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**Report from the National Red List Advisory Group Workshop**  
**“Analysis of the Application of IUCN Red List Criteria at a National Level”**  
**Villa Majagual, 21-26 January 2005**



image: [www.iapad.org/pa/global-context.htm](http://www.iapad.org/pa/global-context.htm)

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## 1. WELCOME, INTRODUCTIONS AND BACKGROUND INFORMATION

Rebecca Miller opened with a brief explanation of the National Red List Advisory Group (NRLAG), the work that had led up to the meeting and the goals for and anticipated products of the meeting.

Verena Keller mentioned that in Switzerland they translated the IUCN Categories and Criteria into both German and Italian, and that both translations can be found in the Swiss publications of red lists and could be made available by the national red list coordinator (Francis Cordillot). It was emphasized that the IUCN Categories and Criteria will have limited impact in many parts of the world unless they are translated into more languages. It was also noted that during the translations the meaning of certain terms is often slightly changed, which could result in the misapplication of the criteria. There was general agreement that all translations should either be produced by the IUCN or should be passed back to the IUCN once completed in an individual country or region, in order to double-check that they have maintained their original meaning.

### **Resolution:**

- All translations of IUCN documents should come from within the IUCN or should be checked by the IUCN before publication and use, in order to assure that their original meaning has been maintained.

### **1.1 Presentation, Convention on Biological Diversity Survey Results**

Rebecca Miller gave a short presentation illustrating how the NRLAG fits into the Species Survival Commission (SSC), outlining the objectives of the group, and discussing the results of the survey that was sent to the Convention on Biological Diversity (CBD) focal points. See the PowerPoint presentation “CBD Survey Results\_Rebecca Miller” on the workshop CD for more information and the slides presented.

23% of the surveys have been returned to date, showing definite patterns from countries representing a range of size and degree of development. 92% of the countries that responded have or will produce a National Threatened Species List (NTSL) and 75% have already produced such a list. IUCN Categories and Criteria have played an important role in the development of those lists (83% of the countries that already produced a list used the Categories and Criteria), but modifications are common (43% of the countries that used the criteria modified them in some way). NTSLs appear to be very powerful local conservation tools, as 90% of the countries that produced a list have incorporated the list and/or the IUCN criteria into national conservation policies.

Motivations for using the IUCN criteria relate mainly to characteristics intrinsic to the criteria: their objectivity, quantitative nature, reputation and broad usage, as well as the convenience of using an existing system. The reasons for not using the criteria include “special restrictions” to the country, mostly related to small size (and the belief that all species will be classified as threatened), and a lack of quantitative data. The Regional Guidelines have not been widely utilised so far, but this is not surprising given the recency of their publication.

In modifying the criteria, threat status was the most important factor taken into consideration, followed by conservation priority. It is clear that countries tend to

incorporate conservation priority-setting into their NTSs; this is sometimes intentional (i.e. a one-step assessment and priority-setting process), but in many cases there still may be confusion regarding the difference between extinction threat and conservation priority. The NRLAG or the Red List Programme Committee (RLPC) may wish to formally address this issue, given that conservation priority-setting is a separate process from the evaluation of species' extinction risk and thus should not be incorporated into lists reflecting extinction risk.

The most prominent perceptions held in relation to the national use of the IUCN criteria are that the criteria exaggerate threat status when not used globally, that in small countries a disproportionately high number of species will be threatened according to the criteria, and that the criteria cannot be used with little quantitative data. The first two perceptions are often true, when the criteria are used at the regional level without the Regional Guidelines. Regional populations are generally not isolated from populations in nearby countries, and the Guidelines are specifically designed to take into consideration information from neighbouring populations (outside the region being assessed). Thus, by up- or downgrading, the Guidelines allow the adjustment of the original classifications made using IUCN criteria to reflect regional extinction risk more appropriately. The first two concerns should in large part be resolved as the Guidelines become more widely utilised.

Issues that remain to be addressed or resolved include: how to use the criteria when little national data is available; the lack of access to the global and regional data necessary for using the criteria and the Regional Guidelines; the lack of communication between different countries and between national and global red list compilers; and both the difference and relationship between red lists evaluating extinction risk and conservation priority-setting activities. We may wish to incorporate the following into the Categories and Criteria, the User Guidelines and/or the Regional Guidelines: slow but continuous declines; setting quantitative criteria for the category Near Threatened and for the Regional Guidelines; improving the definitions for "location", "individual" and "generation time" (especially for clonal species); amplifying and improving the explanations for defining and measuring Extent of Occurrence (EOO) and Area of Occupancy (AOO) within criterion B (especially determining grid size). Finally, potential future actions taken by the NRLAG and/or the RLPC include the development of an online database of national red lists and more training programs (especially at the regional level).

## **2. INTERNATIONAL PRESENTATIONS**

### **2.1 Sweden**

Ulf Gärdenfors provided a summary of the red listing process in Sweden. The Swedish Species Information Centre (SSIC) is an organisation dedicated to red listing, which is made up of roughly 30 people, about 10 of which work on threatened species assessments. The Centre is supported by the government financially, but is entirely a scientific organisation and operates outside of political will. The Centre has produced threatened species lists for several years, but the first list produced using IUCN criteria was published in 2000. Of the 20,000 species assessed at that time, 4120 were published on the Red List and about half of those species published were considered threatened. Among the species assessed were all vertebrates, vascular plants, lichens, mosses, bryophytes, Lepidoptera and Coleoptera.

In 2003 the assessment process began for the 2005 Red List. A system was developed with about 15 specialist groups, primarily made up of volunteers, who are responsible for the species assessments. The IUCN Categories and Criteria, User Guidelines and Regional Guidelines were translated into Swedish and distributed to the specialist groups. Thorough documentation was demanded, and an Excel file was produced that included all of the parameters of the IUCN criteria that could be exported into RAMAS software, which was then sent to the specialist groups. Official environmental statistics, such as changing forest utilisation, acid rain influence, soil pH, etc., were gathered. A database was developed that contains all observations of red listed species, from museum specimens to records and data gathered in the field, in order to calculate EOO and AOO; although this database is obviously incomplete, with knowledge of the different species they could calculate what the information in the database likely represents in terms of the species' actual distribution. In addition, a range of uncertainty for individual species was incorporated into the calculations, in order to determine a plausible range for parameters such as EOO, population decline, etc., which helped to distinguish DD species from those for which assessments could be made. Finally, a general Red List database was created where all of the information contained in the various Excel files submitted by the specialist groups could be compiled.

In March of 2003, a two-day training workshop was held at which the participants were provided with a spreadsheet containing all the species that were to be evaluated and the information from the 2000 Red List. They were then left to gather the information required and to make the assessment of the species they were responsible for. In May 2004, the preliminary data gathered between 2003 and 2004 were revised by members of the SSIC, discussions regarding how to define "individual", "generation time", etc. for particular organisms took place, and all of the files from the specialist groups were amassed into one Red List database which was distributed amongst the members of the SSIC.

They are currently analysing the results and writing the introductory chapters to the publication. All changes from the 2000 Red List have been documented and analysed to determine what caused the change (be it new information, a change in the criteria, a different interpretation of the criteria, actual status change, etc.). There have been very few real status changes. In fact, most of the species are slightly less threatened than they were in 2000, although the situation as a whole is slightly worse than in 2000. The format they have adopted will be published so that others can access it, and the information they have for each species pertaining to the criteria (% decline, EOO, etc.), in a species information sheet, will be available online.

After the 2000 Red List was published, an analysis was conducted of which habitats contain the most red listed species, which threat factors are most common to red listed species and what areas contain many red listed species (i.e. hotspots). The results are used in reserve design, to make recommendations (especially for forestry and logging practices) and to develop a list of species requiring recovery programs. This last activity incorporates many factors, including: national Red List status, global Red List status, the share of the global population found in Sweden, the species' need for a recovery program, the amount of knowledge regarding what needs to be done, whether or not it is possible to take action, the urgency of such action, and the logistics of carrying out the recovery program. Ulf noted that sometimes species with less conservation priority

occur with species that have a greater priority, so some aggregate programs have been produced.

In Sweden, there is no direct connection between the Red List and legislation; the fact that a species is found on the Red List does not imply any required measures be taken to improve its situation or impart any form of protection. In this sense, the Red List signifies extinction risk only. However, the Red List is used indirectly in some legislation. For example, areas called “key biotopes” can be declared if red listed species occur or potentially occur there; logging companies have been required to leave those areas intact. There are thousands of tiny areas that have been declared key biotope areas. However, the most effective use of the Red List to date has been its reputation, which has led to significant social pressure not to harm listed species in any way; although there is no legal pressure not to harm those species, individuals and companies are to some degree limited in their actions by the social implications of harming a threatened species.

## **2.2 Canada I**

Theresa Fowler made the first of a two-part presentation from Canada. Species assessments in Canada are made by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which is made up of one representative (biologist) from each of the following: 10 provinces, 3 territories, the Canadian Wildlife Service, Parks Canada, the Federal Biosystematics partnership, the federal Department of Fisheries and Oceans, 3 NGOs, 8 Species Specialist Sub-committees and the Aboriginal Traditional Knowledge Subcommittee, for a total of 29 members. COSEWIC is funded by the Wildlife Service and takes general directions from the federal/provincial/territorial ministers, but the ministers are unable to command COSEWIC. Instead, they usually give direction to COSEWIC on administrative matters, such as how they want COSEWIC to present the results of its assessments, and request certain reports, but do not get involved in which species are assessed; the Committee is thus free from political interference.

The 2001 IUCN Categories and Criteria have been adopted as the official COSEWIC criteria by which all species are assessed, although the criteria have been slightly modified. The Regional Guidelines are currently being evaluated for adoption. There are several differences in terminology between COSEWIC and the IUCN:

| <b>IUCN TERMINOLOGY</b> | <b>EQUIVALENT COSEWIC TERMINOLOGY</b>  |
|-------------------------|--|
| Extinct                 | Extinct  |
| Regionally Extinct      | Extirpated – extinct in the wild in Canada but exists elsewhere (i.e., in captivity or in the wild in another country) |
| Critically Endangered   | Endangered – with EN thresholds (no extra category equivalent to CR)   |
| Endangered              |  |
| Vulnerable              | Threatened   |
| Near Threatened         | Special Concern (but possibly slightly broader than NT)  |
| Least Concern           | Not at Risk  |
| Data Deficient          | Data Deficient   |
| Not Evaluated           | ----- (many species are not evaluated, but there is no special category for them)                                      |

In the General Status process (which is a broad-brush approach to species assessment, as opposed to COSEWIC which does detailed assessments), each province and territory completes a general assessment of their species, placing each species in a general category: At Risk, Maybe at Risk, Sensitive, Vagrant and Not at Risk. COSEWIC does not evaluate species thought to be Vagrant and Not at Risk. Each Species Specialist Subcommittee (SSC) prepares a prioritised candidates list using the General Status outcomes as one of its sources – others being NatureServe Explorer (on the web) and Conservation Data Centre rankings, expert opinion, etc. Every year, each SSC selects (from its candidates list) top priority species it would like to deal with in that year. All SSC priority species are combined and COSEWIC uses an elimination process (based on workload and available funds) to determine for how many and for which species status reports will be commissioned (usually 40-70 per year). All species selected in this manner are posted on the COSEWIC website, potential authors bid on the preparation of status reports on these species, SSCs select the winning bid for each species and the author receives a contract to produce a species status report which is peer reviewed by the appropriate SSC. Based on the report, the SSC recommends a threat category (using the modified IUCN criteria and other considerations), after which the report and recommended threat category are sent to all COSEWIC members.

COSEWIC meets once or twice a year to consider status reports and status recommendations made by the relevant SSCs. After applying modified IUCN criteria, COSEWIC examines other factors (such as rescue effect, life-history characteristics that might make a species particularly sensitive, protection already afforded the species, etc.) as well as its definitions of the threat categories. If the committee believes the species' situation does not fit the definition of the threat category derived using the criteria (e.g., if a species comes out as endangered according to the criteria, but it was always rare and there are no identifiable threats, then the species is not necessarily at a "very high risk of extinction"), COSEWIC will up- or downgrade the species, nearly always by just one

category. About 30% of the time the category is changed (mostly downgraded); in Canada the rescue effect is quite common, as many species barely extend their ranges into southern Canada but are firmly not of risk in the USA, so species are often judged to be at less risk than the criteria indicate.

Any status must be assigned by consensus or at least two-thirds majority vote. If a two-thirds majority cannot be reached, the assessment is deferred and the report is revised to clarify the contentious issues before it comes back before COSEWIC at a subsequent meeting. Each species is re-assessed at least every 10 years based on an updated status report. It is not uncommon for one species to be assessed as several “designatable units”, each with its own, often different, threat status.

The list of species at risk is slowly updated as new species are assessed each year, rather than conducting a massive re-assessment every few years.

The list of species at risk produced by COSEWIC is considered the scientific list; there is also a legal list which is produced by the government based on the COSEWIC list. When the new Species at Risk Act was passed, legal protection was accorded all species that, up to that point, had been assessed as being at risk by COSEWIC. Now, once a year, COSEWIC submits a list of the newly assessed species to the Minister of the Environment, who then determines the legal list after considering socio-economic and political factors. Except for some of the high-profile hunted and fished species, most species on the COSEWIC list are also on the legal list. Once a species is on the legal list as Endangered or Threatened, there are automatic legal prohibitions against killing, taking, harming, harassing and trade as well as protection of the species “residence” (the term “residence” is problematic, as it is not a biological term and it is difficult to delimit a residence in practical terms – for enforcement purposes). In addition, a recovery strategy must be produced within 1 year for Endangered species and 2 years for Threatened and Extirpated species. In the case of Extirpated species, the plan normally considers whether it is possible to re-establish the species and the actions needed to do so. No prohibitions apply to Special Concern species, but a management plan must be developed within three years to assure the status of these species does not deteriorate.

### **2.3 Canada II**

Ruben Boles finished the Canadian presentation by further discussing an aspect of downgrading a species and outlining some of the questions and problems related to the IUCN criteria that have come up in Canada.

COSEWIC will downgrade a species based on the rescue effect as per the IUCN Regional Guidelines. However, downgrading may also result from consideration of the definition of COSEWIC risk categories, which differ slightly from those of the IUCN. For example, COSEWIC’s definition for Endangered is “A wildlife species facing imminent extirpation or extinction”, where “imminent extirpation or extinction” is further defined as “a 20% or greater probability of extinction of extirpation within 20 years or 5 generations (up to a maximum of 100 years)”. Operationally, COSEWIC first applies the IUCN criteria A-E to arrive at a risk category; the definition of the category is then considered, as a reality check. The IUCN’s definition for Endangered in contrast, requires only that one of criteria A-E is met. In this sense, COSEWIC uses the IUCN criteria more as a guideline together with a sense of the overall state of the species’ situation to determine

the final category. Within each species' status report, there is a section entitled "Applicability of Criteria" in which information related to IUCN criteria A-E (modified slightly as discussed above) is reported.

Two more distinctions between COSEWIC and IUCN definitions were mentioned:

| IUCN TERMINOLOGY | EQUIVALENT COSEWIC TERMINOLOGY |
|------------------|--------------------------------|
| population       | total population (in Canada)   |
| subpopulation    | population                     |

The following are questions and problems related to the IUCN criteria that have come up during the assessment process in Canada:

1. Many species are assessed at the level of a "designatable unit", rather than the species level (see Green 2005 *in press*). Has anything similar been contemplated by the IUCN?  
 -Caroline Pollock responded that although IUCN assessments are based on species, they do accept assessments of subspecies and subpopulations.
2. Difficulty in interpreting rescue effect arises when a species only migrates through Canada. While regional status assessment of a visiting taxa can be envisioned at the time the species is in the region in question, it is difficult to conceptualise how rescue can apply to a region which the species only visits briefly. Further explanations and examples within the Regional Guidelines would be helpful in order to clarify how to evaluate the threat status of a species that does not spend much of its lifecycle in the country. Most of the real threats to these species are from outside Canada. COSEWIC deals with these on a case-by-case basis. It often examines what is happening to the entire biological population unit, some of whose members occur in Canada.
3. Species which form small, concentrated populations outside of Canada at some point in their lifecycle (e.g. Monarch butterfly, Short-tailed Albatross) also require special consideration for assessment purposes. The threats facing them when concentrated are often the most serious and at times may be unknown, but could drastically affect the population and therefore the likelihood of extinction or extirpation in Canada. Again, these special cases are usually dealt with at the level of the biological population unit.
4. Numerous peripheral species whose distributions just barely extend into Canada cannot be assessed simply by using the criteria. Their persistence in Canada may be considered precarious because of restricted ranges and small populations, but these species may be extremely common in the U.S. – the rescue effect is a major consideration.
5. Species that have a high periodic extirpation probability within Canada, but also a high re-colonization probability (e.g. Canyon Wren – the species retreats into the US every time there is a harsh winter) present special cases.

It was noted that many of these problems are addressed by the 2003 IUCN Regional Guidelines.

## 2.4 United Kingdom

Mark Eaton discussed the red listing process in the UK, especially in reference to birds. For his complete presentation, see the PowerPoint presentation entitled "Venezuela Presentation\_UK\_Mark Eaton" on the workshop CD.

Mark discussed three main topics:

1. The UK process for evaluating birds (Birds of Conservation Concern)
2. The IUCN regional red listing exercise with birds in the UK
3. The UK government's Biodiversity Action Plan process

He noted that various processes are used to assess other taxa, and that the latest vascular plant assessment was done using the IUCN criteria.

### 1. The UK process for evaluating birds (Birds of Conservation Concern)

Three publications have been produced evaluating the extinction risk of UK birds since 1990: Red Data Birds (Batten et al. 1990), Birds of Conservation Concern (Gibbons et al. 1996) and Populations Status of Birds: Birds of Conservation Concern (Gregory et al. 2002). The UK is fortunate to have over 30 years worth of monitoring data for birds, so most of the ecological and population information required to conduct confident assessments is available. In this process, regular breeders, migrants and wintering species are evaluated based principally on UK status; international threat and conservation importance of UK populations are also considered.

The UK system is a "Traffic Light System" made up of three categories. The criteria for each category are:

#### RED (highest concern)

Globally threatened

Major and sustained historical decline

Major recent decline:  $\geq 50\%$  decline in 25 years

#### AMBER (medium concern)

Moderate recent decline: 25-50% decline in 25 years

Rare breeding species ( $\leq 300$  pairs)

Localised ( $\geq 50\%$  population at  $\leq 10$  sites)

Threatened in Europe (SPEC 2 or 3)

International significance ( $\geq 20\%$  of European population)

#### GREEN (lowest concern)

None of the above

### 2. The IUCN regional red listing exercise with birds in the UK

The IUCN criteria were recently applied strictly as an academic exercise in order to compare the UK's assessment process to the IUCN process (Eaton et al. *in press*). Several issues were identified, especially regarding points in the assessment procedure in which decisions can be particularly subjective:

#### a) Selection of species for assessment

- It is often difficult to determine the dividing line between regular and irregular breeders, between visitors and vagrants, and

- between regular and visiting populations (i.e. how to determine whether to assess a species once or twice)
- b) How to select data
    - Precautionary approach vs. using unreliable data
    - When should trends be extrapolated?
  - c) Regional adjustment phase
    - Lack of data
    - What constitutes “significant” immigration?
    - When will immigrant individuals be likely to recruit?

A system focusing on extinction risk such as the IUCN system has not been considered very relevant in the UK because few extinctions have occurred (4 bird species since 1800), and much of the focus of conservation action is on declining populations that are not necessarily likely to go extinct in the near future. Species that have suffered historical declines are considered of conservation priority, and these are overlooked in the IUCN process. Many common and widespread species benefit from conservation action as well, as even declines that are unlikely to lead to regional extinction may result in the loss of millions of individual birds. It is not inconceivable that it could be considered acceptable to allow a species to go extinct in the UK, if preventing such an extinction requires a disproportionate use of conservation resources and if the UK is not important for this species in a global sense.

### 3. The UK government's Biodiversity Action Plan process

The BAP process is used by the UK government to identify priority species in all taxonomic groups and priority habitats, and is separate from all red listing activities. There are 3 stages in the current process, the criteria for which consider global threat, local decline, restricted range, endemism and cultural significance. The process is currently being revised, and will ultimately include 3 different stages:

- i. Define the biological status (considering national and international threat, marked decline and UK's level of responsibility for protection)
- ii. Evaluate the need for action (appraisal of available knowledge, potential for recovery, costs, subsidiary benefits, potential conflicts, available expertise, and societal values)
- iii. Identify the mechanism for the implementation of appropriate conservation action

Mark concluded by emphasizing the need for an accurate assessment of species status, the importance of a sensible translation of that status into conservation priorities, and the need for greater guidance in *how* to use status assessments as one component in the development of conservation priorities.

## 2.5 Switzerland

Verena Keller presented the Swiss experience in applying IUCN criteria and Regional Guidelines in their assessment of breeding birds (see PowerPoint presentation “Switzerland\_Verena Keller” on the workshop CD for her presentation).

Red Lists in Switzerland are prepared by national database centres for plants and animals as well as research institutes. These Red Lists are not mentioned in governmental conservation legislation, except indirectly in habitat protection legislation. However, since 1990 all national threatened species lists have been required by the Department of Environment to follow IUCN criteria. Given Switzerland’s small size (41,000 km<sup>2</sup>), the IUCN criteria do not make sense when applied without the Regional Guidelines, which were recently applied to breeding birds for the first time.

One of the biggest advantages to the IUCN criteria is their objectivity, which allows them to be used to measure the success of conservation efforts. However, although the IUCN criteria are quantitative, resulting in objective classifications, the Regional Guidelines are vague and leave much to interpretation, rendering the classifications subjective. In order to limit subjectivity and assure evaluations are consistent between species and over time, certain decisions were formalised:

- Which species to assess (non-natives and exceptional breeders, defined by AERC and Swiss Rarities Committee categories, excluded)
- RE species (definition of RE problematic for list of *breeding* birds; time since last breeding established to determine when a species is RE)
- The process of applying the Regional Guidelines

In formalising the Regional Guidelines, criteria were established at each point in which a decision must be made: whether the populations experience immigration, if immigration is expected to decrease (based on the SPEC category: SPEC 1-3= decrease yes, SPEC 4= decrease no), and if the population is a sink (if no data, assumed if decline continuous then at risk to become a sink). The number of categories to up- or downgrade was established based on these criteria. Since many CR species with small populations have always been rare (and thus face a lower extinction risk than species that are rare due to a decline), criteria for downgrading were also established for CR species depending on whether they are “old rare” or “new rare” (for details, see Keller et al. *in press*).

It was noted that species which declined in the past, which are declining slowly, and which declined in only part of the country are not captured by the IUCN criteria and are thus not red listed.

### Conclusions:

1. The guidelines for national red lists allow a high degree of interpretation
2. Translating the guidelines formally allows a consistent application for all species
3. Emphasis of the criteria on small population size can be problematic for small countries
4. The Red List is a useful tool to measure changes in extinction risk over time
5. A list of conservation priorities has to take into account additional factors such as international responsibility (see Keller & Bollmann 2004)

Red Lists have been produced for a range of taxonomic groups (birds, dragonflies, ferns and flowering plants, bryophytes, lichens) and others are in prep (Orthoptera, amphibians, land snails, fishes, reptiles, aquatic invertebrates). Adjustments to the IUCN criteria have been made for certain taxonomic groups (e.g. defining “individual” for lichens and bryophytes). To date, the Regional Guidelines have been used only for birds, dragonflies and bryophytes.

At the political level the category NT is problematic in that it is difficult to interpret, rendering the Red List confusing (since it includes “non-threatened” species). Verena stressed that the IUCN criteria are often translated incorrectly, thus making their application incorrect, and again offered completed Italian and German translations to the IUCN.

## 2.6 Sri Lanka

Channa Bambaradeniya presented a brief overview of the preparation of Sri Lankan Red Lists (for complete details, see “National Red Lists of Sri Lanka\_Channa Bambaradeniya” on the workshop CD).

Several Red Lists have been prepared in Sri Lanka since 1989:

- 1989 Red List (IUCN SL; updated in 1993): no criteria; rather, a list of the globally threatened species found in Sri Lanka + additional species selected subjectively by a group of experts
- Threatened birds (Ceylon Bird Club, 1997): used IUCN criteria
- Threatened herpetofauna (CAMP workshop, 1998): used IUCN criteria
- 1999 Red List (IUCN SL): used nationally developed criteria
- 2005 Red List (IUCN SL and the National Species Conservation Advisory Group (NSCAG), co-financed by the government): using IUCN 2001 criteria

For the 1999 Red List, Sri Lanka opted to use nationally developed criteria. Two expert teams (plants and animals) were assembled, the national criteria were developed and refined, published and unpublished information was compiled, and draft lists were reviewed by expert groups. Given a lack of population data, the criteria considered broad factors which contribute to extinction risk: distribution, habitat status, human impacts, endemism and global threat status. Species were scored from 1-5, and placed into two categories of threat: Highly Threatened (=CR) and Threatened (=EN+VU).

The 1999 Red List led to several major actions:

1. Institutionalisation of the Red Listing process, including establishing NSCAG
2. Revision of the Fauna and Flora Protection Ordinance, the highest protection an organism can receive
3. Raising awareness and declaring new protected areas
4. Regulation of export of fauna and flora, especially ornamental trade (freshwater fish and plants); increasing the number of species in CITES
5. Promotion of targeted conservation actions

However, there were several constraints of the 1999 Red List. The list was biased toward endemic species, not even the threatened endemics could be included in the global Red List due to the difference in criteria, and conflicts were generated by different

listings in the national and global Red Lists (issues related to priority setting, such as preparation of species profiles and recovery plans; fishermen highlighting discrepancy for species only on national list).

For these reasons, the IUCN criteria and Regional Guidelines were adopted for the 2005 Red List. National workshops on the taxonomic status of species have been conducted, secondary information has been compiled, digital maps (25 km<sup>2</sup> grid squares) prepared, and a digital database and software for analysis have been developed. Still, they have run into a few issues when applying the IUCN criteria:

- Marine and migratory species are difficult to assess
- Poor population data means that assessments are biased toward distribution data
- Population changes must be inferred or predicted based on other factors
- Data obsolete/inadequate for invertebrates and certain plant groups- random field assessments are being conducted to increase the data available
- Lack of recent taxonomic revisions means that likely endemics have not been separated from widespread species
- Highly seasonal species may have biased evaluations

An awareness of the need for conservation has been very important in believing that developing a national red list is possible, even without much data. Several actions have been identified as the next steps to take, including incorporating Sri Lankan endemics into the global Red List and the preparation of a national species conservation strategy and action plan (profiles for priority species, development and implementation of recovery plans, monitoring).

## **2.7 South Asia I**

Sanjay Molur gave the first of two presentations on red listing activities in South Asia. The Indian government made an effort to bring out Red Data Books on plants (3 volumes of 500 species) in 1987, 1988, 1990 through the Botanical Survey of India (BSI), and one Red Data Book on vertebrates in 1991 through the Zoological Survey of India (ZSI). Although the departments were supposed to publish such books on a regular basis, they have not done so to date. Also, the attrition rate of scientists in these two organisations combined with non-recruitment has ensured that the project is last on the list of priorities.

More recently, the ZSI commissioned one of its scientists, who has attended all of the Conservation Assessment and Management Plan (CAMP) workshops for species assessments, to reassess all the mammals of India based on the 2001 IUCN criteria. However, from what Sanjay has seen and understood in talking to the scientist, it seems that rather than being prepared through an objective process, the Red Data Book is being largely influenced by politics. The person compiling the information is doing it all by himself without consulting other researchers in the field.

In the region of South Asia (consisting of 7 countries -- Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka), only India has produced official Red Data Books (mentioned above). In other countries to date, only NGOs have done so -- Bangladesh IUCN published a series of Red Data Books based on the 1994 IUCN criteria, but without much documentation and rationale (criteria not included). Sri Lanka

IUCN modified the 1994 Red List Criteria and assessed a few groups of animals, but this was not accepted. Zoo Outreach Organisation (ZOO) and ARROS (an NGO from Sri Lanka) assessed all the amphibians and reptiles in 1998 using the 1994 IUCN criteria. They are in the process of reassessing many taxa. Nepal, Bhutan and Maldives do not have red data book programmes. IUCN Pakistan and ZOO have organised two CAMP workshops -- mammals and freshwater biodiversity. The assessments will be published soon.

ZOO has been conducting CAMP workshops in India since 1995 and has to date assessed about 3,000 taxa in 15 taxonomic groups. The first country-wide assessments using the 1994 IUCN criteria were conducted in 1997 where all mammals (470), amphibians (205), reptiles (508), mangrove plants (60), 180 medicinal plants, 23 marine algae, 59 marine fishes, 50 marine invertebrates, 95 soil invertebrates, 327 freshwater fishes were assessed globally (endemics) and regionally (non-endemics).

CAMPs were conducted for other groups both at the global level (endemic orchids of Western Ghats -- 120 spp.; selected endemic medicinal plants of southern India -- 130 spp.), and at the regional / state level (non-timber forest produce species in Nilgiri Biosphere reserve and Madhya Pradesh state -- about 100 spp.).

Regional (South Asian) CAMP workshops for bats, primates, amphibians and non-volant small mammals were organised as a follow up to the 1997 workshops. These CAMP workshops used the 2001 IUCN criteria and the assessments were at the South Asian level. The workshops also collaborated with global efforts such as the Global Amphibian Assessment and Global Mammal Assessment. Several other workshops at the South Asia level have been planned in 2005 and 2006 -- such as for reptiles, freshwater fish/biodiversity and some invertebrate groups.

ZOO along with its taxonomic networks and the South Asian Invertebrate Specialist Group has initiated a red listing compilation for invertebrates to be assessed, evaluated and submitted for the 2005 IUCN Red List. The assessments will not be based on the CAMP format, but will eventually lead to future CAMP workshops on some of the groups.

## **2.8 South Asia II**

Sally Walker finished the South Asian presentations by outlining how IUCN Red List assessments have been used to catalyse conservation action in South Asia (see the PowerPoint presentation "04 CBSG SA PAK adapted for rl venez\_Sanjay Molur" on the workshop CD). This has been done by working with the South Asia Conservation Breeding and Specialist Group (CBSG SA). CBSG's job is to design a process to enable stakeholders to come together and share their information, their fears and their dreams, to analyse problems and work together to find creative solutions. CBSG works by facilitating conservation-related workshops, providing training (in field techniques, taxonomy, species risk assessment methods, workshop facilitation, zoo management and public education), providing access to experts and helping to build networks and partnerships.

The key to CBSG's effectiveness is its methodology and workshop philosophy, both of which centre around participation, acceptance of differences, consensus and conflict resolution, transparency, respect and value of all perspectives and opinions,

acknowledging knowledge in expert's heads, participant ownership of assessments, and the use of CBSG representatives as neutral facilitators of workshops.

CBSG SA is hosted by 2 NGOs – Zoo Outreach Organisation (ZOO) and Wildlife Information Liaison Development (WILD) – and is supported by 10 taxon and disciplinary networks. These networks and the CBSG tools form the basis for an Integrated Conservation Action Model for South Asia, which is made up of 5 elements:

1. Networking
2. Conservation workshops (CAMP, PHVA)
3. Training (field techniques, reintroduction, management, education)
4. Field studies (for neglected and non-charismatic taxa)
5. Education, awareness, lobbying (for non-charismatic taxa)

Areas which are in need of improvement include data deficiency, field expertise, coordination between taxonomic specialists, information exchange between countries within South Asia, public conservation education, and generating interest in lesser vertebrates and invertebrates.

Twenty Conservation Assessment and Management Plan (CAMP) workshops have been conducted since 1995, at which groups of experts come together and, using both published and unpublished data, conduct species assessments according to the IUCN criteria. These workshops can make a significant impact by:

- Providing the impetus to create and verify accurate lists of species
- Offering an opportunity for all experts to participate in red listing
- Indicating obvious steps of action based on a species' status
- Demonstrating the need for more field work, taxonomic work, etc.
- Providing material for education and lobbying within the species' assessments

Each workshop is followed up at the national and regional level with both grassroots and governmentally-directed action: education/awareness programmes and lobbying for all taxonomic groups. Different products are produced for different target audiences, from complete reports aimed at scientists to important points highlighted for policy-makers, from attractive information brochures and articles for the layperson to interactive education packets for children.

Even though the CAMP workshops and the follow-up actions have been quite successful, some problems requiring the IUCN's attention have been identified:

- IUCN specialist group chairs and Red List focal points are often hesitant to accept information from local field biologists and thus the CAMP workshops – even endemic assessments are often not accepted
- Lengthy time lag between assessment and appearance on the global Red List
- Public relations issues: confusion at the national level between global Red List assessments and the CAMP's regional and national assessments

The final problem must be resolved by CBSG SA, by developing better public relations materials explaining the issue. The other two issues are directly related to biases within the IUCN, and must be addressed by both regional and global parties.

## **2.9 Venezuela**

Jon Paul Rodríguez discussed the development and use of the Venezuelan Red Data Book (see his presentation “ponencia taller listas rojas\_ Jon Paul Rodríguez” on the workshop CD).

The Red Data Book of Venezuelan Fauna was published in 1995 by Provita, a Venezuelan NGO, and updated in 1999. Both the first and second editions were prepared using a modified version of the “pre-1994” IUCN criteria. This was the first effort to identify threatened species in Venezuela. The book had quite a strong impact, and resulted in the creation of governmental “official” red lists and the development of new funding sources (Iniciativa Especies Amenazadas) for conservation projects in the country.

The third edition of the Red Data Book is currently being prepared, and is expected to be published in 2005. Assessments have been completed with the 2001 IUCN criteria and the Regional Guidelines, although without any specific formalisation of the Guidelines-subjectivity in their application has been an issue in some cases, and for the most part they have not been applied due to a lack of immigration information. It will be published both as a book and in instalments in a national newspaper in order to increase exposure and readership, totalling 50,000-150,000 copies, the largest circulation of any Red Data Book. This edition includes 595 species, 193 of them (32%) threatened (the last edition contained 367 species, 71 of them (19%) threatened).

The Venezuelan Red List has been used to set conservation priorities for Venezuelan birds (Rodríguez et al. 2004). Species were assigned a value of 1-3 on four axes: extinction risk, degree of endemism, taxonomic uniqueness and public appeal. Conservation priority was then calculated by multiplying the values. Priorities were determined by species (4 species highlighted), by geographic area (4 areas based on number of species and 6 areas based on priority value, all of them in the northern part of the country), and by a combination of the two (species highlighted of high priority within each of the 6 priority bioregions).

A serious issue that requires resolution is the discrepancies that often exist between national red lists and the global Red List (see Rodríguez et al. 2000). Nationally endemic species considered threatened in their country often do not appear on the global Red List, and some national endemics listed as threatened globally are not listed as threatened in their country. This causes confusion and scepticism regarding the validity of national red lists, as the global Red List’s reputation is often trusted over that of national lists. This conflict is generated in large part by the fact that SSC Specialist Groups are organised taxonomically, whereas national/regional assessments are organised geographically. There is thus no straight line of communication between these sectors. Developing a method for incorporating national/regional assessments into global assessments is a vital next step.

## **2.10 IUCN Red List Programme**

Caroline Pollock finished the presentations by discussing the IUCN (“global”) Red List and the relationships between the global and national/regional red lists. She covered three topics:

1. The focus of the IUCN Red List
2. The assessment submission and evaluation process
3. Linkages between the global and national/regional red lists

Caroline emphasized the goals of the IUCN Red List, which are:

- to identify and document species most in need of conservation attention if the global extinction rates are to be reduced
- to provide a global index of the status of biodiversity (Red List Index: monitors changes in categories over time due to genuine status change)

#### 1. The focus of the IUCN Red List

The IUCN Red List focuses on *global* assessments of species across their entire range, without considering national borders. It is focused mainly at the species level, although sub-specific and sub-population assessments are accepted if the species assessment has been completed. It was emphasized that the IUCN assessments reflect extinction risk, *not* conservation priority, and that other factors (biological, political, socio-economic, etc.) must be considered when setting such priorities. The IUCN Red List provides baseline data to monitor the changing status of global biodiversity. Both threatened and non-threatened species are included in revisions of the status of large taxonomic groups, giving a more complete picture of the status of biodiversity and allowing the reasons for movements between categories (genuine status change or otherwise) to be analysed.

#### 2. The assessment submission and evaluation process

Red List Authorities (RLAs) act as peer reviewers of all assessments submitted to the IUCN Red List. They will also carry out new assessments and assure that taxa are re-assessed at least every 10 years. Most RLAs are existing SSC Specialist Groups (SSC SGs), although other groups can serve as RLAs as well (e.g. BirdLife International).

When a SSC SG submits a new assessment, it goes straight to the RLA for evaluation. After being checked and accepted by at least two named evaluators, the RLA focal point submits it to the Red List Programme (RLP) office. If there are any problems, it is returned to the RLA; if not, it is added to the IUCN Red List. Outside assessors can submit a new assessment to the RLP office, where it is checked and either returned if there are problems or sent to the appropriate RLA. If, after evaluation, the RLA disagrees with the assessment, it is returned to the assessor. Evaluated assessments agreed upon by the RLA are returned to the RLP office for a final check and, if no further problems are found, accepted onto the Red List.

There are some problems with this system, especially time lags between submission and acceptance, and several improvements to the system have been suggested. It is under review this year, and may change.

#### 3. Linkages between the global and national/regional red lists

National/regional red lists can contribute to the IUCN Red List if they use IUCN Categories and Criteria; since only global evaluations can be accepted onto the global Red List, only endemic taxa are considered for inclusion. Standard supporting documentation is required for all species assessments, and each submitted assessment must be evaluated by the appropriate RLAs.

If there are disagreements between national/regional and global red lists, regional assessors can contact the appropriate RLA through the SSC; if agreement is reached and the global category subsequently changes, the national red list can immediately include the new global category (even if published before the global Red List is updated). If no agreement is reached, national assessors can request a review by the Red List Standards & Petitions Subcommittee, provided the disagreement is based on the use of the IUCN criteria.

#### CURRENT PROBLEMS:

- Regional guidelines were developed to help communicate global Red List priorities and the appropriate use of IUCN criteria at national levels, but communication from global to national red list coordinators is still an issue.
- Poor communication from national to global red list coordinators; the RLP office often learns of national red lists after they are completed and it is too late to offer advice on the use of the IUCN criteria.
- These communication problems often lead to incorrect and inappropriate use of the IUCN criteria.
- Lengthy time lag between submission of national endemics and their addition to the global Red List due to inefficient RLA system, lack of RLP staff, and poor communication between national and global assessors.

#### POSSIBLE SOLUTIONS:

- Improve national-global communication: some suggestions include development of a National Red Listing website, a national-level electronic discussion group, or access to an online assessment submittal system.
- National training workshops/development of training program
- RLA system under review, hope to reduce time lag problem

### **3. APPLICATION AND EFFICACY OF IUCN CRITERIA IN THE NATIONAL CONTEXT**

Each of the sub-points which follow are issues that came up in the CBD surveys and in the interviews Rebecca Miller conducted with some national red list compilers.

#### **3.1 Do the criteria exaggerate threat status when used at a national level?**

In the CBD survey responses, this was by far the most common concern among national red list compilers and was a prominent reason for not using the criteria. It was agreed, however, that this should not be an issue *if* the IUCN Regional Guidelines are utilised along with the Categories and Criteria. It is important to emphasize that although the *extinction risk* of species should not be exaggerated, the categories may be incorrect if they are interpreted to reflect conservation priority. The Regional Guidelines must be made more apparent, in order to assure they are used in conjunction with the criteria for national assessments, and the difference between risk of extinction and conservation priority-setting must be highlighted.

**Resolutions:**

- In the next edition of the Categories and Criteria, emphasize the necessity of using the Regional Guidelines along with the criteria.
- Make the RG more prominent on the SSC and RLPC websites.
- Update the citation on pg. 8 of the IUCN Categories and Criteria from (Gärdenfors *et al.* 2001) to that for the published Regional Guidelines

### 3.2 Potential improvements to the process of applying the criteria nationally

#### 3.2.1 Using the criteria with little data

Many national red list compilers have stated that the IUCN criteria are impossible to use because they require quantitative data not normally available. It is apparently not clear that the criteria allow for inferences. Taxonomic deficiencies were also mentioned as being problematic, and these two problems often lead to postponing assessments or rejecting them as impossible altogether. We acknowledge that conducting assessments can be quite difficult, and agree that the available data should not be exaggerated in order to force an assessment for a truly DD species. Mark Eaton emphasized that interpreting limited data too liberally could lead to the undermining of the perception of red-listing as a rigorous process. However, although it can be difficult to conduct assessments, especially when relying on inferences and suspicions, in our experience the process of making national red lists actually generates data and stimulates data collection in the field. It was suggested that each of the participating countries write a short summary of how they have conducted assessments with little available data. These examples could be included in the Regional Guidelines and in the conclusions to the scientific paper we will produce evaluating the Regional Guidelines in practice. It is also important to assert that criteria not be routinely eliminated at the beginning of the assessment process, even if it is unlikely the data for those criteria exist for most species.

**Resolutions:**

- Mention in the Regional Guidelines that creating national red lists, especially when little data are available, can lead to data generation.
- Include examples of assessments made with little data in the Regional Guidelines and in the scientific paper to be produced by the NRLAG.
- Emphasize in the Categories and Criteria and/or the Regional Guidelines that criteria not be routinely eliminated at the outset of the assessment process, regardless of data available.

**Actions:**

- Each country submits examples of assessments conducted with little data

#### 3.2.2 Document explaining the theory behind the criteria

It has been mentioned that a document explaining the reasoning behind each criterion (e.g. criterion B, explain why a species with a given extent of occurrence, with fragmentation and fluctuation, is considered threatened) would be useful to explain to politicians and stakeholders why species are threatened without referring to the criteria. We agreed that this would be useful, especially if it contained real examples, but that it is not a priority for the NRLAG at this time. It was mentioned that Georgina Mace has

been preparing a history of the development of the IUCN criteria, which would be very useful to have in order to explain the theory behind criteria. We agreed to request this document and to encourage the RLPC to finalise their training package and make it available online.

**Actions:**

- History of the development of the IUCN criteria that Georgina Mace has been preparing should be completed and released
- RLP encouraged to complete and distribute their training package

**3.2.3 Specific criterion issues: Is B problematic for small countries? Does D result in inaccurate evaluations of risk (small population vs. slow continuous decline)?**

It is often asserted that many species are classified in too high a threat category based on criteria B and D when assessed nationally (see also point 3.1). There is a common perception that the IUCN criteria are inapplicable in small countries because all the species will be considered threatened under criterion B, which is in fact the case when the IUCN criteria are used alone. This is one reason Sri Lanka did not use the IUCN criteria in their 1999 Red List. This issue is successfully resolved by applying the Regional Guidelines and appropriately downgrading, as exemplified by Sri Lanka's 2005 Red List.

There is concern that the IUCN criteria have a propensity to give high risk status to edge-of-range/historically rare species and low risk status to those that have declined substantially but slowly over long time periods yet still remain common, when in fact the slowly declining species may be more at risk of eventual extinction than those that have always been rare. This was reflected in both the Swiss bird Red List (Keller et al. *in press*) and the application of IUCN criteria to British birds (Eaton et al. *in press*), where many peripheral species were considered EN or CR based on criterion D; many species that reach the northern extent of their range in Canada just north of the US border are listed using the D criterion as well. The fact that species suffering slow but continuous declines do not qualify as threatened stems in part from the time frame over which declines are measured; in the UK, for example, they are measured over 25 years rather than 10, and more of these species fall into categories of threat. It was acknowledged that the criteria cannot be altered in order to resolve this issue without changing them entirely, and slowly declining species are not as likely to go extinct in the near future. Ulf Gärdenfors pointed out that the concept that a small but persistent population has a lower extinction risk than a larger and slowly declining one is taxon dependent. One of the strengths of the IUCN criteria is that they are uniform in their application to all species and taxonomic groups: perhaps a whale species listed as CR cannot be compared to a bird species listed as CR, but all CR species are comparable and equivalent *within* a taxonomic group. It was agreed that the small population vs. slow continuous decline issue can be resolved by applying the Regional Guidelines: peripheral species should benefit from immigration and could be downgraded, while species with slow but continuing declines that aren't threatened according to the criteria could be placed in NT to highlight their decline (as has been done in Canada for a number of species) and could be emphasised in setting conservation priorities.

Again, it is **essential** that IUCN criteria be used **together** with the Regional Guidelines when making regional assessments.

### **3.2.4 Problem: Discrepancy between global and national assessments**

Sally Walker expressed concern that national governments often have more confidence in the global Red List than in their own national red list, so that national red lists are often not taken seriously and/or decisions will be made considering the global category (which is often lower) rather than the national one. She emphasized that not enough attention has been given to the fact that national/regional assessments must be conducted in order to understand the status of a species in that country/region. She suggested that a statement be made by the IUCN that national assessments must take precedence over global assessments in legislation and decision-making. However, several others argued that this is not always the case, stressing that the global assessment (as long as both global and national/regional assessments are believed to be accurate) is the most important in cohesive and sensible conservation planning.

In addition, she mentioned that apparently some of the SSC Specialist Groups do not have confidence in the knowledge and experience of local assessors, which means not only that local information is lost to the global Red List but also that local assessors get disheartened when their assessments and their knowledge are not considered valuable. For example, many of the assessments of South Asian amphibians were conducted at the same workshop at which information for the Global Amphibian Assessment was collected, yet for some endemic species the local assessment differs significantly from the GAA assessment. This should not be the case, as the very same information was considered by both parties at the same workshop. It was agreed that Sally and Sanjay Molur would produce a document for the Red List Committee quantifying the discrepancy between the GAA and their national assessments, in order to illustrate the problem.

#### **Actions:**

- Sally Walker & Sanjay Molur to produce a document for the Red List Committee, quantifying the discrepancy between the GAA and their national assessments

### **3.2.5 Formalizing quantitative criteria for Near Threatened**

One of the criticisms of the IUCN Categories and Criteria is that while the criteria for categories of threat are quantitative and objective, no such criteria exist for Near Threatened. Formalising criteria for NT has been suggested, such as specifying how close “close to qualifying for” a threatened category is (e.g. 20-30% decline for criterion A, population size 10,000-15,000 individuals for criterion C, etc.). However, it was mentioned that since NT is not a category of threat, quantitative criteria are less important and might even be disadvantageous. In many cases, the category NT is used to incorporate cultural traditions within countries and to highlight species of concern for reasons other than extinction risk, although this practice has been criticised as being contrary to the extinction-risk focus of IUCN red-listing; several of us agree that it should be discouraged, and that highlighting species in this manner should be a part of the conservation priority-setting process. In addition, non-threatened but conservation-dependent species are often placed in NT. The purpose of NT is to draw attention to species that are of extinction concern but that are not threatened according to the criteria, and by establishing criteria for NT, the IUCN would automatically be setting the parameters by which a species can be considered “of concern”. There is no way to do so in a manner that incorporates all of the potential reasons for concern of all the

different nations of the world *and* that functions in the global ambit. It would be useful, however, to add more real examples to the User Guidelines of species that have been put in NT for various reasons: they nearly meet the criteria for VU, they are conservation-dependent, they are somewhat close to meeting several different criteria for VU but not particularly close to meeting any, etc. It was also mentioned that DD species should receive priority attention in order to gather more information on their status, rather than being largely ignored as they often are (DD being somewhat of a “black hole” category- it doesn’t impart threat and thus the species in the category are often not of conservation priority).

**Resolutions:**

- Add more real examples to the User Guidelines of species that have been put in NT for various reasons
- Emphasise (in the priority-setting paper [see point 5, this document], potentially in section 10.2 of the User Guidelines), that DD species should receive priority attention in order to gather more information on their status

**3.2.6 Slow but continuous decline: not recognised by the IUCN criteria**

This issue was discussed in the second paragraph of item 3.2.3.

**3.2.7 Better definitions and more thorough explanations for criterion B**

In many of the responses to the CBD survey were requests for better, more user-friendly definitions, especially of the terms “location”, “generation length” and “individual”, as well as more thorough explanations for EOO and AOO within criterion B. In workshops and training exercises, detailed explanations of these confusing terms are critical, and more examples of actual assessments should be incorporated into the User Guidelines in order to make the explanations more user-friendly and comparable to “real life”, rather than heavily theoretical. Case studies of particularly difficult taxa would be useful (especially from countries with little published information), including citations of where the data and calculations used in the assessments were found (for example, in India they have had to rely on information for European species in order to infer life histories for many poorly known species of bats and small mammals). It was noted that the User Guidelines are not mentioned anywhere in the Categories and Criteria; a note should be added to the Preamble or addendum sheets developed to add to the booklets (which should also be available for downloading on the Red List website), specifically directing assessors to consult the User Guidelines as part of the assessment process.

Location: It would be useful to include real examples in the User Guidelines to give assessors an idea of what a “location” can be. The phrase “geographically or ecologically distinct” should be placed at the end of the definition; assessors tend to focus on this phrase and define locations based on physically or geographically distinct populations, losing sight of the most important part of the definition: the common threat that can rapidly affect all individuals within one “location”. The definition should be changed to read:

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

Generation length: Include in the User Guidelines a number of real examples of how the generation time was calculated in a range of taxonomic groups.

Individual: The explanation in the User Guidelines is fairly complete and we did not identify any ways in which to improve it.

EOO: This is generally less confusing than AOO. It may be useful to include some diagrams of the  $\alpha$ -hull estimation process.

AOO: This is by far the most problematic term, despite the lengthy explanation in the User Guidelines. It would be helpful to quantify a bit more, especially in terms of grid size, as well as to include a few real examples where it was difficult to calculate AOO (e.g. species living in a river, species with few known sites of occurrence but that “probably” occur in other sites as well). We may want to consider setting a minimum grid size or discouraging the use of grids smaller than a set area; we agreed that the minimum appropriate grid area should be 1 km<sup>2</sup>. Explaining the rationale behind a minimum grid size will be essential. Assessors tend to set the grid size to the minimum possible given the available data, in order to measure the *actual* area a species occupies. It is important to reiterate that AOO is *not* the actual area in which a species is found, but rather represents a smaller scale at which to measure general distribution. The thresholds were not defined to accommodate such fine scales as the area of a river or mountaintop, for example, and using such a scale will result in an over-classification of the species.

**Resolutions:**

- Add a note to the Preamble of the Categories and Criteria or produce addendum sheets to insert into the booklets specifically directing assessors to consult the User Guidelines as part of the assessment process
- Incorporate more examples of how location, generation time, individual, EOO and AOO were calculated in actual assessments into the User Guidelines.
- Rephrase the definition of location, placing the term “geographically or ecologically distinct” at the end of the definition.
- Include diagrams of the  $\alpha$ -hull estimation process for calculating EOO in the User Guidelines.
- Discourage the use of grid squares smaller than 1 km<sup>2</sup> in calculating AOO.
- In the AOO explanation, reiterate that AOO is *not* the actual area in which a species is found, but rather represents a smaller scale at which a species’ general distribution is measured.

### **3.2.8 Species which are in a higher threat category at the global level than at the national/regional level- a contradiction?**

We discussed the possibility of suggesting that species that are in a higher threat category at the global level than at the national level be upgraded to the global category in the national red list, in order to draw attention to the species' global status and emphasise the country's responsibility to maintain healthy populations. We decided that this was inappropriate, as it would be a misrepresentation of the species' actual risk of extinction within the region and it is really an issue for conservation priority setting. When this situation occurs, both the global and the regional assessments should be double-checked, especially whether the impact of external populations has been properly assessed in the regional process. If both assessments are determined to be correct, both should be listed in the regional red list. It may be helpful to include a few examples in point 8 of the Preamble in the Regional Guidelines; some suggestions were the Dugong in Australia and the Boreal Felt Lichen in Canada.

#### **Resolutions:**

- Include examples of species with a higher global than regional threat category (e.g. Australian Dugong, Canadian Boreal Felt Lichen) in point 8 of the Preamble of the Regional Guidelines.

## **4. ANALYSIS OF THE PRACTICAL APPLICATION OF THE REGIONAL GUIDELINES**

### **4.1 Initial reactions and feedback**

Most of the countries represented at the meeting had applied the Regional Guidelines in developing their recent red lists. All of the participants agreed that the Regional Guidelines are well-designed and logical, and that the resulting red lists represent the status of species in their countries reasonably accurately. There were no complaints that the Guidelines are fundamentally flawed in any way. However, the subjectivity of the Regional Guidelines was a serious concern, and many of us felt that the questions in the flowchart in Figure 2 (pg. 12) and Table 1 (pgs. 14-15) are vague and can easily be answered in many different ways. We have suggested many changes in order to clarify these questions, which are described in the following 3 sections.

### **4.2 Should official criteria for the Regional Guidelines be formalised?**

As with NT, many of the criticisms of the Regional Guidelines relate to their lack of quantitative criteria, thus rendering all assessments made with them open to subjectivity and negating the benefits of having used the quantitative Categories and Criteria. Verena Keller expressed concern that expert opinion tends to rule the decisions made when moving through the Regional Guidelines more than actual data does, especially with mobile organisms and in small (and even more so in landlocked) countries. She argued that formalised criteria will make assessments more comparable over time. In Switzerland, quantitative criteria were developed in order to answer the questions presented in Figure 2 (pg. 12) of the Guidelines (Keller et al. *in press*). This formalisation of step 2 in the regional assessment process has been very useful in defending the final classifications.

Verena gave the following example of how they formalised the Guidelines: one of the criteria they used is the status of the species in Europe (SPEC category); if the species is under threat in Europe, the likelihood of Swiss populations benefiting from the rescue

effect is diminished and the question “Is the immigration expected to decrease” was answered “yes”. However, Ulf Gärdenfors pointed out that the SPEC classifications do not fully answer the question “what sort of rescue effect will there actually be?” and do not consider the geographic location of the country within the region. In Sweden the SPEC categories would not be as useful, since the country is separated from much of Europe by the Baltic Sea and, regardless of the species’ status in Europe, immigration resulting in rescue is less likely. Verena mentioned that in cases closer to the Swedish example they did make some exceptions, such as for species with high alpine distributions and limited mobility. Nonetheless, it became clear that establishing formalised criteria for all taxonomic groups across all national circumstances would be impossible.

Rather than formalising the Guidelines, assessors should be encouraged to very thoroughly document how they made their decisions with respect to the questions asked in the Guidelines. When conducting national assessments, assessors should think very carefully about how they will apply the Regional Guidelines and could formalise or standardise the Guidelines if they so choose (so long as the original intent of the Guidelines is not altered, as undesirable modifications may result from a poorly-designed formalisation process). The reasoning behind each decision in the process of moving through the Regional Guidelines must be explained so that the next person to conduct the assessments will be able to repeat the process. This should be included as an additional point in section V, “Documentation and Publication”, of the Regional Guidelines. We acknowledged that everyone, including the same person at different times, will interpret even identical data in different ways, so some subjectivity is unavoidable; this is equally true for the Categories and Criteria. This is precisely why thorough documentation of the decisions made in each step is required.

We recommend changing the first sentence in point 5 (pg. 4) of the Preamble to read: “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 Regional Guidelines. Variable interpretation of certain definitions and applications of the Guidelines is inevitable, and these are left to the discretion of regional Red List authorities.”

Finally, local assessors should be encouraged to explain the reasons for category changes within their national red list documentation, in order to distinguish between species that changed category due to genuine status change from those that changed category as a result of new information, a different interpretation of the data and/or the criteria, taxonomic changes, etc. The Red List Indices could be given as one example of how to evaluate trends using species that have genuinely changed status. These additions could be inserted as a new point within section V, “Documentation and Publication”, of the Regional Guidelines.

**Resolutions:**

- Encourage assessors to very thoroughly document the reasoning behind each decision made in the process of moving through the Regional Guidelines, so that the next person to conduct the assessments will be able to repeat the process. This should be included as a new point in Section V, “Documentation and Publication” of the RG.
- Change the first sentence in point 5 (pg. 4) of the Preamble to read: “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 Regional Guidelines. Variable interpretation of certain definitions and applications of the Guidelines is inevitable, and these are left to the discretion of regional Red List authorities.”
- Encourage assessors to document the reasons for changes in category between red lists; give Red List Indices as an example of how to evaluate trends in threat status. These could be inserted in a new point within section V, “Documentation and Publication”, of the Regional Guidelines.

**4.3 Methods for decreasing the subjectivity of the Guidelines: Clarifying the regional assessment process**

After much discussion, it was concluded that the most practical way to reduce the subjectivity inherent in non-quantitative guidelines is to improve the consistency with which the Guidelines are applied (across species, taxonomic groups, and through time). Many terms in the Regional Guidelines are vague and open to interpretation, and several questions posed in the current Figure 2 are difficult to answer, even for countries and taxonomic groups for which there exist large amounts of data. As a case in point, Mark Eaton illustrated several issues encountered in applying the Regional Guidelines to birds of the UK, one of the most studied groups in the world and thus what should be a relatively “easy” group to assess. Improving consistency in the application of the Regional Guidelines involves:

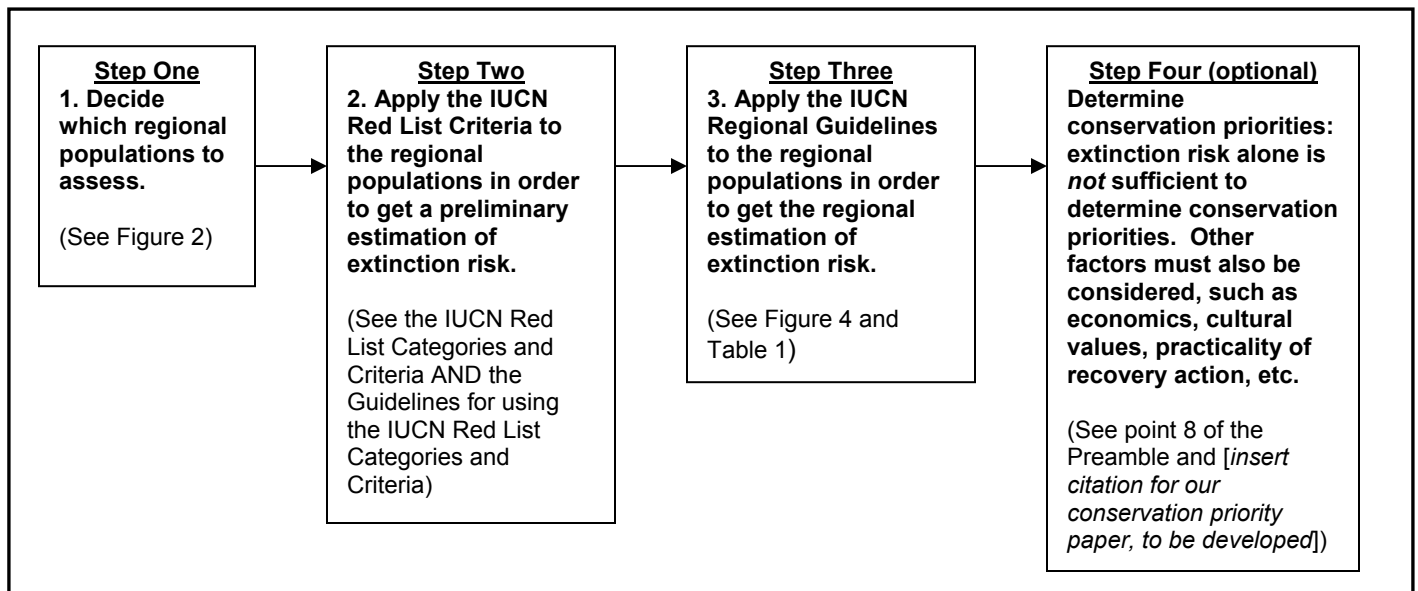
- Improving the definitions of vague terms (e.g. “significant” immigration, “capable of reproducing”)
- Providing more examples, especially of species that were difficult to assess and examples from regions with little available data
- Giving advice on where to find the data required to answer the questions posed in the Guidelines (e.g. provide examples of where the test countries have found such information)
- Making it as easy and straightforward as possible to move through the different steps in the Guidelines
- Visually clarifying the relationship between the Regional Guidelines and the Categories and Criteria
- Emphasizing the necessity of using the Regional Guidelines when evaluating extinction risk at the sub-global level

We have recommendations for each step in the regional assessment process. In many cases we changed the wording, tables and/or figures in the current Regional Guidelines; in others we added new phrases and figures. We have developed two new figures and restructured and renumbered the current Figure 2, bringing the total number of figures to four:

- Figure 1: The complete regional assessment process
- Figure 2: Determining which regional populations to assess
- Figure 3: Structure of the categories at regional level (current Figure 1 in the Regional Guidelines)
- Figure 4: Applying the IUCN Regional Guidelines after assessment using the Categories and Criteria (re-structured version of the current Figure 2).

Table 1 has the same purpose as in the current Regional Guidelines, but the content has changed significantly. It is and will be important to emphasize that these changes are in design only; the Regional Guidelines themselves have not been changed, and assessments made using the current Guidelines will be entirely comparable with those made using the “new” ones.

In order to fully clarify the entire regional assessment process, including which documents should be referred to and when, we suggest inserting the following figure as Figure 1 in section IV, “The Assessment”, in a new point 1 in which the general outline of the assessment procedure is detailed:



**Figure 1.** The complete process of assessing the extinction risk of species at the regional level. It is important to follow each step (through step 3) in order and refer to all listed documents in order to obtain correct regional assessments of extinction risk. In step 2, 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 2. Likewise, breeding populations may be affected by events in, e.g., wintering areas, which must be considered in step 2.

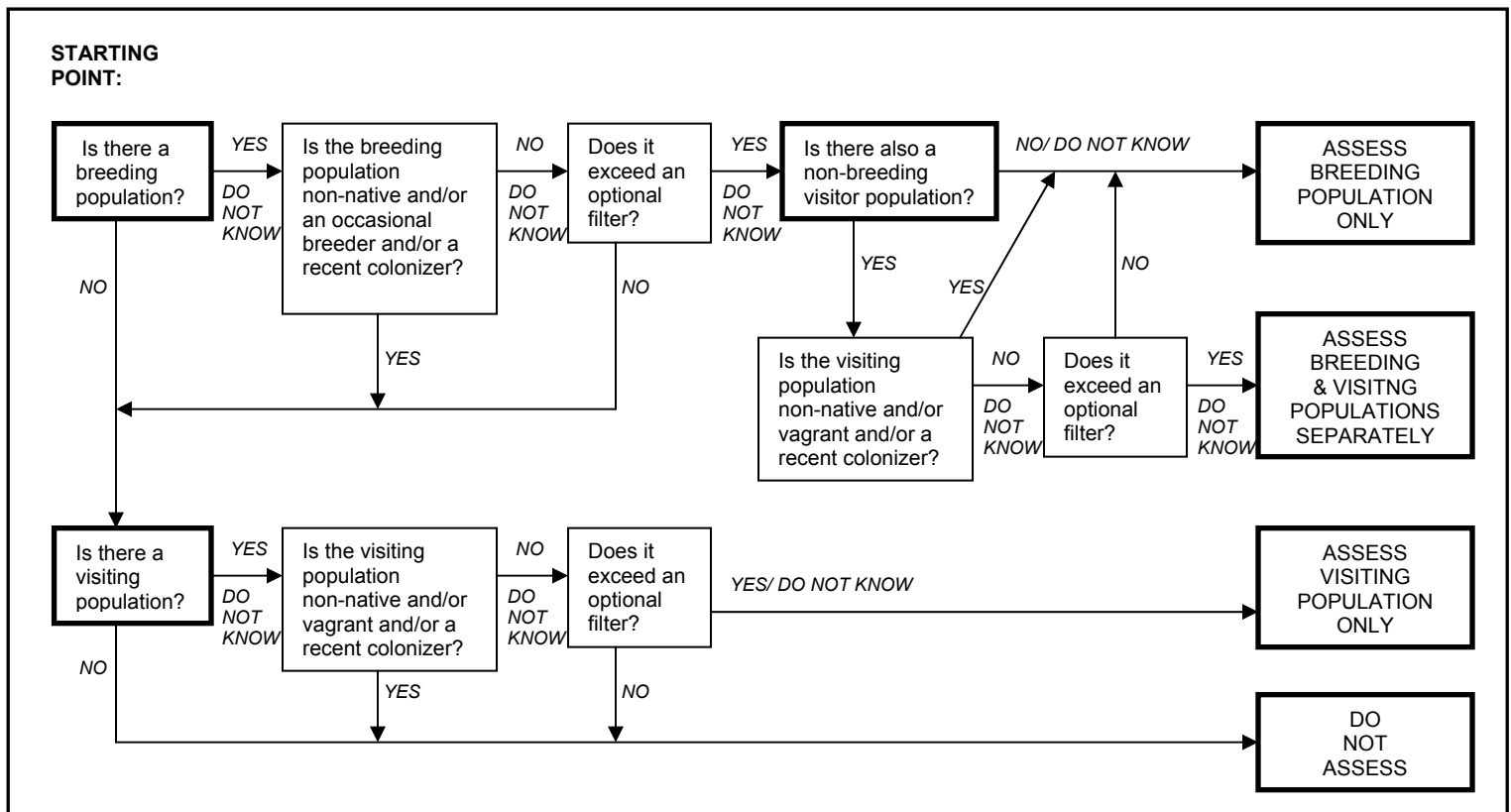
All references within the text of the Regional Guidelines to the current “second step” should be changed to the “third step”, and references to the current figures should be updated to refer to the appropriate new figure.

**Resolutions:**

- Replace the current figures in the Regional Guidelines with the four figures (two new, one modified, and one old) outlined in this document.
- All references within the text of the Regional Guidelines to the current “second step” should be changed to the “third step”, and references to the current figures should be updated to refer to the appropriate new figure.
- Insert the above figure as a new Figure 1 into section IV, “The Assessment”, of the Regional Guidelines, under a new point 1 in which the general outline of the assessment procedure is detailed.

**4.3.1 Determining which taxa to assess**

The confusion in conducting regional red list assessments begins with determining which taxa and which regional populations to assess. Differentiating between visiting taxa, breeding taxa, occasional breeders, etc., can be quite complicated, especially when there are several populations of the same species which fall into different categories. It is important to note that the manner in which a species is divided into different populations (breeding, visiting, etc.) can substantially affect its final classification. In order to clarify the issues that must be considered in this step, we developed a new flowchart to be inserted into the “Taxa to be assessed” point of section IV, “The Assessment”:



**Figure 2.** Step One: flowchart to determine which taxa and populations to assess. The chart should be followed by answering each question, beginning in the top left corner. For definitions and explanations of terms (e.g. occasional breeder, recent colonizer, optional filter) see The Assessment, point 1: “Taxa to be assessed” and the Definitions.

In addition to the flowchart, we recommend working the following points into the text of the sections “Taxa to be assessed” and “The categories”:

1) Paragraph 3 regarding visiting and vagrant taxa should be eliminated and replaced with the following three paragraphs:

“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 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 non-breeding population is present
- are clearly identifiable based on phenotype
- differ greatly in size- if the breeding population is very small relative to the non-breeding population, the two populations can be assessed separately, and although data collected on the non-breeding population will include individuals from the breeding population, any influence of these on the assessment will be marginal. However, if the non-breeding population is relatively small compared to the breeding population, it should be filtered from assessment before this stage (see next paragraph).

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 1, Example 1).”

2) The following two paragraphs should be added to the last paragraph of the “Taxa to be assessed”:

“Due to the many different geographic contexts in which regional assessments will be conducted, it is impossible to define a specific recommended filter level. It should be kept in mind that if the threshold above which species are assessed is set too low, many marginal species will be considered highly threatened due to their small population sizes. For examples of how filters have been set, see Annex 1, Examples 2 & 3.

Once the threshold for assessment of a taxon is determined (e.g. the fraction of the global or continental population of a species that is present in the country, predictability that a visiting species will be present in any given year, etc.), if the regional assessors would like to assign a threat category to a species that falls below that threshold, the global threat category only should be used. If there is no global threat category, no category should be given to the species.”

3) All species should be assessed for which an important part of any stage of their life cycle (breeding, wintering, migrating, etc.) takes place in the region.

4) The global threat category should be listed for all globally threatened species present in a region, regardless of whether those species are assessed at the regional level.

5) On page 11 of the Regional Guidelines, in the section “The categories”, the second sentence under number 2 should be eliminated and replaced with:

“If a taxon is (globally) EW but extant as a naturalised population within the region, the regional population should not be evaluated according to the IUCN Criteria but may still be considered of conservation importance 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.”

The first sentence on page 5 of the User Guidelines, under section 2.1.3, should also be changed so that it ends with the word “globally”, eliminating the phrase “but they may be assessed regionally (see Regional Guidelines, page 11)”.

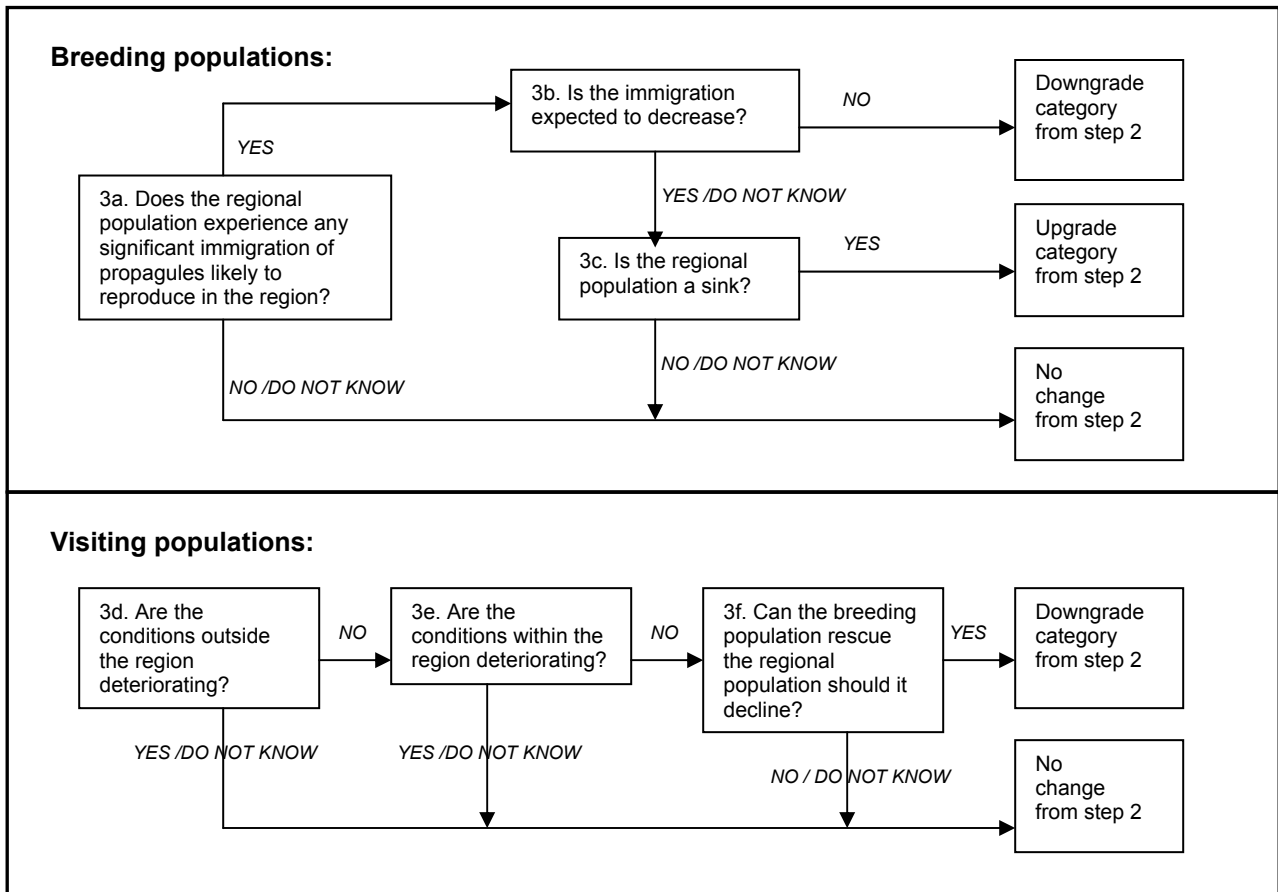
These changes stem from the fact that once a species is Extinct in the Wild, it has been completely eliminated from its natural habitat and its ecological context within that system is irreversibly altered, regardless of whether it is present as a naturalised population in another region. Assessing naturalised populations of species that are EW has the potential to create incentive for permitting or minimising the significance of extinction within a species’ natural range, as long as it is present elsewhere in the world. Naturalised populations located outside the natural range are indeed important for conservation and that regional and global conservation priority should be highlighted, but they should not be assessed as if they were benign introductions when their introduction was in fact no way conservation-related.

**Resolutions:**

- Insert the new “Figure 2” into the “Taxa to be assessed” point of section IV, “The Assessment”.
- Incorporate points 1-5 into the text of “Taxa to be assessed” and “The categories” in the Regional Guidelines, replacing existing text and adding new paragraphs as needed.

#### **4.3.2 Applying the Regional Guidelines: re-working current Figure 2 & Table 1**

After determining which taxa to assess (using the new Fig. 2), regional assessors will have distinct breeding and visiting populations to evaluate. As the regional portion of the evaluation process is different for each of these populations, we recommend separating them in the flowchart illustrating the procedure to follow. Having distinct flow charts for each type of regional population will reduce the likelihood of error in the assessment process and clarify the procedure. We developed a new figure, “Figure 4”, to replace Figure 2 in the current version of the Regional Guidelines (points 1 and 2a were eliminated since they have been incorporated into previous figures):



**Figure 4.** Step Three: conceptual scheme of the procedure for adapting the preliminary IUCN Red List category to the regional level (numbers and letters reflect the different sub-steps within Step 3). See Table 1 for further details on the procedures to follow, especially how to answer the questions and examples of where to find the information needed to do so.

Although we did not attempt to improve the chart for the visiting populations, we agreed that this portion of Figure 4 is rather insufficiently elaborated and does not include all of the factors which influence the potential rescue of a visiting regional population. We recommend re-working and improving the visiting population portion of the chart, so that a more thorough assessment of their regional status may be conducted. This will require a separate workshop dedicated specifically to this theme, where examples from many different countries and migratory contexts should be evaluated.

In order to clarify the relationship between the current Fig. 2 (our new Fig. 4) and Table 1 and to reduce the uncertainty involved in answering the questions posed in the figure, we incorporated those questions into Table 1 and elaborated the explanations under each point:

**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. 4). In answering the questions in the boxes in Fig. 4, refer to each of the points and their accompanying questions below.

| Questions to consider   | Comments  |
|---|---|
| <p><b>3a. Does the regional population experience any significant immigration of propagules likely to reproduce in the region?</b></p> <p><b>Likelihood of propagule migration:</b><br/>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><b>Evidence for the existence of local adaptations:</b><br/>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?</p> <p><b>Availability of suitable habitat:</b><br/>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>The regional population may likely experience some immigration from neighbouring regions, but in order to determine if that immigration is “significant”, several factors must be considered:</p> <p>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 number of individuals arriving in the region is 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 1, Example 4)</p> <p>If regional populations express physical, behavioural, genetic, or other adaptations to local conditions that enable them to survive and/or reproduce within the region and that the extra-regional populations do not express, it may be unlikely that individuals from extra-regional populations would be able to survive and/or reproduce in the region. The extra-regional population would therefore be unable to rescue the regional population, and the category should be left unchanged (See Annex 1, Example 5).</p> <p>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 at which immigrating individuals can successfully establish themselves. Thus, immigration from outside the region will not decrease extinction risk and the category should be left unchanged.</p> |
| <p><b>3b. Is the immigration expected to decrease?</b></p> <p><b>Status of extra-regional populations:</b><br/>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</p>   | <p>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, downgrading the category is appropriate. If the</p>  |

they produce an appreciable amount of emigrants and will continue to do so for the foreseeable future?

taxon is currently decreasing in neighbouring regions, the “rescue effect” is less likely to occur, so downgrading 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 global Red List (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 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.

### 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, upgrading the category may be appropriate. Actually, 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 impart a strong suspicion that the population is a sink AND immigration is expected to decrease, it may be appropriate to upgrade. All reasoning must be fully explained in the documentation.

### 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 where the taxon utilises resources; 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 global Red List (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 and the network of Conservation Data Centres/Natural Heritage Information Centres; proxies from which the status of the taxon outside the region can be inferred, such as habitat status, estimates of annual harvest, population trends in neighbouring regions, etc.  |
| <p><b>3e. Are the conditions within the region deteriorating?</b></p> <p><b>Environmental conditions inside the region:</b><br/>Are the <b>population status</b>, habitat or other conditions of the taxon deteriorating, or are they 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 two. Consequently, such conditions should not be accounted for once again in the third step, thus leaving the category unchanged.</p>  |
| <p><b>3f. Can the breeding population rescue the regional population should it decline?</b></p> <p><b>Plausibility of a rescue effect:</b><br/>Is the taxon globally very sparse, 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 to likely meet criterion D?</p> | <p>If the breeding population is very restricted, <b>it will not be able to rescue the regional population visiting the region</b>, thus leaving the category <b>for the visiting regional population</b> unchanged. If, on the other hand, the breeding population is quite substantial and conditions are not deteriorating neither within nor outside the region, <b>there is a higher chance that the breeding population will be able to rescue the regional population.</b> The probability of regional extinction is thus less likely than suggested by the criteria in step two; consequently, a downgrading may be appropriate.</p> |

In addition, the last sentence of the second paragraph on pg. 16 of the Regional Guidelines, which reads “Note that taxa which are globally very rare...any notable rescue effect within the region”, should include a reference to step 2g (the new step 3f) in both Fig. 2 (the new Fig. 4) and Table 1.

- Resolutions:**
- Replace the current Figure 2 with the new Figure 4
  - Improve the visiting population section of Figure 2 (new Figure 4) in a workshop dedicated specifically to this theme.
  - Incorporate the changes illustrated above into Table 1
  - Include a reference to Figure 2 (the new Figure 4) and Table 1 in the last sentence of paragraph 2, on pg. 16 of the Regional Guidelines.

**4.3.3 Establishing more defined guidelines for the number of steps to up- or downgrade**

Although we agreed that formalising the number of steps to up- or downgrade is not practical, the Regional Guidelines should include a statement emphasizing the need to document the reasoning behind such decisions, in order to increase their transparency.

It is not only important to be systematic in using the flowcharts, but also in determining the number of categories to up- or downgrade. We strongly agree that in nearly all instances, the category should not be changed by more than one step. We therefore recommend that the third paragraph on pg. 13 be changed to read:

“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 Vulnerable (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 steps may be appropriate (see Annex 1, Example 6). Likewise, if the region is very small and not isolated by barriers from surrounding regions, downgrading by two steps may be necessary. In extremely rare cases, a species may be downgraded by more than two categories, but in most situations this will not be appropriate. In principle, species should not be downgraded below the global category.”

We also recommend that the following statement be placed at the end of the Breeding Populations section in point 3, “The Assessment Procedure”, after the paragraph on upgrading:

“Thorough documentation of the reasoning behind changing the category, including all decisions made in the process and the number of categories up- or downgraded, is required. Heterogeneity in the amount and type of available information is unavoidable; for this reason it is particularly important to be as consistent as possible between taxa when up- and downgrading, and to document thoroughly the decision-making process.”

**Resolutions:**

- Modify the third paragraph on pg. 13 of the Regional Guidelines as outlined above.
- Add the second statement outlined above to the very end of the Breeding Population section in point 3, “The Assessment Procedure”

#### **4.3.4 Miscellaneous**

1) In many cases (if not most), solid data to answer the questions posed in the Regional Guidelines are unavailable and the questions cannot confidently be answered “yes” or “no”. However, even when the data are unavailable there is often enough general information to lead an assessor to believe the answer to be “probably” or “most likely”. Nonetheless, lacking certainty most assessors will act conservatively and select “no/do not know”, thus potentially ignoring important, though not scientifically tested, information.

It may be beneficial to suggest that when assessors are confronted with a decision for which they have no solid data to guide them, they determine if the answer is *likely* or *not likely* and then opt to move in the “yes” or “no” direction accordingly. This will reduce the tendency to choose “no/do not know” even when the available general information indicates that the answer is most likely “yes”. In the Categories and Criteria and the Regional Guidelines, the terms “yes” and “no” could be changed to read “yes/probably” and “no/probably not”.

2) Many of the common questions that arise during the assessment process could be addressed by expanding and elaborating the examples presented in the Regional Guidelines. The decisions made and the information available at all stages in the process should be presented, so that assessors can identify where the information came from and how it was used to inform the decisions. This includes any filters placed in selecting the taxa to assess, the information that lead to the preliminary category assigned using the IUCN Categories and Criteria (explain how the % of population decline was determined, etc.), the information used and decisions made when moving through the Regional Guidelines (each question in the flowchart should be answered in order), and the number of categories up- or downgraded. The reasoning behind each of the decisions should be thoroughly explained, in order to illustrate descriptively how to conduct assessments in different contexts and provide potential solutions to the issues that come up in the assessment process. It is most likely more useful to have fewer detailed examples than many vague examples.

3) Ruben Boles brought up the fact that for species which migrate through a region, at any one time only a fraction of the total number of visiting individuals will be present in the region. This is especially true for species which migrate over a long time period. However, most estimates of the number of individuals probably take place over a short time period, therefore only capturing a portion of the total number of visitors. If these estimates are incorporated directly into the red listing assessments, the total number of individuals that visit the region over the migration period will be underestimated. It may be worth incorporating a statement advising against underestimating population size in this manner into the User Guidelines, and recommending a method for making a better estimate of population size in such a case.

4) Ulf Gärdenfors voiced concern over the symbol used to identify species that have been up- or downgraded. Several people, including the Swedish team, have realised that there is no ASCII sign for the currently-recommended symbol, an elevated black dot (°). Consequently, it is difficult to use in certain contexts, such as in a database. Ulf therefore suggests that the recommended symbol be changed to a degree sign (°).

**Resolutions:**

- Consider advising assessors that when confronted with a decision for which they have no solid data to guide them, they determine if the answer is *likely* or *not likely* and then opt to move in the “yes” or “no” direction accordingly.
- Expand the examples in the Regional Guidelines to include all of the information available, the decisions made and the reasoning behind each decision in each step of the assessment process.
- Potentially include a statement in the User Guidelines highlighting danger of underestimating number of mature individuals for species that migrate through a region, by conducting estimates over a short time period and counting only a fraction of the number of individuals that visit the region over the migration period; recommend a method for making a better estimate of population size in such a case.
- Change the currently-recommended symbol for indicating species that have been up- or downgraded from an elevated black dot (°) to a degree sign (°).

## **5. USE OF THE IUCN CRITERIA AND NATIONAL RED LISTS IN SETTING CONSERVATION PRIORITIES**

It has been widely recognised that a range of factors must be considered in establishing conservation priorities, as opposed to extinction risk alone (e.g. Avery et al. 1994, Gärdenfors 2001, Rodríguez et al. 2004, Eaton et al. *in press*, Keller and Bollmann 2004). Financial, cultural, practical, biological, ethical and social factors, among others, play important roles in the ultimate success or failure of conservation action plans and programs, and many species with high regional extinction risk may actually fall quite low on a list of species of regional conservation concern. Alternatively, species with a low regional extinction risk may be of very high conservation priority. This point is emphasised in the Regional Guidelines, yet there is still a tendency in many countries to associate extinction risk directly with a need for conservation action, and thus to establish conservation priorities based primarily, or even solely, on the national Red List.

In order to draw further attention to the fact that extinction risk, and therefore Red List status, should be just one aspect considered in setting conservation priorities, we agreed to produce a scientific paper reiterating the relationship between these two activities, exploring certain problematic issues and outlining a series of examples of how different test countries have approached priority setting. Integral to the paper is the notion that red listing is part of a larger process that has not been completed once the red list is finalised; red listing and priority setting are indeed related, but are not one and the same. A key point will be highlighting the fact that priority setting is fundamentally subjective: any list of priority species is dependent entirely on which criteria are chosen for incorporation into the priority-setting scheme, and there is no single correct way to select criteria or to set up the scheme.

We devised a general format for the publication and discussed in moderate detail each of the main points. A summary of the points and examples we discussed for inclusion in the paper follows:

The IUCN Red List Categories and Criteria have become widely respected as an objective and systematic method for determining species' extinction risk. As a result of this broad acceptance, countries around the world are increasingly interested in utilising the criteria to develop national lists of threatened species; this interest has led to the development of the IUCN Regional Guidelines, which adjust the criteria to fit a regional (and thus national) context. Following the growing global interest in preserving biodiversity, international treaties and conventions such as the Convention on Biological Diversity have established goals for reducing the rate of biodiversity loss, and national Red Lists serve as indicators that can be used to measure progress toward reaching these goals. However, in order to truly preserve biodiversity, threatened species must be recovered. Consequently, countries need conservation priority-setting systems to help them determine how to best spend limited conservation resources (both human resources and funds) to reduce the extinction risk of their threatened species.

Although extinction risk is a logical component of any conservation priority-setting system, it should not be the only component. Yet, many countries around the world have incorporated their red lists directly into conservation legislation, thus limiting their priority-setting systems to only one factor: extinction risk. For a number of reasons, many species with high regional extinction risk may actually fall quite low on a list of

species of regional conservation priority. At the global level, extinction is taboo, a tragedy to be avoided at all costs. At the national or regional level, however, extinction is not necessarily a worst-case outcome. There may be species that have an extremely high risk of regional extinction, but that would not benefit from any specific conservation action. For example, if a country is home to a very small percentage of the global or continental population of a species, that country has less responsibility for protecting that species than would a country that houses a large proportion of the global population, especially when the species is stable in the continent/region. Or, there may be a highly threatened species for which no conservation actions can be taken; perhaps the threats simply cannot be addressed. On the other hand, greater impact from conservation action may be achieved by preserving a less threatened species that has a higher chance of long-term survival than a critically endangered species whose chances of preservation are slim.

This is not to say that local extinctions are acceptable or unavoidable. Extinction within a region is still extinction, even for species widespread outside the region. On the contrary, the purpose of conservation priority-setting is to determine which species are most in need of conservation action, which will benefit most from such action, and for which the country has the most responsibility for protecting, in order to distribute conservation funds so that as many species may be conserved as possible.

There are many factors that can be considered in evaluating conservation priorities and determining need for action, which reflect a wide variety of values and practical limitations. Such factors include, but are not limited to:

#### General factors

How threatened is the species within the region?

How threatened is the species globally?

Does the country/region have an international or global responsibility to protect the species (i.e. what proportion of the global population is found in the region/degree of endemism)?

Is there enough data to make sensible decisions?

Has the species always been rare?

Are the threats clearly identifiable? Can they be addressed?

What is the degree of understanding of the species' ecology?

What is the cost of action?

Is the species a good flagship species?

Does the recovery of the species require species-specific measures, such as a recovery plan, or would general conservation measures – such as more forest reserves, changed environmental subsidies, reduced pollution, or changed general legislation – be sufficient?

Could the species' conservation requirements be met by meeting those of another species?

Are there conflicting issues? (e.g. wind turbines for renewable energy vs. raptor conservation)

Are there other species that could benefit from action for this species?

Are the expertise/skills required for action available?

What is the likelihood that the species could re-colonize the country, should it go regionally extinct?

Under what time frame must conservation action be taken (i.e. is there time to follow standard procedures and send recommendations through committees, etc., or must action be taken immediately)?

#### Societal Values

Public enjoyment (of the species)

Educational value

Potential economic value of the species

Potential economic loss (by curtailing activities in order to benefit the species)

Intrinsic appeal

#### Characteristics Intrinsic to the Species or its Ecology

Taxonomic uniqueness

Is it a keystone species?

Does the species supply any ecosystem services (e.g. pollination, biological control)?

#### Other

Governmental involvement

Is the species listed in any national or international agreement or legislation that requires the country take conservation action for the species?

The list of priority species will be very different depending on the purpose of the priority setting exercise (e.g. to conserve biodiversity, to protect cultural heritage, etc.); a priority-setting system can be created that will result in *any* species being a priority, and is inherently subjective. A country could choose any of the above factors, or others, when designing their priority-setting strategies, depending on the goals of those strategies. Given the unique geographic, cultural and political climate of each nation, such factors will undoubtedly be combined and weighted in infinite different ways. Some examples of different approaches are:

**UK:** For bird species in the UK, extinction risk is not an overriding concern, as they have suffered few extinctions in the past century. The UK national threatened species list is therefore not a starting point for conservation priority setting activities, which tend to focus more on declining populations that are not necessarily likely to go extinct in the near future, including those which remain common and widespread despite large declines, and those which have stable populations but which are much depleted compared with historical levels (Gregory et al. 2002).

**India:** Under the Indian Wildlife Protection Act, the national Red List is a starting point from which priority species are determined, and as such, extinction risk factors largely (but not solely) into the ultimate list of priority species.

**Sri Lanka:** One of the groups which receive priority in Sri Lanka are trees of religious value; whether or not they are threatened with risk of extinction, they are valued for their religious and cultural significance and therefore factor highly on the list of priority species for preservation.

**Venezuela:** In Venezuela, a system for determining conservation priorities for threatened birds was devised (Rodríguez et al. 2004) which included extinction risk, degree of endemism, taxonomic uniqueness and public appeal as the factors taken

into consideration. By considering the distribution of threatened birds along with their priority score, this system resulted in both a species-based and a bioregion-based series of priorities. Combining the top-ranking species and bioregions led to an overall definition of priorities for conserving threatened Venezuelan birds.

**Canada:** Under the federal Species at Risk Act, the COSEWIC list is the basis (which may be altered by the government) for the list of species that are protected under legislation. Although in general it should be considered best practice to give priority to species with a large proportion of their global population in a country, there are exceptions to this rule. The Great Basin desert and the Carolinian Zone just cross the southern border of Canada, so many species present in those ecosystems have very limited distributions within the country, although they are (or were) widespread in the United States. Human population densities in the southern part of Canada are quite high compared to those in the central and northern parts, and many of the Great Basin and Carolinian species are highly threatened throughout their ranges due to development pressures on their habitats. In contrast, many of the more typical Canadian species, for which the country has a larger responsibility to protect, are distributed in the remote areas of the north and are not as threatened. As the Canadian priority setting-system considers both extinction threat and percentage of the global population found in the region (among other attributes), some species for which Canada has less global responsibility end up high on Canada's list of priority species due to the high threat of extinction.

**Switzerland:** For birds in Switzerland, species of national conservation concern were determined by combining extinction risk (threat status), international importance and historical rarity (Keller & Bollmann 2004). On the basis of this list those species were determined that needed specific recovery programmes.

**Sweden:** In 2003, the following procedure was implemented in order to derive a list of the 365 most prioritised species targeted for recovery plans. 3954 species on the Swedish Red List, representing a variety of taxonomic groups including vertebrates, invertebrates, vascular plants, bryophytes, fungi, lichens and algae, were analysed according to a number of factors. In the first step a *Base priority* was identified, which was calculated by assigning values to the National Red List category, Global Red List category and proportion of the European population occurring in Sweden, and adding these values to calculate a total for each species. This *Base priority* was then combined with three other parameters: 1) Possibility of re-colonization should the species go regionally extinct (reflecting the degree of reversibility of a regional extinction), 2) Degree of indigenosity of the taxon in the country and 3) Possibility of increasing the population within 20 years by taking conservation measures. The latter two variables were assigned values between 0 and 1 and were calculated multiplicatively. Thus, if the species was introduced by man recently or there were no possible measures that could increase the population within a time period of 20 years the species would not be considered for any recovery plans (both criteria would have been given values of 0). The resulting list was computationally compared, species by species, to the environmental preferences and distribution of all red-listed species according to a data base where such properties were recorded. The objective was to identify where measures for the thus far most prioritised species would benefit, or detriment, other species. As a result, the list was again re-ordered. At last, when the 365 most prioritised species had been identified, the urgency for measures for each species was identified. In some cases, measures

had to be taken very soon in order to rescue a species even though the overall, long-term conservation priority was somewhat less than for another species. Thus, within the list of identified priority species for recovery plans, beginning with those for which measures must be taken quickly was recommended. Consequently, although the process involved quite a substantial amount of subjective judgements, it guaranteed that every species on the Swedish Red List, irrespective of taxonomic group, was considered for a recovery plan and not *a priori* disqualified or left out because it was small, obscure or had no advocates.

Incorporating these attributes into priority-setting systems often involves assigning them numerical values, which is another point at which subjective decisions must be made. The degree of endemism, for example, is a very important factor in determining priorities, but at what taxonomic level do you draw the line (e.g. species, subspecies, variety, etc.) and what value do you assign varying degrees of endemism? In Sweden, this issue was resolved by assigning endemic species a value of 1 and endemic subspecies a value of 0.5. From these and other values, a total was calculated which determined the “importance” in terms of degree of endemism.

Another factor which must be evaluated at different levels is taxonomic uniqueness. This issue, in part, involves the question: should different subspecies within the same country be evaluated separately? In Canada, a large country with many different habitats and areas with differing degrees of development, species are often evaluated at the subspecies level, as many are made up of one common and widespread subspecies and another much rarer subspecies. In this context, taking account of such differences is considered important in order to highlight and prioritise for the rare subspecies. Canada also has a number of species with naturally highly disjunct, isolated populations whose main ranges are in another part of Canada and/or the US. These disjunct populations are usually assessed separately because, due to their isolation, the threats they face and their conservation status differ from those in the main range. Although it may be appropriate to consider different subspecies or populations when setting conservation priorities, there is no particular population or taxonomic division at which the line “should be” drawn. Whether drawn at species, subspecies, population, or a combination of them all, the most important factor to consider is isolation, both geographic and taxonomic.

It is important to note that when priority species are determined by assigning numerical values to different factors and calculating a priority score, Data Deficient (DD) species are often located low on the list of priority species because they are not “threatened” and do not receive a value for their threat status. In order to highlight the particular need for additional knowledge regarding the status of these species, in Sweden the same value is given to DD species as to Endangered species when calculating priority status. Although this example uses IUCN Red List categories, the problem is common to many extinction risk assessment procedures and the solution is easily applicable to other systems.

The actions required to protect priority species will very much depend on which factors are included in the priority-setting equation. In conserving biodiversity, many species can be protected under general actions, such as national parks, nature reserves, species protection legislation, etc. Other species, however, will require more specific, directed measures, which are often more expensive and labour intensive. Determining which kinds of measures species require for protection is an important part of priority

setting; if a species can benefit from a general action, it is senseless to spend scarce funds on special action plans for its preservation. For example, an approach being encouraged in the UK is the formation of grouped species actions – prioritising groups of species that can benefit from a generic action.

One of the best conservation investments is often simply to look for species. Especially in less-explored countries (e.g. Venezuela, India) and for less well-known taxonomic groups (e.g. invertebrates, fungi) around the world, when searches are conducted for apparently rare species they are frequently found to be more widespread and abundant, and therefore less threatened, than previously thought. Ironically, when a species is listed as threatened and then later found to be quite common, it is often considered an embarrassment for the listing agency and an indication that the listing process is dysfunctional. However, down-listing species should be considered an achievement and the additional knowledge that led to the down-listing celebrated. One of the goals of conservation is to reduce the level of perceived threat and thus risk of extinction to species. Conducting searches and realising a species is more common than suspected is one way of doing that. Central to this notion is the fact that red lists are dynamic and should change. Some species will improve in status, others will decline, but the red list will never be finalised.

Obviously a lot of information is missing from this summary, which needs to be refined and re-organised, especially regarding the examples from each country. The information included here is only that which we discussed at the meeting, and the examples are only those that came up in our discussions. A more detailed outline will be sent out for comments once it is developed, as will the final draft before it is submitted. Each of the meeting participants will be actively involved in the development of the publication.

**Actions:**

- Produce a scientific paper authored by all participants discussing the use of national red lists in conservation priority setting (preferred journal: Nature).

## **6. FUTURE DEVELOPMENT OF THE NATIONAL RED LIST ADVISORY GROUP**

Channa Bambaradeniya suggested that representatives from countries that have prepared national Red Lists become official members of the NRLAG, and that this membership could rotate or change every few (e.g. 2) years.

### **6.1 Development of an online information warehouse**

There has been much discussion of the need for improved communication and information exchange, both between the IUCN and national red list compilers and between national compilers from different countries. This need is recognised by the IUCN as well as by many national assessors. One of the most problematic issues in using the IUCN Regional Guidelines is obtaining information on the status of species outside of the country conducting the assessment. Moreover, there is no clear, direct method by which national assessors can contact the NRLAG or other national assessors in order to pose questions and discuss concerns related to national red listing and/or the use of the IUCN Categories and Criteria. We believe the most efficient method of improving communication and information exchange is to establish an online database

of national red listing information, which would facilitate access to information regarding the status of species in other countries and also serve as a communication centre.

We imagine this website to be similar to the IUCN Red List website, or potentially like the Species 2000 website ([www.sp2000.org](http://www.sp2000.org)). It should provide information from red lists published in different countries around the world, and would ideally contain:

- The species found on each list, their category and criteria (if available); this is the minimum amount of information that should be provided
- The system (IUCN criteria or other) by which each list was developed
- Citations for each list
- Contact information for the compiler of each list
- Available documentation for each list
- References for each listed species and subspecies; countries should be encouraged to use IUCN taxonomy, but given that not all will, the references for the taxonomic system used should be given.
- Higher taxonomy for each taxon listed, so that searches can be conducted using taxonomic levels above species (especially important given that taxonomy between lists will not be uniform)
- A field where assessors can explain how they used the Categories and Criteria and the Regional Guidelines, especially any modifications they made, all thresholds that were set, etc.
- Whether the lists strictly, loosely or do not follow the IUCN Categories and Criteria
- Additional information such as threats, habitat, population size, etc. (existing IUCN authority files for threats and habitat should be used to maintain homogeneity)
- Links to websites containing national red listing information
- Very prominent links to the IUCN Red List website, including the page outlining required documentation, the page with the Categories and Criteria and the Regional Guidelines
- A mechanism by which national assessments (especially of national endemics) can be electronically submitted to the Red List Programme Committee for inclusion in the global Red List.
- Frequently Asked Questions
- A page dedicated to commentary exchange, be it in the form of a blog, a list-serve, or a bulletin board where messages and interchanges regarding different subjects can be accessed, new inquiries sent out, and experiences using the criteria shared. Vivek Tiwari may be able to provide advice, as he moderates a very successful South Asian Natural history list-serve from Princeton University.

The most basic information for all lists (class, order, family, genus, species, category, criteria) should be available in many different languages in order that assessors with limited command of English, French or Spanish can access this basic data. Ideally each list would be presented in English as well as its original language, although initially posting the lists in their original language only may have to suffice. This database should also be compatible with the Species Information Service (SIS) database.

When developing the CAMP database, the Conservation Breeding Specialist Group (CBSG) intended to present it in all three official languages of the IUCN (Spanish,

English and French), in such a manner that all of the fixed response categories would be consistent in the three languages. Thus, it should have been possible for all of the data collected in one language to be visible in the other two official languages as well (additional information other than the fixed response categories would be presented in the original language only). While this was the initial idea, in practice it has not been so simple and they have had to revise the program several times. They have thought a great deal about how their database may be used and how to make it compatible with SIS, and could potentially provide much useful information for formulating this part of the website. In addition, in Canada the COSEWIC status reports and species lists are available in both English and French; database managers at COSEWIC may also be able to provide useful information.

The information contained in the website should be accessible in a variety of different ways. Visitors should, as a minimum, be able to search by: nation, taxonomic group (at any level of taxonomy), lists that strictly follow the IUCN Categories and Criteria, lists that loosely follow the IUCN Categories and Criteria, and lists that do not follow the IUCN Criteria. There should also be a link to a page with all the countries listed; by clicking on the country, the visitor should be able to reach another page with all of the lists available for that country.

Collecting the information to be included in this website and setting it up will take at least one year, and will be a full-time position. Given adequate finances, we would like to request that an employee be hired in order to complete this task and to manage the database once it is set up. We would also like to request permanent representation for national red listing within the Red List Programme Committee. The relationship between national and global red list compilers is a permanent one, and it cannot be satisfactorily fulfilled and maintained through a temporary group such as the NRLAG. Developing a National Red Listing Specialist Group may be a good way to assure that the connection between national and global red listing remains strong within the RLPC.

**Resolutions:**

- Collect information for, design and develop an online database of national red listing information from countries around the world.
- Recommendations for information to be included in the website are detailed in the text of this report.
- A person should be hired to collect the necessary information, then set up and manage the website.
- Request permanent representation for national red listing within the Red List Programme Committee, possibly in the form of a National Red Listing Specialist Group

**6.2 Strategies for improving communication and interchange of information**

The most long-term strategy we have is the creation of the online information database, described in point 6.1. We also plan to publish a high-profile paper in an accredited scientific journal (potentially Conservation Biology), in which we will discuss briefly the global impact of the IUCN Red List and the influence international biodiversity conventions such as CITES, CBD and RAMSAR have had in catalysing national threatened species listing; report the findings of the CBD surveys and discuss how national red lists are developing worldwide; outline the results of this workshop and

provide a summary of the different ways in which red listing has been approached in the test countries; provide a succinct summary of the issues brought up in both the CBD surveys and in the workshop, as well as our recommendations for their resolution. Conservation priority setting will be discussed only briefly in the last section, as we have planned a separate publication addressing this topic.

Finally, articles in which different countries outline their experiences in conducting national red list assessments could be published in the SSC journal “Species”, not only to provide an opportunity for national assessors to express their concerns and their problems but also to improve exposure between countries as to other countries’ red listing efforts.

**Resolutions:**

- Develop online information database (see point 6.1)
- Publish high profile paper discussing the results of the CBD surveys and of this workshop, summarising the main issues and concerns related to national red listing and outlining recommendations for their resolution.
- Publish articles in which different countries outline their experiences in conducting national red list assessments in the SSC journal “Species”.

**6.3 Strategic development: international training programs**

One of the most common requests from national red list compilers who filled in the CBD surveys was more training. We all agree that the best mechanism for properly training assessors in the use of the IUCN criteria is through personal contact, and many of the oft-repeated questions and errors related to using the IUCN criteria could be prevented if proper training were provided to assessors across the globe. However, recognising the time and cost that this would require, as a first step we encourage the RLP to complete the Red List Training Pack as soon as possible and to distribute it widely to all national red list compilers for which we have contact information.

It would be worthwhile, both for national assessors who need more training in the use of the criteria and to prevent the Red List Criteria from being used improperly, to secure additional funding and hire a person who would be in charge of organising and presenting international training workshops around the world. This could be done on a regional basis by inviting several countries to the same workshop, which would also increase the contact and communication between national assessors in neighbouring countries. Representatives from countries that have successfully used the IUCN criteria in developing their national threatened species lists could be invited to attend the workshops as well.

**Resolutions:**

- Encourage the completion and wide distribution of the Red List Training Pack.
- Investigate the possibility of securing funding to hire an international training workshop coordinator to organise and present workshops on the use of the Red List Criteria.

## 7. PRODUCTS OF THE WORKSHOP

The products to be developed outlining the proceedings, results and recommendations of the workshop include:

1. Detailed report of the workshop to be distributed to participants, the IUCN and other interested parties (includes revision of the Regional Guidelines)
2. Scientific paper discussing state of national threatened species listing, including CBD survey results, our review of the Regional Guidelines and our recommendations for problem resolution
  - Preferred journal for publication: Conservation Biology
3. Scientific paper discussing the use of national red lists in conservation priority setting
  - Preferred journal for publication: Nature

### Timetable for the delivery of drafts of the papers:

|                      |  |
|----------------------|--|
| 1 June – 1 September | Drafting of scientific paper discussing state of national threatened species listing                   |
| 1 September          | First draft distributed to co-authors  |
| 14 September         | Co-authors comments received   |
| 30 September         | Final version distributed to co-authors  |
| 7 October            | Final comments received  |
| 14 October           | Final comments incorporated and paper submitted to Conservation Biology                                |
| 1 August – 1 October | Drafting of scientific paper discussing the use of national red lists in conservation priority-setting |
| 1 October            | First draft distributed to co-authors  |
| 14 October           | Co-authors comments received   |
| 21 October           | Final version distributed to co-authors  |
| 28 October           | Final comments received  |
| 1 November           | Final comments incorporated and paper submitted to Nature  |

## 8. SUMMARY OF RESOLUTIONS AND ACTIONS

CB= Channa Bambaradeniya; CP= Caroline Pollock; JPR= Jon Paul Rodríguez; ME= Mark Eaton; NRLAG= National Red List Advisory Group; RB= Ruben Boles; RLP= Red List Program; RM= Rebecca Miller; S&PS= Standards and Petitions Subcommittee; SM= Sanjay Molur; SW= Sally Walker; TF= Theresa Fowler; UG= Ulf Gärdenfors; VK= Verena Keller

| ITEM  | RESOLUTIONS   | ACTIONS  | WHO?  |
|---|---|--|---|
| 1. Welcome, introductions and background information                        | <ul style="list-style-type: none"> <li>All translations of IUCN documents should come from within the IUCN or should be checked by the IUCN before publication and use, in order to assure that their original meaning has been maintained.</li> </ul>  |  | IUCN  |
| 3.1 Do the criteria exaggerate threat status when used at a national level? | <ul style="list-style-type: none"> <li>In the next edition of the Categories and Criteria, emphasize the necessity of using the Regional Guidelines along with the criteria.</li> <li>Make the RG more prominent on the SSC and RLPC websites.</li> <li>Update the citation on pg. 8 of the IUCN Categories and Criteria from (Gärdenfors <i>et al.</i> 2001) to that for the published Regional Guidelines</li> </ul>  |  | RLP<br>RLP/S&PS<br>RLP  |
| 3.2.1 Using the criteria with little data                                   | <ul style="list-style-type: none"> <li>Mention in the Regional Guidelines that creating national red lists, especially when little data are available, can lead to data generation.</li> <li>Include examples of assessments made with little data in the Regional Guidelines and in the scientific paper to be produced by the NRLAG.</li> <li>Emphasize in the Categories and Criteria and/or the Regional Guidelines that criteria not be routinely eliminated at the outset of the assessment process, regardless of data available.</li> </ul> | <ul style="list-style-type: none"> <li>Each country submits to NRLAG examples of assessments conducted with little data</li> </ul>                                       | CB/RB/<br>ME/TF/<br>UG/VK/<br>RM/SM/<br>JPR/SW<br><br>RLP<br><br>RLP &<br>RM/JPR/<br>CB/RB/<br>ME/TF/<br>UG/VK/<br>SM/SW<br><br>RLP |
| 3.2.2 Document explaining the theory behind the criteria                    |   | <ul style="list-style-type: none"> <li>History of the development of the IUCN criteria that Georgina Mace has been preparing should be completed and released</li> </ul> | RLP   |

|   |  |  |   |
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|   |  | <ul style="list-style-type: none"> <li>▪ RLP encouraged to complete and distribute their training package</li> </ul>   | RLP/CP  |
| 3.2.4 Problem: Discrepancy between global and national assessments  |  | <ul style="list-style-type: none"> <li>▪ Sally Walker &amp; Sanjay Molur to produce a document for the Red List Committee, quantifying the discrepancy between the GAA and their national assessments</li> </ul> | SW/SM   |
| 3.2.5 Formalizing quantitative criteria for Near Threatened   | <ul style="list-style-type: none"> <li>▪ Add more real examples to the User Guidelines of species that have been put in NT for various reasons</li> <li>▪ Emphasise (in the priority-setting paper [see point 5, this document], potentially in section 10.2 of the User Guidelines) that DD species should receive priority attention in order to gather more information on their status</li> </ul>  |  | RLP/S&PS<br><br>S&PS,<br>RM/JPR/<br>CB/RB/<br>ME/TF/<br>UG/VK/<br>SM/SW |
| 3.2.7 Better definitions and more thorough explanations for criterion B   | <ul style="list-style-type: none"> <li>▪ Add a note to the Preamble of the Categories and Criteria or produce addendum sheets to insert into the booklets specifically directing assessors to consult the User Guidelines during the assessment process</li> <li>▪ Incorporate more examples of how location, generation time, individual, EOO and AOO were calculated in actual assessments into the User Guidelines.</li> <li>▪ Rephrase the definition of location, placing the term “geographically or ecologically distinct” at the end of the definition.</li> <li>▪ Include diagrams of the <math>\alpha</math>-hull estimation process for calculating EOO in the User Guidelines.</li> <li>▪ Discourage the use of grid squares smaller than 1 km<sup>2</sup> in calculating AOO.</li> <li>▪ In the AOO explanation, reiterate that AOO is <i>not</i> the actual area in which a species is found, but rather represents a smaller scale at which a species’ general distribution is measured.</li> </ul> |  | RLP<br><br>S&PS<br><br>S&PS<br><br>S&PS<br><br>S&PS<br><br>S&PS         |
| 3.2.8 Species which are in a higher threat category at the global level than at the national/regional level- a contradiction? | <ul style="list-style-type: none"> <li>▪ Include examples of species with a higher global than regional threat category (e.g. Australian Dugong, Canadian Boreal Felt Lichen) in point 8 of the Preamble of the Regional Guidelines.</li> </ul>  |  | RLP   |



|  |  |  |   |
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| 4.3.1 Determining which taxa to assess   | <ul style="list-style-type: none"> <li>▪ Insert the new “Figure 2” into the “Taxa to be assessed” point of section IV, “The Assessment”.</li> <li>▪ Incorporate points 1-5 into the text of “Taxa to be assessed” and “The categories” in the Regional Guidelines, replacing existing text and adding new paragraphs as needed</li> </ul>  |  | <p>RLP</p> <p>RLP</p>                       |
| 4.3.2 Applying the Regional Guidelines: re-working current Figure 2 & Table 1          | <ul style="list-style-type: none"> <li>▪ Replace the current Figure 2 with the new Figure 4</li> <li>▪ Improve the visiting population section of Figure 2 (new Figure 4) in a workshop dedicated specifically to this theme.</li> <li>▪ Incorporate the changes illustrated in section 4.3.2 into Table 1</li> <li>▪ Include a reference to Figure 2 (the new Figure 4) and Table 1 in the last sentence of paragraph 2, on pg. 16 of the Regional Guidelines.</li> </ul>   |  | <p>RLP</p> <p>RLP</p> <p>RLP</p> <p>RLP</p> |
| 4.3.3 Establishing more defined guidelines for the number of steps to up- or downgrade | <ul style="list-style-type: none"> <li>▪ Modify the third paragraph on pg. 13 of the Regional Guidelines as outlined in section 4.3.3.</li> <li>▪ Add the second statement outlined in this section to the very end of the Breeding Population section in point 3, “The Assessment Procedure”.</li> </ul>  |  | <p>RLP</p> <p>RLP</p>                       |
| 4.3.4 Miscellaneous  | <ul style="list-style-type: none"> <li>▪ Consider advising assessors that when confronted with a decision for which they have no solid data to guide them, they determine if the answer is <i>likely</i> or <i>not likely</i> and then opt to move in the “yes” or “no” direction accordingly.</li> <li>▪ Expand the examples in the Regional Guidelines to include all of the information available, the decisions made and the reasoning behind each decision in each step of the assessment process.</li> <li>▪ Potentially include a statement in the User Guidelines highlighting danger of underestimating number of mature individuals for species that migrate through a region, by conducting estimates over a short time period and counting only a fraction of the number of individuals that visit the region over the migration period; recommend a method for making a better estimate of</li> </ul> |  | <p>NRLAG</p> <p>RLP</p> <p>RLP</p>          |

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|   | <p>population size in such a case.</p> <ul style="list-style-type: none"> <li>▪ Change the currently-recommended symbol for indicating species that have been up- or downgraded from an elevated black dot (•) to a degree sign (°).</li> </ul>   |  | RLP  |
| 5. Use of the IUCN criteria and national red lists in setting conservation priorities |   | <ul style="list-style-type: none"> <li>▪ Produce a scientific paper authored by all participants discussing the use of national red lists in conservation priority setting (preferred journal: Nature).</li> </ul> | RM/JPR/<br>CB/RB/<br>ME/TF/<br>UG/VK/<br>SM/SW                                   |
| 6.1 Development of an online information warehouse                                    | <ul style="list-style-type: none"> <li>▪ Collect information for, design and develop an online database of national red listing information from countries around the world.</li> <li>▪ Recommendations for information to be included in the website are detailed in the text of this report.</li> <li>▪ A person should be hired to collect the necessary information, then set up and manage the website.</li> <li>▪ Request permanent representation for national red listing within the Red List Programme Committee, possibly in the form of a National Red Listing Specialist Group</li> </ul> |  | NRLAG<br><br>IUCN/<br>RLP<br><br>NRLAG/<br>RLP                                   |
| 6.2 Strategies for improving communication and interchange of information             | <ul style="list-style-type: none"> <li>▪ Develop online information database (see point 6.1)</li> <li>▪ Publish high profile paper discussing the results of the CBD surveys and of this workshop, summarising the main issues and concerns related to national red listing and outlining recommendations for their resolution.</li> <li>▪ Publish articles in which different countries outline their experiences in conducting national red list assessments in the SSC journal "Species".</li> </ul>   |  | NRLAG<br><br>RM/JPR/<br>CB/RB/<br>ME/TF/<br>UG/VK/<br>SM/SW<br><br>NRLAG/<br>RLP |
| 6.3 Strategic development: international training programs                            | <ul style="list-style-type: none"> <li>▪ Encourage the completion and wide distribution of the Red List Training Pack.</li> <li>▪ Investigate the possibility of securing funding to hire an international training workshop coordinator to organise and present workshops on the use of the Red List Criteria.</li> </ul>  |  | RLP<br><br>IUCN/<br>RLP  |
| 7. Products of the workshop   |   | <ul style="list-style-type: none"> <li>▪ Detailed report of the workshop to be distributed to participants, the IUCN</li> </ul>  | RM   |

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|  |  | <p>and other interested parties (includes revision of the Regional Guidelines)</p> <ul style="list-style-type: none"> <li>▪ Scientific paper discussing state of national threatened species listing, including CBD survey results, our review of the Regional Guidelines and our recommendations for problem resolution (preferred journal: Conservation Biology)</li> <li>▪ Scientific paper discussing the use of national red lists in conservation priority setting (preferred journal: Nature)</li> </ul> | <p>RM/JPR/<br/>CB/RB/<br/>ME/TF/<br/>UG/VK/<br/>SM/SW</p> <p>RM/JPR/<br/>CB/RB/<br/>ME/TF/<br/>UG/VK/<br/>SM/SW</p> |
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## **Annex I: Examples to be added to the IUCN Regional Guidelines**

The following examples are cited in our recommendations for changes and additions to the IUCN Regional Guidelines, outlined in the main body of this report. These examples should be added to Annex 1 or placed in a new Annex 2 in the IUCN Regional Guidelines. The numbering of these examples within the text (and in the Annex) will have to be updated once the actual changes are made, in order to accommodate the other examples that are already presented in the Guidelines. Ideally, more examples from developing countries and illustrating alternative solutions to these issues will be added to this list in the near future.

### Example 1

#### **Distinguishing between breeding and visiting populations (The United Kingdom)**

Many common breeding bird species in the UK have their populations supplemented in the winter by non-breeding birds arriving from continental Europe and the Arctic. Although for these species there might be some movement of the breeding population out of the UK in the non-breeding season, many individuals stay and will contribute to measures used to assess the non-breeding population. In such cases, it is often impossible to distinguish trends, ranges and population sizes of the two populations. In these cases, assessors in the UK conducted two assessments, of: 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 it is partially migratory or not. In such 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. For the assessment of birds in the UK, a rule was applied that the population 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 2

#### **Using a filter to determine which species to evaluate (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 man, or one that was introduced by man before 1800 and since then has become established and reproducing. Species that have immigrated unaided by man (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) species 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 3

#### **Using a filter to determine which species to evaluate (Canada)**

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

(1) 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.

(2) 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 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 by COSEWIC.

Another consideration that has been used in filtering species is the global status of the species. A species that is highly threatened globally requires evaluation even if it spends little time in Canada. Although we do not normally assess vagrants or occasional visitors, we do tend to make an exception and assess them – as well as provide some protection for the individuals that turn up in Canada – when they are globally endangered. For example:

(1) 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. Not all members of COSEWIC agreed with this interpretation, but in the end, everyone agreed to assess the species because, although it may be a vagrant, it is at risk throughout its range.

### Example 4

#### **Likelihood of propagule migration (Sweden)**

The Serin, *Serinus serinus*, breeds in a limited number in southernmost part of Sweden. However, the species is common in neighbouring countries to the south. Individuals from these neighbouring populations regularly reach Sweden; these extra-regional populations are thus capable of rescuing the subpopulation in Sweden.

### Example 5

#### **Evidence for the existence of local adaptations (Canada)**

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 not likely be able to rescue the Canadian population.

### Example 6

#### **Downgrading by more than one category: Firecrest - *Regulus ignicapilla* (Sweden), downgraded from VU to LC**

The Firecrest is rapidly colonizing Sweden from continental Europe. A parallel pattern is also taking place in Denmark, one of Sweden's neighbouring countries. The number of mature individuals in Sweden is estimated to be > 250 (thus meeting VU D1), although the population may be substantially larger. Due to the high rate at which the species is expanding its distribution and the size of its Swedish subpopulation, the risk of extinction is judged to be very low. Consequently, the Red List category was downgraded by two steps from VU to LC°.