From Red Lists to Species of Conservation Concern

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Abstract: National red lists of threatened animal and plant species prepared according to the criteria of the World Conservation Union (IUCN) adequately reflect the extinction risk of species within a country but cannot be used directly to set conservation priorities. In particular, the significance of national populations for the conservation of the species as a whole is not taken into account. We present a procedure that can be used to assess national responsibility based on the national red-list status of a species, the international importance of the national population, and the species “historical rarity” status. We distinguished five responsibility classes for breeding birds: B1, threatened species with internationally important populations in Switzerland; B2, threatened species with internationally less important populations; B3, nonthreatened species with internationally important populations; B4, nonthreatened species with internationally less important populations; and B5, species that have never been common in Switzerland. Two responsibility classes were distinguished for birds occurring in Switzerland as visitors: G1, species with large concentrations in Switzerland and an unfavorable conservation status in Europe, and G2, species with large concentrations in Switzerland and a favorable conservation status in Europe. Two additional classes (G3 and G4) for visiting species occurring in internationally less important numbers are possible but were not analyzed in detail. Responsibility classes B1, B2, B3, G1, and G2 were defined as species of national conservation concern. We developed the method for birds in Switzerland, but it can be used in other countries and for other taxonomic groups as well. It is particularly suitable where national red lists are established according to IUCN guidelines.

Key Words: birds, conservation priorities, red lists, species conservation, Switzerland

De Listas Rojas a Especies Interés para la Conservación

Resumen: Las listas rojas nacionales de especies de animales y plantas amenazadas que siguen los criterios de la World Conservation Union (IUCN) reflejan adecuadamente el riesgo de extinción de especies en un país pero no pueden ser utilizadas directamente para definir prioridades de conservación. En particular, no se toma en cuenta el significado de poblaciones nacionales para la conservación de especies como tales. Presentamos un procedimiento que se puede utilizar para evaluar la responsabilidad nacional con base en el estatus de lista roja de una especie en un país, la importancia internacional de la población nacional y el estatus de “rareza histórica” de la especie. Distinguimos cinco clases de responsabilidad para aves residentes: B1, especies amenazadas con poblaciones internacionalmente importantes en Suiza; B2, especies amenazadas con poblaciones internacionalmente menos importantes; B3, especies no amenazadas con poblaciones internacionalmente importantes; B4, especies no amenazadas con poblaciones internacionalmente menos importantes; y B5, especies que nunca han sido comunes en Suiza. Se distinguieron dos clases de responsabilidad para aves que ocurren como visitantes en Suiza: G1, especies con grandes concentraciones en Suiza y un estatus de conservación desfavorable en Europa y G2, especies con grandes concentraciones en Suiza y un estatus de conservación favorable en Europa. Son posibles dos clases más, (G3 y G4) para especies visitantes que ocurren en números menos importantes internacionalmente, pero no fueron analizados en detalle. Las clases de responsabilidad B1, B2, B3, G1 y G2 fueron definidas como especies de interés nacional para la conservación. Desarrollamos
World Conservation Union (IUCN) Red Lists are well established as a conservation tool at the global level. In recent years, IUCN Red List categories and criteria have increasingly been used at national levels, and this has been encouraged by the IUCN with the publication of guidelines for national or regional red lists (Gärdénfors et al. 2001; World Conservation Union 2003). National red lists based on IUCN criteria, however, may differ substantially from other “red lists.” In many countries, red lists have been established to reflect the need for conservation action; the criteria used to define a species as threatened are usually based on the rate of decline but also consider other factors, such as whether a species has always been rare in the country (e.g., Zbinden et al. 1994; Gibbons et al. 1996; Bauer et al. 2002). Thus, most national red lists are considered an appropriate basis for setting conservation priorities, and in some countries red lists also have legal status. Use of the IUCN criteria, however, requires different thinking. The IUCN Red Lists are based on an objective method for assessing extinction risk, or, at the national level, “regional extinction risk,” the risk that a species will disappear from a country. This is not necessarily equivalent to a need for conservation action or for the setting of national conservation priorities (Gärdénfors 2001; Gärdénfors et al. 2001; Possingham et al. 2002).

In recent years, the discussion of setting priorities in species conservation has intensified (e.g., Master 1991; Avery et al. 1994; Schnitler et al. 1994; Flade 1998; Dunn et al. 1999; Rocamora & Yeatman-Berthelot 1999; Schnitler & Günther 1999; Boye & Bauer 2000). The different approaches are alike in that they consider biogeographical information in addition to national threat status and thus put the national view into a broader perspective. In Europe, BirdLife International used a similar approach to identify bird species of European conservation concern (SPEC; Tucker & Heath 1994). Some priority-setting approaches include the proportion of a species’ range relative to the total distribution area (Dunn et al. 1999) or percentages of the population in European Union countries (Denz 2003). Others include legal or political factors such as occurrence of species on appendices to European Union directives (Boye & Bauer 2000). Although it is understandable that such aspects are considered in political decisions, limited conservation resources should nevertheless be invested in projects that will make the largest contributions to the safeguarding of the species as a whole. This requires a sound knowledge of the responsibility of a country or region for a particular species.

In Switzerland all new national red lists are required to follow IUCN criteria to be accepted by government agencies. In 2001 a new red list was therefore prepared for breeding birds (Keller et al. 2001). In comparison to earlier lists (Bruderer & Thönen 1977; Bruderer & Luder 1982; Zbinden 1989; Zbinden et al. 1994) the new red list reflects regional extinction risk and less adequately indicates conservation priorities. For this reason we developed a new classification method to determine bird species of conservation concern in Switzerland (Keller & Bollmann 2001). We set ourselves the following targets: the new classification should (1) be based on the new red list and take into account the significance of the Swiss populations in a global or regional (e.g., European) context, (2) be simple so that it can be easily understood and updated, and (3) group species into classes that will require broadly similar types of conservation action. The classification should also provide a basis for identifying those species in particular need of species action plans and recovery programs. This selection of priority species for recovery programs was done in a separate step (Bollmann et al. 2002).

Overall, our approach resulted in a three-step procedure: identifying (1) threatened species (national red list), (2) species of national conservation concern, and (3) priority species for national recovery programs. Here, we first discuss some characteristics of IUCN-based red lists that led us to the development of the three-step system. We then present the method to determine species of national conservation concern and briefly discuss how it can be used to identify priority species for recovery programs.

Characteristics of National Red Lists Based on IUCN Categories and Criteria

Categories of the IUCN Red List were designed to reflect the extinction risk of species or lower taxa at the global scale (IUCN 2001). The application of the criteria at a subglobal level requires two major adaptations because in most situations it will not be a taxon but populations of a taxon or even parts of a population arbitrarily limited by a national border that will be assessed (Gärdénfors et al. 2001). First, the category extinct (EX) cannot be treated
in the same way as at the global level and is replaced by the category regionally extinct (RE) because the taxon will normally continue to exist outside the country.

Second, the “population” to be assessed may be subject to immigration or emigration, and extinction risk will be affected by the situation of the populations with which the national population is in contact. The regional application guidelines take these factors into account by proposing a two-step approach, in which at first populations within a country or region are assessed as if they were isolated taxa. In a second step a species (population) can be “downgraded” or “upgraded”—assigned a lower or higher category depending on whether populations outside the country are judged to decrease or increase extinction risk of the population within the country. The second step requires a lot of knowledge and makes for arbitrary decisions, which would be contrary to the aim of the IUCN assessment procedure to be based on quantitative data. For the Swiss red list of breeding birds, we therefore formalized the second step by defining additional criteria for upgrading and downgrading a species (Keller et al. 2001). The adjustments in the second step are important in particular for such mobile species as birds and for small and/or landlocked countries such as Switzerland, where hardly any species have isolated populations within the country.

Despite these adjustments the resulting red list contained a fair number of species that fulfilled criterion D, “small population size,” for one of the threat categories without showing a decline. Many of these species have always been rare and are unlikely to increase their populations because suitable habitat is lacking. Despite downgrading they are still part of the red list, together with species that have become rare after a serious decline, yet everyone agrees that they do not merit the same conservation attention.

A national red list assesses extinction risk from a national point of view. It does not account for the consequences that the extinction of a species in a country would have for the global or regional (e.g., European) population of the species. The following example illustrates this. The Common Teal (Anas crecca) and Golden Eagle (Aquila chrysaetos) are both classified as vulnerable (VU) on the Swiss list. For the future of Common Teals in Europe it would hardly matter if teals no longer bred in Switzerland because the few breeding pairs there make up a tiny fraction of the overall European population. If Golden Eagles became extinct in Switzerland, on the other hand, this might have a noticeable effect on the European population because about 5% of the European population occurs in Switzerland. The Swiss thus have a much higher responsibility to maintain Golden Eagle populations than they do to maintain Common Teal populations.

The same applies to species that are not considered threatened and are thus classified as of least concern (LC). A serious decline of the Snow Finch (Montifringilla nivalis), a species restricted in Europe to the Alps and some southern mountain massifs, would be equivalent to a serious decline of the species as a whole because Switzerland currently holds about one-third of the European population. Conservation must also ensure that the populations of such species remain unthreatened. To prevent a species from having to be red-listed is particularly important in countries where that species has a stronghold in an international context. Therefore, the most important factor in determining species of national conservation concern, in addition to threat status, is the importance of the national population for the species as a whole.

Methods

Definition of Species of National Conservation Concern

Although it is recognized that all species living in a country are important, not all of them need the same attention from conservation organizations. To maximize the benefit of conservation measures, attention should be greater for (1) threatened species than for nonthreatened ones, (2) species with internationally important populations, and (3) species that have become rare after a decline than for species that have always been rare.

Based on a combination of these parameters, we defined five classes of national responsibility for breeding species (B1—B5) and four for visiting species (G1—G4). Out of those nine classes we defined species as of particular national conservation concern that are threatened at the global level, that are threatened at the national level but have not always been rare, and/or that have internationally important populations in the country (i.e., classes B1, B2, and B3 for breeding species and G1 and G2 for visiting species) (Table 1).

Classification of Breeding Species

We classified all regular breeding bird species into the responsibility classes B1—B5 according to (1) threat status, (2) importance of the national population relative to the total European population, and (3) historical rarity. Threat status, percentage of the European population, and historical rarity can be considered the three axes of a “conservation cube” similar to the one developed by Avery et al. (1994) (Fig. 1). Three theoretically possible combinations do not occur for birds in Switzerland and are unlikely to occur in other countries or for other taxonomic groups and were therefore not considered further. Rare species by our definition are automatically red-listed because of their small populations (IUCN criterion D); the two combinations of rare and nontreated categories are therefore not possible. A species that has always been rare in a country might theoretically occur in
Table 1. Definition of classes of national responsibility and number of species in each class: B1, B2, B3, G1, and G2 (species of national conservation concern).

<table>
<thead>
<tr>
<th>Responsibility class</th>
<th>threat status*</th>
<th>percentage of European population</th>
<th>historical rarity</th>
<th>Description/need for action</th>
<th>No. of species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breeding species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>threatened (RE, CR, EN, VU, NT)</td>
<td>high</td>
<td>(formerly) common</td>
<td>species threatened at global or national level with internationally important populations need for action: preservation and/or enhancement, intensive monitoring</td>
<td>10</td>
</tr>
<tr>
<td>B2</td>
<td>threatened (RE, CR, EN, VU, NT)</td>
<td>low</td>
<td>(formerly) common</td>
<td>species threatened at global or national level with internationally less important populations need for action: preservation and/or enhancement, intensive monitoring</td>
<td>60</td>
</tr>
<tr>
<td>B3</td>
<td>not threatened (LC)</td>
<td>high</td>
<td>(formerly) common</td>
<td>species not threatened at national level with internationally important populations need for action: preservation, intensive monitoring</td>
<td>42</td>
</tr>
<tr>
<td>B4</td>
<td>not threatened (LC)</td>
<td>low</td>
<td>(formerly) common</td>
<td>species not threatened at national level with internationally less important populations need for action: routine monitoring</td>
<td>52</td>
</tr>
<tr>
<td>B5</td>
<td>threatened (RE, CR, EN, VU, NT)</td>
<td>low</td>
<td>rare</td>
<td>species that were never common in Switzerland but on red list because of their rarity, very small percentages of the European populations need for action: routine monitoring</td>
<td>31</td>
</tr>
<tr>
<td>Visiting species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G1</td>
<td>unfavorable conservation status in Europe (SPEC 1–3)</td>
<td>≥1% of population (Ramsar criterion)</td>
<td></td>
<td>species threatened in Europe with internationally important populations in Switzerland need for action: preservation and/or enhancement, routine monitoring</td>
<td>2</td>
</tr>
<tr>
<td>G2</td>
<td>favorable conservation status in Europe (SPEC 4, non-SPEC)</td>
<td>≥1% of population (Ramsar criterion)</td>
<td></td>
<td>species not threatened in Europe with internationally important populations in Switzerland need for action: preservation, routine monitoring</td>
<td>6</td>
</tr>
<tr>
<td>G3</td>
<td>unfavorable conservation status in Europe (SPEC 4, non-SPEC)</td>
<td>&lt;1% of population (Ramsar criterion)</td>
<td></td>
<td>species threatened in Europe with internationally less important populations in Switzerland need for action: preservation, routine monitoring</td>
<td>?</td>
</tr>
<tr>
<td>G4</td>
<td>favorable conservation status in Europe (SPEC 4, non-SPEC)</td>
<td>&lt;1% of population (Ramsar criterion)</td>
<td></td>
<td>species not threatened in Europe with internationally less important populations in Switzerland need for action: routine monitoring</td>
<td>?</td>
</tr>
</tbody>
</table>

*Abbreviations: RE, regionally extinct; CR, critically endangered; EN, endangered; VU, vulnerable; NT, near threatened; LC, least concern.
Species of Conservation Concern

Keller & Bollmann

Figure 1. Definition of responsibility classes (B1—B5) according to the three axes: threat, percentage of European population, and historical rarity. The two levels of the cube are drawn apart to enhance clarity. See Table 1 for explanation of responsibility classes.

Figure 2. Classification of Swiss breeding bird species according to their percentages of the European population: I, less than value expected from percentage of the surface area of Switzerland in relation to total surface area of Europe (<0.7%); II, up to 2 times the expected value (0.7–1.4%); III, up to 5 times the expected value (1.4–3.5%); IV, up to 10 times the expected value (3.5–7%); V, more than 10 times the expected value (>7%).

an internationally important population when the global or regional (e.g., European) population is very small. This could be the case if a globally threatened species had declined in areas where it was formerly common, and the formerly marginal population thus would become more important.

Threat Status

We classified species as either threatened or nonthreatened. All species were considered threatened that were either globally threatened or listed on the new Swiss red list, classified as regionally extinct (RE), critically endangered (CR), endangered (EN), vulnerable (VU), or near threatened (NT). We included the category NT because species in this category may need special conservation action to prevent them from being put on the red list (see Discussion). Species in the category of least concern (LC) were considered nonthreatened.

International Importance

We assessed the importance of the Swiss population of a species in an international context on the basis of its proportion of the total European population, which can be considered a correlate for degree of endemism. Percentages were classified as high or low according to the value expected from the surface area of Switzerland relative to the size of Europe. The surface area of Switzerland (41,285 km²) makes up approximately 0.7% of the surface area of Europe (without Russia). If a bird species were spread evenly across Europe, one would therefore expect Switzerland to hold 0.7% of the European population. More than half of the species in Switzerland do not even reach this value (Fig. 2). Fifteen percent have a proportion of up to twice the expected value, and for only 5% the proportion makes up more than 10 times the expected value (i.e., more than 7% of the European population). The highest percentages were for Snow Finch (32%), Alpine Accentor (*Prunella collaris*) (28%), and Water Pipit (*Anthus spinoletta*) (25%). Percentages of the European population were classified as high if they were higher than twice the expected value (i.e., above 1.4%) and as low if they were below that level.

We calculated the percentages based on estimates in the EBCC Atlas of European Breeding Birds (Hagemeijer & Blair 1997). These estimates do not include the European part of Russia because comparable data were not available for this country. For most species, however, the inclusion of Russia would hardly have changed our classification.

Historical Rarity

Species with very small populations can be separated according to whether they have always been rare or whether they were once abundant and have become rare after a strong decline, usually due to anthropogenic influences. We defined those species as rare that in the nineteenth or twentieth centuries probably never occurred in more than 50 breeding pairs. Examples are Common Pochard (*Aythya ferina*) and some other duck species, for which suitable breeding habitat is limited, and the Pallid Swift (*Apus pallidus*) and some other southern
European species that reach the northern limit of their range in Switzerland. All the others were classified as (at least formerly) common.

**Visiting Species**

The Swiss red list assesses threat status only for breeding birds. Switzerland, however, also carries a responsibility for species migrating through or wintering in the country. Therefore, we defined additional responsibility classes for regularly visiting species. As for breeding birds, the classification was based on a combination of threat status and international importance. However, instead of national threat status we used European threat status because species passing through or wintering in Switzerland originate from areas covering large parts of Europe. Species with an unfavorable conservation status in Europe and internationally important populations in Switzerland were classified as G1; those with a favorable conservation status and internationally important populations were classified as G2. For species with internationally less important populations, the same distinction results in class G3 for species with an unfavorable conservation status and G4 for species with a favorable conservation status. For practical reasons we refrained from assessing all visiting species with small numbers relative to the European populations. Categories G3 and G4 would contain all species migrating through the country and would not provide additional information for conservation other than SPEC status.

We determined European threat status according to the list of species of European conservation concern (SPEC) published by BirdLife International (Tucker & Heath 1994), which distinguishes between species with an unfavorable conservation status (SPEC 1–5) and species with a favorable conservation status (SPEC 4 or non-SPEC).

International importance was determined from the proportion of the European or the relevant flyway population occurring in Switzerland. For waterbirds, which are the most important group of visiting species in Switzerland, we used the 1% criterion of the Ramsar Convention. Species were regarded as of international importance if Switzerland regularly held at least 1% of the European or flyway population. Only for waterbirds do quantitative figures exist for wintering populations in Switzerland. With the exception of the Brambling (*Fringilla montifringilla*), which in certain years occurs in very high numbers, no species from other groups are likely to reach 1% of the European population. For waterbirds we took the size of the Swiss populations from the results of the waterbird census of the Swiss Ornithological Institute for the winters 1990/1991–1999/2000 (Schmid et al. 2001) and those of the total flyway populations from the waterbird population estimates by Wetlands International (Rose & Scott 1997).

**Need for Action**

The responsibility classes group species that in the context of conservation can be treated in similar ways. For each class we briefly described the basic types of conservation measures to be considered. We distinguished between monitoring of populations and conservation measures to protect or enhance populations. Whether the emphasis should be put more on monitoring or on specific conservation measures differs among responsibility classes. Species of responsibility class B3, for instance, do not need specific measures to enhance their populations because they are not threatened. Yet monitoring has to ensure that potential problems are recognized at an early stage. Monitoring of these species should therefore be more intensive and should preferably go beyond counting individuals or breeding pairs to include monitoring of additional demographic parameters. On the other hand, “ordinary” monitoring of numbers will be sufficient for the rare species of class B5.

Conservation measures also have different levels. Responsibility classes B1 and B2 contain some species with currently stable or increasing populations (e.g., Golden Eagle and Tufted Duck [*Aythya fuligula*]). They do not require specific programs to enhance their populations, but decline of their populations must be prevented. We can therefore distinguish between “passive” conservation measures and “active” enhancement measures to increase populations.

**Results**

The classification procedure resulted in 120 of the 195 regular breeding bird species being listed as species of national conservation concern (Table 1). Class B1—threatened species with internationally important populations in Switzerland—contains 10 species. They were all classified as VU or NT, the lowest threat categories. Populations of three of these species (Golden Eagle, Peregrine Falcon [*Falco peregrinus*], and Hobby [*Falco subbuteo*]) are currently stable or increasing, and five species are declining (Hazel Grouse [*Bonasa bonasia*], Rock Partridge [*Alectoris graeca*], Common Cuckoo [*Cuculus canorus*], Gray-headed Woodpecker [*Picus canus*], and Rock Thrush [*Monticola saxatilis*]). Populations of two species (Common Kestrel [*Falco tinnunculus*] and Alpine Swift [*Apus melba*]) are only stable as a result of specific conservation measures.

Class B2 contains 60 species with small and mostly declining populations. A large part of them occur in wetlands or agricultural areas. This reflects the important loss (wetlands) or degradation (agricultural habitats) of these habitats have undergone in recent decades (Keller & Zbinden 2001). Class B2 also contains the only globally...
themselves as threatened species breeding regularly in Switzerland, the Corncrake (*Crex crex*).

Forty-two species were classified as B3, nonthreatened species with internationally important populations in Switzerland. This group contains mainly species of alpine and subalpine habitats or woodlands. On the one hand, this reflects the importance of these habitats in the European context: Switzerland is situated in the heart of the alpine chain, and one-third of the country is covered with forests. On the other hand, mountain habitats have been less affected by development than the Swiss lowlands.

Breeding birds not classified as species of national conservation concern occur in a variety of habitat types. Class B4 contains 52 species, all of them widely distributed in Switzerland and Europe, and with few exceptions they are classified as SPEC 4 or non-SPEC at the European level. The same is true for about half of the 31 species in class B5. The other half consists of species with an unfavorable conservation status in Europe but which have always occurred in Switzerland in only small numbers. Class B5 also contains a few species with still small but recently increasing populations, such as the Red-crested Pochard (*Netta rufina*).

Eight visiting species reached the 1% criterion. With the exception of the Brambling they are all waterbirds. These seven species also breed in Switzerland, but only two species were classified as species of conservation concern both as breeding and wintering species: the Great Crested Grebe (*Podiceps cristatus*), which has internationally important breeding populations in Switzerland and is thus classified as B3, and the Tufted Duck, classified as B2.

**Discussion**

Our classification is based on principles comparable to those embodied in other approaches that were, however, not based on red lists according to recent IUCN categories. It offers a way to define species of national conservation concern in addition to national red lists. The approach is similar to the definition of SPEC species (Tucker & Heath 1994).

Our method results in a relatively small number of categories. A more detailed distinction based on individual red-list categories or finer classes of the percentage of European populations would have resulted in a higher number of classes. However, too high a number of classes may be confusing (Rocamora & Yeatman-Berthelot 1999). Avery et al. (1994) also pooled the original 27 cells of their “conservation cube” into just three categories.

In contrast to the conservation cube of Avery et al. (1994), we did not consider European conservation status (SPEC; Tucker & Heath 1994) to be a separate axis because SPEC status was already used as criterion for upgrading or downgrading of national red-list categories (Keller et al. 2001). Our third axis considered the concept described by Huenneke (1991), which distinguishes between “old rare species,” species that have always been rare, and “new rare species,” species that have become rare following a decline, mostly due to anthropogenic influences. Avery et al. (1994) do not clearly distinguish between these two categories. They thus follow a static definition of rarity, which does not take into account the history of populations. In the framework of setting national conservation priorities, this distinction is helpful. Rare species often get a lot of public attention, especially when they are attractive or otherwise charismatic, even though limited conservation resources would be spent more effectively on other, more abundant but overall more vulnerable species.

We included species classified as NT in the group of threatened species, despite the fact that the category NT is not part of the Swiss red list sensu strictu. Species of this category merit conservation action for two reasons. First, conservation action should not be targeted only at highly threatened species but should also prevent species from having to be red-listed. Second, the success and effectiveness of conservation measures may be higher when a species is still relatively abundant.

Percentage of the global or European population has been used to determine international importance in other approaches, too, but the limits for determining a high percentage were usually set without a particular reason being given. Avery et al. (1994), for instance, classified percentages of >30% as high, 15–29% as medium, and <15% as low. Flade (1998) set the limit for a high percentage at 10%, whereas Schnittler et al. (1994) considered populations significant if they corresponded to more than one-third of the global population and if Germany was situated in the center of the species’ range. These approaches do not take into account the size of the area considered (e.g., a country). However, it is obvious that the larger a country, the larger a population one would expect it to hold. For Germany a value of 10% is equivalent to 1.7 times the value expected relative to the size of the country; for the United Kingdom it is equivalent to 2.4 times the expected value, and for a small country like Switzerland it is equivalent to 14 times the expected value. Even though our approach of setting the limit at twice the value expected is also arbitrary, it allows a comparable application for large and small countries or other geographical units.

Nevertheless, our approach is a simplification and does not take into account other biogeographical aspects, such as the unequal distribution of main habitat types or the position of the population within the worldwide range (Schnittler & Günter 1999). For Switzerland, taking central Europe as a reference as suggested by Zbinden (1989), might be a more suitable approach. This is not a clearly defined biogeographical region, however, and southern Switzerland strictly speaking belongs to southern and not
central Europe. Geographical isolation of populations is another aspect not adequately considered when one is simply calculating percentages of European populations. Several species in Switzerland have breeding populations in the Alps that are geographically separated from those in other mountain regions or in northern Europe. For some, such as the Ring Ouzel (Turdus torquatus), the northern and alpine forms are considered different subspecies; for others, such as the Goosander (Mergus merganser), it is uncertain whether the populations are indeed isolated. Due to the uncertainty of the status of such populations, we decided not to take this criterion into account and instead favored a simple and pragmatic approach.

Among birds, no species endemic to Switzerland exist. If our approach were used for other taxonomic groups or other countries, an additional category for endemic species might be needed. In principle, degree of endemism is accounted for by the percentage of the European population. Similarly, a special category for globally threatened species with globally important national populations (a case that did not occur in Switzerland) might be considered to emphasize the particular responsibility of a country or region at the global level.

The responsibility classes adequately group species that for conservation purposes can be treated in a similar way. For instance, species of responsibility class B2 will need active measures to enhance their populations, whereas for B3 species, which by definition are not threatened, “passive” protection will be sufficient to maintain their important populations in Switzerland. This is an advantage over the classification of Avery et al. (1994), whose “amber” list contains both threatened species and nonthreatened ones with internationally important populations.

We see three main actions for which our classification into responsibility classes can serve as an adequate basis: (1) selecting priority species for recovery programs, (2) evaluating priority conservation areas, and (3) improving monitoring programs.

In Switzerland we successfully used responsibility classes to select priority species for recovery programs (Bollmann et al. 2002). Starting with the species of national conservation concern (responsibility classes B1, B2, B3, G1, G2), we defined for each species the need for conservation action and the adequate type of conservation action (species recovery programs vs. habitat protection or site protection).

Species of national conservation concern are also a suitable basis for evaluating important areas for conservation. In Switzerland, as in other countries, currently only breeding bird species on the Swiss Red List legally qualify as a basis for defining habitats for breeding birds that merit protection. This means that rare but marginal species are considered more important than species with internationally important populations. In particular, the red list is an insufficient basis for selection of important areas in the alpine regions, where today, fortunately, many species are not threatened. The Important Bird Area (IBA) program of BirdLife International recognized this problem and proposed a method that takes international responsibility and threat status into account. Bird species used for the designation of IBAs in Switzerland mainly belong to responsibility classes B1, B3, G1, and G2, although the European IBA program was finished before the responsibility classes were defined (Heath & Evans 2000; Heer et al. 2000).

The list of species of conservation concern shows for which species a sound knowledge of population size and trend is particularly important. An analysis of the current situation of monitoring programs in Switzerland revealed, however, that for 10% of species of national conservation concern not enough data are available to evaluate population trends. Moreover, programs to monitor additional population parameters, such as breeding success and mortality, would be desirable for species with internationally important populations.

We present a well-defined and comprehensible procedure to evaluate species of national conservation concern. It builds upon national red lists of threatened species that are based on IUCN criteria. By considering both threat and international importance, the classification is more adequate than red lists alone as a basis for determining the focus of national conservation efforts. The criteria used may vary in the details, and no selection system will give the “right” answer for every species or group of species, no matter how many criteria are included (Dunn et al. 1999). What is more important is that such concepts are elaborated and accepted by government agencies and nongovernmental organizations and that sufficient resources are provided for the adequate protection of species of national conservation concern.

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Literature Cited


