, but small, scattered populations occur(ed) along the outer coasts of Washington (extirpated), Oregon (3 sites) and California (12 sites). It has been recorded at only three sites on southern Vancouver Island in Canada in the early 1900s, 1915, 1927, 1941, 2000 and 2001 (only one site each year and only two or three plants at each site). With this occurrence record, the Pink Sand-verbena can be considered a "vagrant" that occasionally gets washed up and germinates on Canadian beaches. Although this interpretation was not universally accepted by the assessor committee, the species was ultimately assessed because, although it may be a vagrant, it is at risk throughout its range.

Example 5: Likelihood of propagule migration

In some cases, although specific evidence of species migrating across regional borders is not available, the general life history of the species can be used to infer a likely migration from surrounding areas into the region being evaluated. For example:

(i) *Aeshna caerulea* - Azure Hawker (Regional assessment for the Mediterranean Basin):

The Azure Hawker (*Aeshna caerulea*) is a Eurasian alpine species that ranges from Scotland to the Kamchatka Peninsula in the east. In the Mediterranean region, the population is fragmented. In France, it is known with certainty only from four localities within a range

of 1,700-2,200 m in the Haute-Savoie department (municipalities of Chamonix-Mont-Blanc, Vallorcine and Samoëns); its EOO is 191 km² and AOO is 33 km². It is known from one locality in Italy; two other localities require confirmation, and it may be present in additional unknown localities. In Slovenia it is known from just one record, which may have been a vagrant; to date, no populations have been found. Populations within the Mediterranean are on the western and southern border of the species' range. Outside of the Mediterranean, it is common in Sweden, Norway and Finland; it occurs as a post glacial relict in Scotland, in the central Alps and in the Caucasus. The species inhabits Alpine and Arctic moors, heaths and tundra, and breeds in bog pools and sedge swamps above the tree line. The Azure Hawker is adapted to live in areas with long, strong winters and short summers with a low air temperature; in warmer areas it appears to be out-competed by other dragonflies. Many of the habitats it occupies tend to be small, shallow water bodies that are fed by snowmelt and rainfall and are vulnerable to climatic changes, as they may dry up completely during dry years. Population sizes and trends are unknown. Drying out of small ponds during some years is currently reported in the Alps, and this is expected to worsen as global warming advances. Climate change is therefore considered its main threat. Based on its limited AOO, its presence in <5 threat-defined locations, and a continuing decline in habitat quality (drying out and alteration of habitats), the species is given a preliminary assessment of Endangered (EN B2ab(iii)). However, as this species has been observed to have high dispersal power, significant "reservoir" populations in Switzerland are likely to provide immigrants that can repopulate the Mediterranean localities in the event of local population declines. The entire European population is listed as Least Concern. Given the good populations outside of the Mediterranean region, the assessment was downlisted to Vulnerable (VU° B2ab(iii)).

(ii) *Carex paniculata* - Greater Tussock-sedge (Regional assessment for North Africa):

The Greater Tussock-sedge (*Carex paniculata*) is a Euro-Siberian species. Its world distribution covers Europe, the Caucasus, Siberia, the Canary Islands and Morocco. In the Mediterranean region it is very widespread, occurring in Portugal, Spain, France, Italy, Sicily, former Yugoslavia, Albania, Greece, Bulgaria, Morocco and Algeria; its EOO exceeds 4,500,000 km², with several locations and an AOO >150 km². In North Africa it is very rare, found only in Morocco and Algeria, with a total EOO >20,000 km², four threat-defined locations and an AOO of <20 km². In Morocco it is known from three localities, namely Middle Atlas (Ouiouane lake) and northern Atlantic Morocco (in north Gharb, specifically Oued Lakhal and Bou Charen swamp near Larache); the populations are decreasing as their habitat is being drained, becoming unsuitable for this species. In Algeria it is found in only 2 localities (Numidie and Jijel). Drainage, agricultural expansion, water pollution, road infrastructures and urbanization are the major threats to the habitat of this species in Morocco. In Algeria, deforestation is the main problem and the sites where the species is present could easily disappear. A continuing decline in the quality

and extent of the habitat is therefore expected. The North African populations meet the criteria for Endangered under B2 (AOO <500 km², <5 locations, continuing decline). However, the species is classified as Least Concern in Europe and the Mediterranean and it is readily transported (e.g. by ducks), so a rescue effect from European populations is expected. Therefore, the assessment is downlisted to Vulnerable (VU° B2ab(iii)).

Example 6: Evidence for the existence of local adaptations

In Canada, the Black-tailed Prairie Dog (*Cynomys ludovicianus*) occurs as a disjunct northern outlier population, separated by a considerable distance from the species' main range. This prairie dog is not generally considered to be a hibernating species, but the Canadian population hibernates to survive harsh winter conditions. Populations in the US and Mexico do not hibernate and would be unlikely to survive Canadian winters. Thus, due to this local adaptation, individuals immigrating into Canada from the US and Mexico would be unlikely to survive and be able to rescue the Canadian population.

Example 7: Downlisting by more than one category

Savi's Warbler (*Locustella luscinioides*) has recently begun to colonize Sweden and now breeds in dense reeds. In particular, it occurs in the southernmost province Scania, but also in lakes rich in *Phragmites australis* reeds in the provinces of Västergötland, Östergötland, Southern Värmland, Närke, Västmanland and Uppland. The number of mature individuals in Sweden is estimated to be 100 (possibly ranging from 60-150), based on the number of singing males defending territories. The population in Sweden is increasing. The area of occupancy (AOO) is estimated to be 150 km² (potentially from 100-200 km²). The extent of occurrence (EOO) is larger than any Red List thresholds. The number of reproductive individuals meets criterion D under Endangered (EN). Because there is an ongoing immigration and expansion of the subpopulation in Sweden, the extinction risk is judged to be substantially lower than what is reflected by the category EN based on the number of mature individuals. This is also supported by the fact the Savi's Warbler has large, stable or even increasing subpopulations in the countries east and southeast of Sweden to the Baltic Sea. Consequently, the Red List Category is downlisted by two steps, from EN D to NT° D.

Example 8: Taxa having a higher threat status at the global level than at the regional level

It is generally the case that taxa will be assessed in a higher threat category at the regional level than at the global level. Criteria A and C, however, offer the potential for a taxon to be less threatened at the regional level than it is at the global level, because of population trends being inconsistent in different parts of the taxon's range. For example:

The Dugong (*Dugong dugon*) has a global range that spans at least 48 countries. An analysis of the data from across this range indicates that the species is declining or extinct

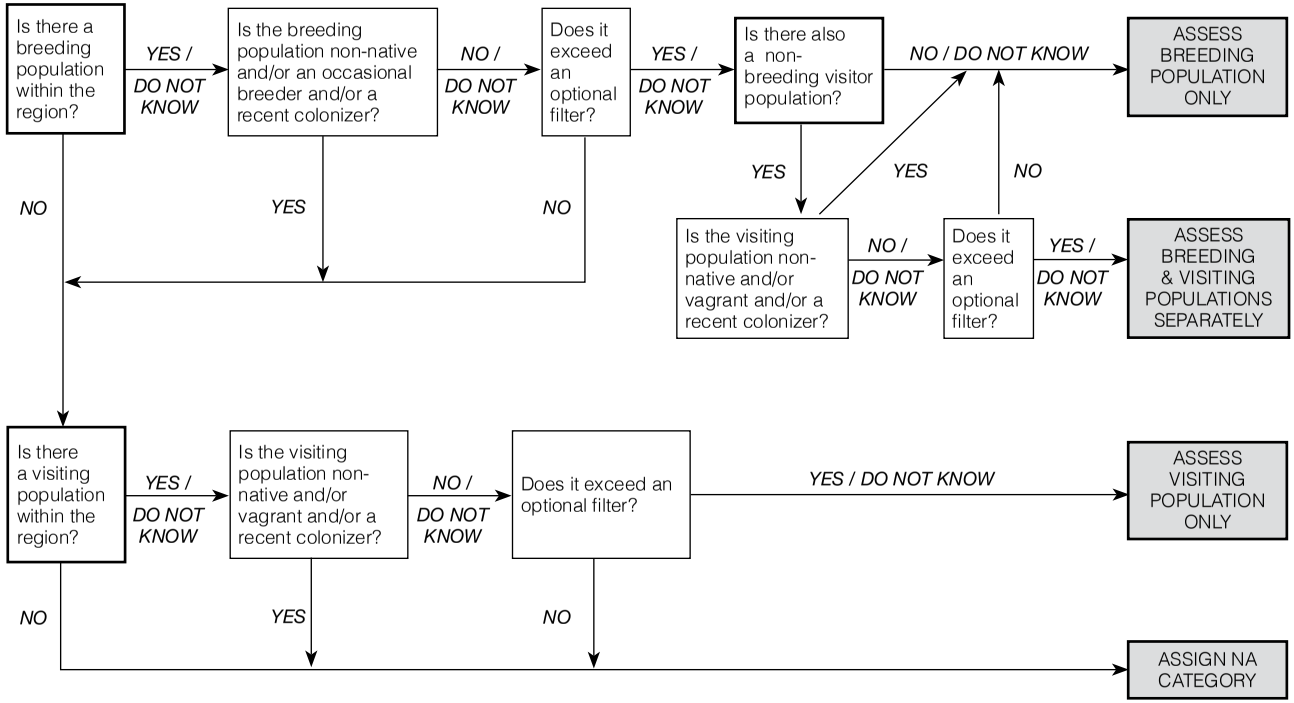
in a least a third of its range, of unknown status in about half its range, and is possibly stable in the remainder of its range, which is mainly in the remote coasts of the Northern Territory and Western Australia. Although it is difficult to specifically determine the population trend across its entire global range, there is evidence suggesting that its area of occupancy has reduced throughout its range, in some areas to the point of extinction, and from this the species is estimated to have undergone a global population reduction of at least 30% over the last three generations. Therefore at the global scale, the Dugong is assessed as Vulnerable (VU A2bcd).

In Australia, the Dugong is not listed as a threatened species. Although population declines have been recorded in some parts of Australia (e.g. Queensland), other Australian populations appear to be more stable. There are many management plans and protection measures in place for the Australian Dugong population, and these are helping to maintain a good population there.

Annex 3: Flowchart to determine which taxa to include in a regional Red List

Step one of the regional Red List assessment process involves determining which taxa to assess, and which taxa to assign a Not Applicable (NA) category. The chart should be followed by answering each question, beginning in the top left corner. For definitions and explanations of terms used (e.g. occasional breeder, recent colonizer, optional filter, etc.) see section *III. Definitions*, and point 2 “Taxa to be assessed” in section *IV. The Assessment*.

STARTING POINT:



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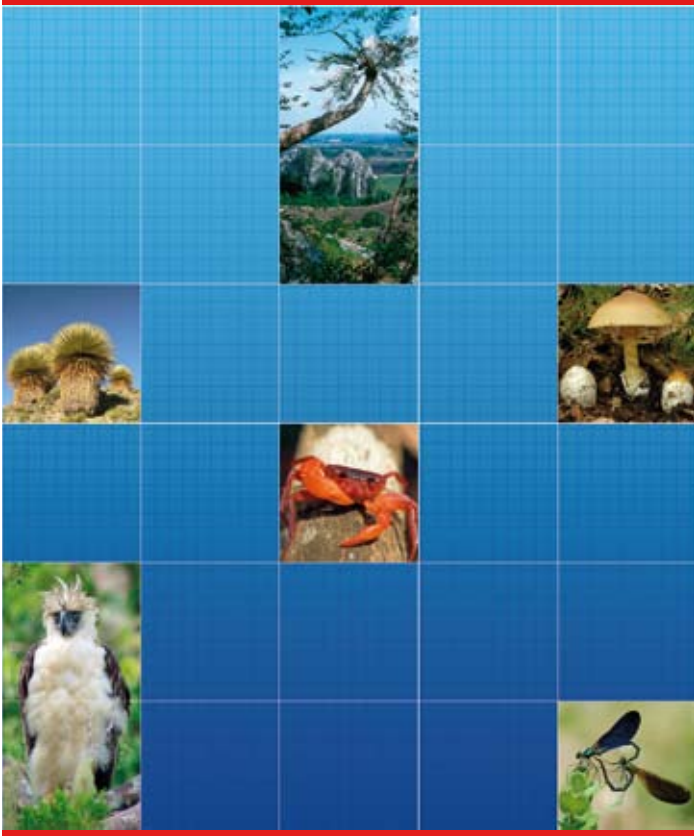

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