

AS WE SEE IT

Harmonization of Red Lists in Europe: some lessons learned in the Netherlands when applying the new IUCN Red List Categories and Criteria version 3.1.

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ABSTRACT: This paper discusses the desirability of the harmonization of Red Lists for both regional and national red listing by using the new IUCN Categories and Criteria (C&C) version 3.1, and presents a case study demonstrating the application of the new IUCN Categories and Criteria for red listing in the Netherlands. We make a plea for more harmonization of Red Lists in Europe. One means of achieving this is to use the new IUCN Categories and Criteria version 3.1. for threatened species. Recent testing of Dutch national Red Lists with the new IUCN C&C version 3.1. in the Netherlands has shown that a substantial number of species (and subspecies) will lose their national Red List status, while other species previously not red listed may become so. The use of the new IUCN C&C version 3.1 resulted in some cases (reptiles and amphibians and vascular plants) in a shorter, but in other cases (birds, butterflies) a longer IUCN-criteria based Red List. We found an overlap of over 50 % in the threat categories in both Red Lists; a marked exception is that for birds (34 %). The application of the new IUCN C&C version 3.1. for the Dutch national Red Lists results in a substantial variation in outcome when compared with Red Lists based on the 'Dutch' criteria. This variation is particularly due to the A and D criteria of IUCN, especially when applied to fairly small countries. The Dutch government has therefore decided to continue using the 'Dutch' Red Lists for national policy purposes, but to use the IUCN-criteria based Red lists for international (European) comparison only. A link between the Birds and Habitats Directives and regional IUCN Red Lists for Europe would also be desirable.

KEY WORDS: Threatened species · Red Lists · Red List harmonization · Application of IUCN Categories and Criteria · Regional Red Lists · National Red Lists

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BACKGROUND

Gärdenfors et al. (2001) were the first to present new guidelines for the application of the IUCN Red List criteria at regional levels. A final version of the Regional Application guidelines (version 3.0) was published by the IUCN in 2003. These new guidelines were expected to facilitate regional (national) red listing, using the new IUCN Categories and Criteria (C&C). Several initiatives have been taken to discuss the need

to harmonize European Red Lists, using the new IUCN C&C version 3.1.

In 2001 the Finnish National Committee for IUCN organized a European seminar on Red List Categories and Criteria in Helsinki. An important conclusion of this workshop was the need to apply the new IUCN C&C to achieve more harmonization of Red Lists within Europe, since many countries still use different criteria and categories for establishing national Red Lists. Another international seminar was organized in

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November 2002 in Leiden, the Netherlands, by the Netherlands Committee for IUCN. This seminar built on the results of the Helsinki workshop (De Iongh et al. 2003). During the Leiden Seminar some 60 Red List experts discussed the desirability of achieving a harmonization of Red Lists in Europe.

Some experience has been gained with the application of the new IUCN C&C version 3.1 in combination with the regional application guidelines in several European countries. Here, we discuss the desirability of Red List harmonization in Europe and the first results of the application of the new IUCN C&C in the Netherlands, as a case study. For brevity, we will herein use the term new IUCN C&C (new IUCN Red List Categories and Criteria version 3.1.) and national IUCN-criteria based Red List (national Red List based on the new IUCN C&C).

IUCN CATEGORIES AND CRITERIA (C&C)

The reason for establishing IUCN Red Lists is to show the risk of extinction to a species. The first IUCN C&C were published in 1994 (IUCN 1994). An extensive review has since been carried out, and a considerable number of adjustments have been made, partly as a result of a resolution of the World Conservation Congress in 1996. In 2001 the new IUCN C&C version 3.1. was published (IUCN 2001). The most recent version of the IUCN global Red List was published in 2006 (IUCN 2006). The IUCN intends to hold on to the present set of C&C in the near future, and, in order to ensure future consistency and comparability, does not want any changes to be made. The IUCN has also provided a tool for the regional application of the new IUCN C&C (Gärdenfors et al. 2001, IUCN 2003) with its guidelines of the same name.

As in the regional application guidelines, definitions were chosen for concepts such as population, sub-population, generation, reduction, extreme fluctuations, area of occupancy etc. These guidelines are mainly intended to evaluate the position of species on national Red Lists in the light of the status of that species in the respective region. At the same time, they take into account the populations in adjacent areas. With the help of these guidelines it is possible to decide whether a species should be up- or downgraded. For these regional application guidelines, a protocol consisting of several steps has been developed. The existing status of a species is tested using criteria such as life history, habitat specialisation and reproduction ecology in a regional or local setting; the consequence may be the upgrading or downgrading of the species.

EUROPEAN RED LISTS

Köppel et al. (in: De Iongh et al. 2003) summarized the situation regarding Red Lists in Europe. He reviewed over 2000 publications containing 3701 Red Lists. Of these, 139 are world-wide lists which include Europe (Walter & Gillett 1997, Hilton Taylor 2002). A total number of 94 Red Lists covering the European region (both geographical Europe and the EU) have been published by inter-governmental bodies, such as the Council of Europe in Strasbourg (Van Swaay & Warren 1999), by the United Nations in Geneva (Economic Commission for Europe 1991), by NGOs such as BirdLife (Tucker et al. 1994) or by experts of special species groups (European Foundation for the Conservation of Bryophytes 1995). The remaining 3468 refer to 49 European countries and regions. A substantial number of supranational Red Lists have been published in Europe (Stewart & Church 1992, Ingelög et al. 1993, Sergio et al. 1994, von Nordheim et al. 1996, von Nordheim & Boedeker 1998). Most of them, however, have been published on a national or sub-national scale (Ekim et al. 2000, Balaz et al. 2001, Glowacinski 2001). Germany has the highest proportion (1810 lists, or 52% of all European Red Lists), followed by the UK (226), Austria (204) and Finland (144). On average, there are 71 for each of the 49 evaluated European countries and regions (or 35 if we disregard Germany). With the exception of the Former Yugoslav Republic of Macedonia, all European countries have published at least one national Red List. However, both the number of systematic groups covered as well as the number of regional Red Lists published varies widely: the 10 European countries and regions with the highest numbers of Red Lists make up 78% (2714) of all lists.

Sub-national Red Lists can be subdivided according to geographical region, naturally isolated areas, such as islands (Gómez et al. 1996), ecosystem level including natural areas such as rivers and mountains (Schiemer & Spindler 1989, Blanca et al. 1998), administrative units such as Federal states (Bundesländer), Cantons, districts and cities (Lammert et al. 1996, Maes & Van Dyck 1996, Goffart & De Bast 2000).

APPLYING THE NEW IUCN C&C TO DUTCH RED LISTS

Between 1994 and 2002, 18 Dutch national Red Lists were compiled and subsequently published in the Dutch government gazette by the Ministry of Agriculture, Nature and Food Quality, ANF). The taxonomic groups consisted of all 5 groups of vertebrates, 9 groups of invertebrates and 4 groups of plants and fungi.

These Red Lists were established on the basis of categories borrowed from a draft version of the IUCN criteria (later published in IUCN 1994); see Table 1 and the vertical axis in Tables 3 to 6. Since the details of the IUCN criteria were not known at the time, the Dutch government decided to develop their own criteria. In short, these criteria aim at identifying (sub) species that are (more or less) rare and have declined (more or less) since 1950; these species are listed in the categories 'critically endangered' or 'endangered'. Species that either are extremely rare or have declined more than 50% are listed in the category 'susceptible'. At the other side of the spectrum, species that have disappeared are listed (after 10 years) as 'extinct'. The criteria can be applied at 2 levels: area of occupancy (on the basis of grid cells of 5 × 5 km) and population size (which proved to be difficult for many groups) (Table 1).

After finishing this (first) series of Red Lists several of the list compilers were asked by the Dutch IUCN Committee to test the new IUCN C&C. This resulted in 3 provisional regional IUCN Red Lists, namely Red Lists of vascular plants (Tamis et al. 2003), reptiles and amphibians (Creemers 2003) and freshwater fish (De Nie 2003). It should be emphasized that these assessments were not guided by an advisory group of experts. All assessments made use of the same database and (with a few exceptions) the same species lists as had been used for the previously published Dutch Red Lists.

From 2004 onwards the Dutch government started a new series of Red Lists for the same taxonomic groups as the first series. It is the policy of the Ministry of ANF to renew every Red List after 10 yr. In addition to renewing the Red Lists with Dutch categories and criteria, the Ministry decided to initiate a pilot study to test the added value of the new IUCN C&C in combination with the regional application guidelines. The combination of a new Dutch Red List and an IUCN-criteria based Red List was published for birds in Hustings et al. (2004). Although the results of the pilot

Table 2. Summary of a comparative assessment of species using the Dutch Categories and Criteria (C&C) and the new IUCN Red List Categories and Criteria version 3.1 (new IUCN C&C). The first 3 are provisional, the last 2 official IUCN-criteria based Red Lists. Year: year of assessment. *: Regional application guidelines were used; n = no. of species

| Red List | Dutch C&C | | New IUCN C&C | |
|-------------------------|-----------|-----|--------------|-----|
| | Year | n | Year | n |
| Reptiles and amphibians | 1996 | 17 | 2002 | 16 |
| Freshwater fish | 1998 | 17 | 2002 | 17 |
| Vascular plants | 2000 | 499 | 2002 | 435 |
| Birds | 2004 | 78 | 2004 | 85* |
| Butterflies | 2006 | 46 | 2005 | 52* |

study were not very satisfactory, it was decided to continue making regional IUCN Red Lists for the sake of international comparison. So far only one other Red List has been published, for butterflies (Van Swaay 2006). Three other Red Lists will be published in 2007. In all these cases, the assessments were guided by advisory groups of experts, of which both authors of the present paper were members.

The findings of the 3 provisional and the 2 official IUCN-criteria based Red Lists showed that the application of the new IUCN C&C resulted in both fewer and more species on the IUCN Red Lists for different taxonomic groups compared with the Dutch Red Lists (Table 2). When comparing the differences in classification between the Dutch Red Lists and the IUCN-criteria based Red Lists the differences are more pronounced (Tables 3 to 6).

For the Red Lists of birds, butterflies, freshwater fishes and reptiles & amphibians respectively, 27 species (34% of the Dutch Red List), 32 species (66% of the Dutch Red List), 13 species (54% of Dutch Red List) and 15 species (100% of Dutch Red List) had a *similar* threat classification (when including the categories 'susceptible' for the Dutch Red List and the similar category 'near threatened' for the IUCN-criteria based Red List). So the differences were largest between the 2 Red Lists for birds: 13 birds which were included in the Dutch Red List, were classified as Least Concern using the IUCN criteria and thus were not included in the IUCN-criteria based Red List. On the other hand, 20 birds were included in the IUCN-criteria based Red List, but were not found on the Dutch Red List. Although the differences between the 2 Red Lists for butterflies were not as great, among the 7 butterfly species that were

Table 1. Summary of the Dutch Red List Criteria and Categories. Percentage of 'decline' is based on Atlas grid and/or population numbers, percentage of 'occurrence' only on Atlas grid

| Decline (%) | Occurrence (%) | | | |
|-------------|-----------------------|-----------------------|----------------|----------------|
| | 0-1 | 1-5 | 5-12.5 | >12.5 |
| <25 | Susceptible | Not threatened | Not threatened | Not threatened |
| 25-50 | Vulnerable | Vulnerable | Vulnerable | Not threatened |
| 50-75 | Endangered | Endangered | Vulnerable | Susceptible |
| >75 | Critically endangered | Critically endangered | Vulnerable | Susceptible |

Table 3. Differences in classification between the use of IUCN criteria (horizontal axis) and the Dutch criteria (vertical axis) for the Red List 'Birds of the Netherlands' (Hustings et al. 2004)

| | Regionally extinct | Critically endangered | Endangered | Vulnerable | Near threatened | Least concern |
|---------------------------|--------------------|-----------------------|------------|------------|-----------------|---------------|
| Extinct | 8 | | | | | |
| Critically endangered | | 10 | 1 | 1 | | |
| Endangered | | 4 | 4 | 2 | 1 | 1 |
| Vulnerable | | 2 | 2 | 3 | 5 | 8 |
| Susceptible | | 5 | 10 | 5 | 2 | 4 |
| Not threatened at present | | | 2 | 8 | 10 | 105 |

Table 4. Differences in classification between the use of IUCN criteria (horizontal axis) and the Dutch criteria (vertical axis) for the Red List 'Butterflies of the Netherlands' (Van Swaay 2006)

| | Regionally extinct | Critically endangered | Endangered | Vulnerable | Near threatened | Least concern |
|---------------------------|--------------------|-----------------------|------------|------------|-----------------|---------------|
| Extinct | 17 | | | | | |
| Critically endangered | | 9 | 3 | 2 | | |
| Endangered | | 2 | 5 | 2 | | |
| Vulnerable | | | 2 | | | 1 |
| Susceptible | | | 3 | | 11 | 1 |
| Not threatened at present | | 1 | 5 | | 1 | 16 |

Table 5. Differences in classification between the use of IUCN criteria (horizontal axis) and the Dutch criteria (vertical axis) for the Red List 'Reptiles and Amphibians of the Netherlands' (Creemers 2003)

| | Regionally extinct | Critically endangered | Endangered | Vulnerable | Near threatened | Least concern |
|---------------------------|--------------------|-----------------------|------------|------------|-----------------|---------------|
| Extinct | | | | | | |
| Critically endangered | | 2 | | | | |
| Endangered | | | 4 | | | |
| Vulnerable | | | | 9 | | |
| Susceptible | | | | | | |
| Not threatened at present | | | | | | 8 |

Table 6. Differences in classification between the use of IUCN criteria (horizontal axis) and the Dutch criteria (vertical axis) for the Red List 'Freshwater fish of the Netherlands' (De Nie 2003)

| | Regionally extinct | Critically endangered | Endangered | Vulnerable | Near threatened | Least concern |
|---------------------------|--------------------|-----------------------|------------|------------|-----------------|---------------|
| Extinct | 7 | | | | | |
| Critically endangered | | | | | | |
| Endangered | | | 3 | 3 | | |
| Vulnerable | | | | 3 | | |
| Susceptible | | 1 | 1 | | | |
| Not threatened at present | | | | | | 21 |

included only in the IUCN-criteria based Red List there were several very common and abundant species (such as *Inachis io*, *Pieris brassicae* and *Pieris rapae*).

DISCUSSION

International harmonization of Red Lists

The differences observed between the official Red Lists of birds and butterflies can be explained as follows: (1) Very rare species with stable or even increasing populations are listed as Susceptible (=Near Threatened) using the Dutch criteria, but Endangered or even Critically Endangered with IUCN criterion D (examples: *Corvus corax* with stable population and *Casmerodius albus* with exponentially increasing population).

(2) The reference period for a measured decline is very different: since 1950 (Dutch criterion) as opposed to 10 yr or 3 generations (IUCN criterion A). This means that species which have declined from 'common' (1950) to 'rather rare' (present) but have remained more or less stable over the last 10 yr are red listed according to the Dutch criteria but are Least Concern according to the IUCN criteria. Among these are several species that are important for nature policy and nature management (e.g. *Anas querquedula* and *Tyto alba*). On the other hand, a reduction of over 50% in 10 yr results in Endangered according to IUCN criterion A2, regardless of the present population size, while the Dutch criteria classify such cases in a less severe category (Susceptible) if the species is still common (examples: *Hirundo rustica* and *Ochlodes faunus*). Common species with a 50% decline over the past 10 yr are even listed as Not Threatened (according to Dutch criteria) if the trend is only a temporary or recent phenomenon—the decline is, after all, measured over a period of some 50 yr (examples: the above-mentioned very common butterflies and *Larus ridibundus*).

In many cases the authors of the 2 Red List reports and their advisory groups were not satisfied with the results of the IUCN criteria when these differed considerably from the results of the Dutch criteria.

During the European Red List seminar in 2002 it was suggested that the existing national Red Lists could be reviewed with the new IUCN C&C, aiming at a better quality of support and harmonization with other national, regional and global Red lists.

The experience with the Dutch Red Lists revealed that in total numbers of species listed, the IUCN Red Lists are more prudent in some groups, listing more species (birds and butterflies), less prudent in other groups, listing fewer species (vascular plants, reptiles and amphibians) and similar in one group (freshwater

fish). It is remarkable that these differences correspond with the Red Lists assessed under the guidance of the Ministry of ANF and an expert advisory group (birds and butterflies) and those not assessed under the guidance of the Ministry (vascular plants, freshwater fishes and reptiles, and amphibians). As a consequence, we can not exclude a bias from this circumstance.

In addition, it was concluded that the application of the new IUCN C&C resulted in significant differences in the results of the Dutch and the IUCN-criteria based Red Lists. This was particularly the case with the Red Lists for birds. Although the experts took some subjective decisions when applying the new IUCN criteria, it is the opinion of the authors that this is not a major factor in explaining the differences between the lists. Subjective decisions were made in particular in the interpretation of trend data for birds and butterflies. It is suggested that experts involved in the assessments were too strict in the application of the new IUCN C&C and did not sufficiently correct their assessments based on expert opinion, which may in a number of cases have resulted in a higher threat category on the IUCN-criteria based Red List. This is contrary to Eaton et al. (2005), who concluded in a comparative study of a national Red List for birds in the UK using the UK system and the new IUCN C&C, that the IUCN Red List depended heavily upon the subjective decisions made during the assessment process. Eaton et al. (2005) also concluded that in their study the total number of 223 red listed birds on the IUCN Red List broadly agreed with the UK Red List, but that there was also (and this is also true for the Dutch experience with birds and butterflies) a tendency for the IUCN process to give higher risk status to edge of the range species and low status to those that have declined but remain common.

The different outcomes of the IUCN Red Lists compared with the Red Lists using the national system found in the Dutch pilot and in the UK study by Eaton et al. (2005) may have important consequences for overall national nature conservation priorities. Although more and more European countries have now started using the new IUCN C&C (for example Finland, Sweden, Switzerland, the UK, the Netherlands), a substantial number of countries, among them the Netherlands, still make use of their own criteria or of modified IUCN criteria for national policy purposes. In the Netherlands the ANF Ministry has decided to continue to use the Dutch Red Lists for national policy purposes, but to use the IUCN Red List for international (European) comparison only.

Bennett (in: De Jongh et al. 2003) revealed that Red List species are hardly used in European Ecological Networks (EEN). Also, the list of species listed in Annex 4 of the EU Habitats Directive creates problems

with the national Red Lists. This annex comprises some species which have a common distribution in countries like the Netherlands. A good example is the natterjack toad *Bufo calamita*, which is not red listed according to the Dutch Red List, but which is protected according to Annex 4 of the Habitats Directive. There are no legal means of adjusting this on a national scale, but a link between the Birds and Habitats Directives and regional IUCN Red Lists for Europe would be desirable.

Besides the use of the new IUCN C&C version 3.1. for harmonization purposes (as is already happening in a few European countries such as Norway, Sweden, Finland and Switzerland) we recommend that additional regional IUCN Red Lists be made to complement the 'national' Red Lists (as has been done in the Netherlands, Germany and the UK).

We also recommend considering the application of the regional application guidelines on Red Lists prepared with different criteria from the IUCN C&C version 3.1. So far, in the Dutch Red List system, experience has only been gained with the regional application guidelines for butterflies and birds (in combination with the new IUCN C&C). The pilot study showed that after application of the regional application guidelines in combination with the new IUCN C&C version 3.1. some additional species will gain a Red List status but that a substantial number of other species will lose this if the new IUCN C&C and/or regional application guidelines are applied.

The latter observation may cause constraints, since some NGOs argue that nationally threatened species (and subspecies) should not lose their national Red List status and thus protective measures, because these particular species still have several vital populations in adjacent countries. This stresses the political significance of national Red Lists. On the other hand, the IUCN-criteria based Red Lists aim to assess exclusively a species' risk of extinction (and not necessarily conservation priority) and if this is really the case, a shorter Red List would not be harmful.

The principal question we need to ask is whether the application of the new IUCN C&C really contributes to saving more species from extinction. This may be a rhetorical question, which is very difficult to answer. The fact that in at least 2 of the Dutch Red Lists (birds and butterflies) the new IUCN C&C resulted in more species on the IUCN Red List implies that more species may be at risk of extinction than are represented in the Dutch Red Lists. The experts involved in the assessment, however, believed that this was not the case with the Red Lists of butterflies and birds, although the new IUCN C&C are generally believed to have added value in terms of greater transparency, accuracy and reliability of data and the general scientific methodology applied.

The new IUCN C&C should also be considered in the context of the policy objective of the Earth Summit in Johannesburg in September 2002—to bring to a halt the global loss of biodiversity in 2010, the new IUCN C&C being one of the new instruments which may contribute to reaching this goal.

The importance of the support function of the IUCN Red List Unit in Cambridge is emphasized. This support function comprises, among other things, new guidelines for specific taxonomic groups and stand-alone training packages. There is also a need for maps indicating the geographical coverage and availability of Red Lists in Europe.

With regard to the scale issue, the importance of Red Lists on a smaller scale for local nature conservation policy should be emphasized. Examples are the County Red Lists in the UK and the Provincial Red Data Books in Spain. Red Lists also contribute to effective nature conservation legislation on these smaller scales. It is also realized that at smaller scales the issue of edge effects of the area of occupancy will play a greater role, causing a bias in red listing. However, the regional application guidelines may compensate partly for this bias (although not sufficiently so in the case of birds and butterflies in the Netherlands).

Red Lists of smaller-scale levels are complementary to Red Lists of larger-scale levels, such as the European region, both as an input in the periodical updating process of the annexes of the Bird and Habitat directives, and as an early warning system for species at risk of extinction in the respective region.

Finally, we must raise the question as to who (which institutions) have expressed a need for harmonization of Red Lists and even whether there is a need for harmonization at all. The recommendations of the Helsinki workshop in 2001 and the Leiden seminar in 2002, which emphasized the importance of harmonization for the European region, provide some answers to this question. It is difficult to convince policy makers of the importance of Red Lists in Europe for nature conservation policy if a large variety of methods and approaches are used. Greater harmonization in methodology and approach of Red Lists is therefore expected to enhance the impact on European policy. However, the best option may be to make regional IUCN Red Lists for Europe (or the European Union) as a whole.

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