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Applying Red List criteria in Flanders (North Belgium)

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INTRODUCTION

Red Lists are compiled for three main reasons: 1) To assess potentially adverse impacts on species, 2) to help inform conservation priorities and to promote research on threatened species or 3) as a component of State of the Environment Reports (Possingham *et al.* 2002). Another important use of Red Lists is to enlarge the awareness of the public about the decline of biodiversity in general (Blab *et al.* 1984). In the past most of the Red Lists were compiled on a 'best professional judgement' basis. In 1994, the IUCN promoted the use of quantitative criteria for the compilation of international (Mace and Stuart 1994; IUCN Species Survival Commission 1994) and national or regional Red Lists (Gärdenfors *et al.* 2001; e.g. Schnittler *et al.* (1994) in Germany; Maes *et al.* (1995) in Flanders – North Belgium; Van Ommering (1994) in the Netherlands).

In this contribution, we will illustrate the criteria and Red List categories that are applied for the compilation of Red Lists in Flanders (North Belgium) and we will demonstrate that the proposed IUCN criteria for use on the regional scale are inappropriate in small countries or regions.

RED LISTS IN FLANDERS

Flanders (total area 13,512 km²) is the northern, Dutch speaking part of Belgium. It exhibits the typical features of a western industrialised region: Extensive industry, infrastructure, house building and agriculture, and a human population density of 431 citizens/km² (De Bruyn *et al.* 2002; Van Hecke and Dickens 1994). Nature conservation policy is the responsibility of the regional governments (Flanders, Wallonia and Brussels) and it is therefore appropriate to compile Red Lists per region rather than for Belgium as a whole. Flanders developed Red List Categories and Criteria in 1995 (Maes *et al.* 1995; Maes and van Swaay 1997) that were based upon the IUCN criteria (IUCN Species Survival Commission 1994) and on Categories and Criteria used in

The Netherlands (Van Ommering 1994) and in Germany (Schnittler *et al.* 1994). Flemish Red List categories are based on two criteria: A trend criterion (change in the extent of distribution between two compared periods) and a rarity criterion (the number of sites, populations, grid squares, etc. of a species). The application of the Red List criteria in Flanders is summarised in Table 1. Additional Red List categories, not shown in Table 1, are 'Probably threatened' (i.e., studies on single or few populations indicate that the species is threatened in its entire range) and 'Data deficient' (i.e., insufficient data are available for correct assessment, for example because of the inconspicuousness of species or an unclear taxonomy).

Table 1 – Classification scheme for the Red Lists of Flanders; the % that determine rarity (% grid squares, populations, etc.) and trend (decline in the number of grid cells, populations, etc.) are indicative.

Trend	Rarity				
	Extinct 0%	Very rare <2%	Rare 2-5%	Fairly rare 5-15%	Not rare >15%
Very strong decline >75%	Extinct	Critically Endangered	Endangered	Vulnerable	Near threatened
Strong decline 50-75%	–	Endangered	Endangered	Vulnerable	Near threatened
Moderate decline 25-50%	–	Vulnerable	Vulnerable	Vulnerable	Near threatened
No decline <25%	–	Rare	Rare	Rare	Not threatened

Since 1994, 16 Red Lists have been compiled in Flanders: Five vertebrate groups, nine invertebrate groups, higher plants and a selected group of fungi (Table 2).

Table 2 – Published Red Lists in Flanders together with their reference and the total number of species per taxonomic group.

Group	Reference	Number of species
Vertebrates		
Mammals	Criel (1994)	59
Amphibians & Reptiles	Bauwens and Claus (1996)	19
Fish	Vandelannoote and Coeck (1998)	55
Birds	Devos and Anselin (1999)	163
Invertebrates		
Carabid beetles	Desender <i>et al.</i> (1995)	352
Butterflies	Maes and Van Dyck (1996)	64
Dragonflies	De Knijf and Anselin (1996)	58
Spiders	Maelfait <i>et al.</i> (1998)	607
Grasshoppers	Decler <i>et al.</i> (2000)	39
Dolichopodid flies	Pollet (2000)	260
Empidid flies	Grootaert <i>et al.</i> (2001)	258
Water bugs	Bosmans <i>et al.</i> (in prep.)	57
Land snails	Backeljauw <i>et al.</i> (in prep.)	104
Plants and fungi		
Fungi	Walley and Verbeken (1999)	552
Higher plants	Biesbrouck <i>et al.</i> (2001)	1028

A digital list of all species for which a Red List has been compiled together with their threat status in Flanders can be found on ftp://ftp.instatat.be/Users/Dirk_M/RedListsFlanders.xls or on www.nara.be.

DISCUSSION

Flanders is a small region (13,512 km²) which makes a straightforward application of the regional IUCN Red List criteria inappropriate. Table 3 shows the Red List of butterflies (Maes and Van Dyck 1999; 2001) based on the IUCN Red List criteria. This exercise clearly shows that many Flemish butterfly species would appear in the most threatened IUCN Red List category (based on criterion 'B1ab' in the guidelines of Gärdenfors *et al.* (2001)) simply due to the limited area of Flanders. Even smaller European countries or regions (e.g., Luxembourg, Liechtenstein, Andorra, or the different German 'länder', etc.) would have all their species, even the most widespread ones, in the category 'Critically endangered' on the basis of this limited 'extent of occurrence' cri-

terion. This does not allow prioritisation of threatened species because they appear all equally threatened.

Table 3 – Number of butterfly species in Flanders using the Flemish Red List criteria compared to the IUCN Red List criteria.

Red List category	Number of species	
	RL criteria	Flanders RL Criteria IUCN
Extinct	19	19
Critically endangered	5	14
Endangered	6	4
Vulnerable	7	3
Rare	3	–
Data deficient	1	1
Not threatened	23	23
Total	64	64

Since much more data are available on vertebrates and on vascular plants, the proposed IUCN criteria are more easily applicable to these groups than to lower organisms, such as invertebrates [dolichopodid – Pollet (2000) or emiidid flies – Grootaert *et al.* (2001)] or lower plants (Hallingbäck *et al.* 1995). Their distribution and certainly their population numbers are only vaguely known, let alone changes in the area of extent or the number of populations.

Comparability of Red Lists among countries or regions is, in our opinion, of secondary importance to comparability among taxa within a country or region. Nature conservation is the competence of local or national governments and should therefore focus on the local scale. Listing priorities within a region or country should be based on comparable categories and criteria within the region rather than between countries or regions. Recently, techniques have been developed to compare trends among species of different taxonomic groups within a country or region (Telfer *et al.* 2002). As an example, we compared trends of butterflies and dragonflies in Flanders. Among the ten most declining species of both groups, nine are butterflies and only one is a dragonfly (Table 4); this means that butterflies have declined stronger than dragonflies (Maes and Van Dyck 2001). Extending such trend calculations to other taxonomic groups will result in an objective priority list for the compilation of national or regional species action plans.

Table 4 – Comparing trends of two taxonomic groups (butterflies and dragonflies) in Flanders (north Belgium) using Telfer *et al.* (2002).

Species	Trend
1 <i>Polyommatus semiargus</i> (butterfly)	-3.290
2 <i>Issoria lathonia</i> (butterfly)	-2.720
3 <i>Melitaea cinxia</i> (butterfly)	-2.807
4 <i>Pyrgus malvae</i> (butterfly)	-2.446
5 <i>Leptidea sinapis</i> (butterfly)	-2.428
6 <i>Satyrrium w-album</i> (butterfly)	-1.320
7 <i>Hesperia comma</i> (butterfly)	-1.234
8 <i>Coenagrion hastulatum</i> (dragonfly)	-1.055
9 <i>Plebeius argus</i> (butterfly)	-0.971
10 <i>Limnitis camilla</i> (butterfly)	-0.576

FUTURE USE OF RED LISTS IN FLANDERS

In the future, the use of Red Lists and the 'follow-up' of Red List species in Flanders will probably change; the compiled information in the present Red Lists is usually rapidly out of date because many threatened species decline at such speeds that one can only confirm its extinction in a next Red List published 10-15 years later. Threatened species should therefore be monitored on a year to year basis so that species declines are detected early enough to undertake conservation actions. Since it will not be feasible to monitor all threatened species, a well selected set of species from different taxonomic groups and habitats (a so called multi-species approach) is more appropriate (Lambeck 1997; Van Dyck *et al.* 2001).

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