

BIODIVERSITY & CONSERVATION

IUCN Red List assessment and the Global Strategy for Plant Conservation: taxonomists must act *now*

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The Global Strategy for Plant Conservation (GSPC) sets a series of ambitious targets for 2010 to stem the loss of plant diversity. Target 2 calls for a preliminary assessment of the conservation status of all known plant species, at national, regional and international levels, but with less than 3% of global diversity assessed to date, the process must be greatly accelerated. This can best be done by mobilizing plant taxonomists to identify species that are threatened (or potentially threatened) using available distribution data from herbaria and other sources, and by including preliminary IUCN Red List assessments in all their taxonomic works. Emphasis should be placed on rare taxa with restricted ranges, which are the most likely to be at risk. Sufficient data are available for preliminary assessment of nearly all species, thereby limiting the number that must be relegated to “data deficient” status (DD). The taxonomic community can play a unique role in fulfilling the GSPC goals, but we must act quickly.

KEYWORDS: CBD, conservation, GSPC, IUCN Red List, Madagascar, taxonomists.

INTRODUCTION

The Sixth Conference of the Parties (COP6) to the Convention on Biological Diversity (CBD) held in April, 2002 adopted the Global Strategy for Plant Conservation (GSPC), which includes 16 outcome-oriented targets for 2010. The long-term objective of the GSPC is to halt the continuing loss of plant diversity. Target 1, “Understanding and documenting plant diversity”, is an indispensable precursor for Target 2, “a preliminary assessment of the conservation status of all known plant species, at national, regional and international levels”, which in turn is a necessary precondition for meeting the Target 7 goal of “60 percent of the world’s threatened species conserved *in situ*”.

Governments, through the CBD, have acknowledged the existence of a “taxonomic impediment” to the sound management of biodiversity. The gaps in our taxonomic knowledge substantially impact our ability to conserve and use biological diversity and to share in its benefits. To address the taxonomic impediment, COP6 established the Global Taxonomic Initiative (GTI), which aims to improve conservation decision-making by redressing the lack of taxonomic information and expertise that effects many parts of the world. At COP7 held last year in Kuala Lumpur, the CBD moved to integrate the targets of the

GSPC into all its relevant thematic and cross-cutting programs. Thus, GSPC Target 1 should be integrated into the GTI, and Target 7 into the program of work aimed at protecting critical ecosystems in 190 countries around the world.

It is imperative that botanists and conservationists interact to meet the global biodiversity challenge (Golding & Timberlake, 2003; Lowry & Smith, 2003; Smith & al., 2004). A move to integrate the GTI and the GSPC is reflected in a growing trend to include conservation assessments in taxonomic works. The conservation community urgently needs input from taxonomists; P. Raven has pointed out that “The GSPC is the greatest opportunity so far for plant conservation” (Bramwell & al., 2002).

GSPC TARGETS AND IUCN RED LIST CATEGORIES

Recent estimates of the total number of vascular plants have ranged from 310,000 (Prance & al., 2000) to 420,000 species (Bramwell & al., 2002), and we are far from having any kind of authoritative “world checklist”. Threatened species lists are designed primarily to draw attention to the most urgent cases, and are usually based

on a rather simple quantitative evaluation of extinction risk. The IUCN Red List is a valuable source of information on conservation status (for a discussion of the appropriate uses of the Red List, see Possingham & al., 2002; Lamoreaux & al., 2003). However, the 2004 Red List (IUCN, 2004) contains only 11,521 species of vascular plants, a tiny (< 3%) fraction of global plant diversity, most of which was evaluated using the 1994 IUCN criteria. How, then, can we possibly achieve GSPC Target 2 by 2010? Plants lag far behind many animal groups in contributing to global conservation planning, despite their essential role in structuring most ecosystems and as the basis for all life on Earth.

Red listing is not an end in itself but provides a comparative framework for conservation planning (Given, 2003). Red Lists for tropical countries are, however, so incomplete that it is nearly impossible to assess how many species are truly threatened at a global scale (Pitman & Jørgensen, 2002) or at a regional/hot spot level (Myers & al., 2000). All species must be assessed (or reassessed) using the most recent Red List criteria (IUCN, 2001) to determine those that are “threatened”, whether Critically Endangered (CR), Endangered (EN), or Vulnerable (VU) (i.e., those facing an “extremely high risk” of extinction, a “very high risk”, or a “high risk”). Threat assessments should be based upon the “best available evidence”, and GSPC Target 2 seeks a “preliminary assessment of the conservation status of all known plant species”, the operative word being *preliminary*. Additionally, it was stressed at the 2003 GSPC Expert meeting that the full scientific name of assessed taxa must be included to reflect changing taxonomic concepts. Participants also agreed that in order to reach Target 2 in the next six years, a “first cut” should be taken by classifying all described plant species as either “threatened/potentially threatened”, or “not threatened”.

ACCELERATING THE INTEGRATION OF PLANT INFORMATION INTO CONSERVATION PLANNING

Herbarium specimens comprise the primary data source documenting the diversity and distribution of nearly all plant species. Many plant taxa are “known” only in the herbarium, and not as “living” entities in the wild. Indeed, many are “known” only to us, the community of taxonomists who curate the primary specimen data. As such, we have an obligation to do more than merely erect taxonomic frameworks and summarize regional diversity in floras and other information sources that are, alas, often intelligible only to our peers. We must also interpret and translate that information for other constituencies, and ensure that it becomes an inte-

gral element in conservation planning at local, national, and international scales. In other words, we must efficiently and effectively integrate botanical work (such as inventories and taxonomic revisions/monographs) and conservation (Schatz & al., 2000).

In the recently published South African Plant Red Lists (Golding, 2002), 29% of the 4,098 taxa assessed were evaluated as Data Deficient (DD). Recognizing such a high proportion of species as DD severely limits the prospect of achieving GSPC targets. The Red List Guidelines (IUCN & SSC, 2004) recommend that a precautionary but realistic attitude be adopted when using the IUCN criteria, and suggest that “worse case scenario” reasoning be avoided. Insufficient specimen data can result in inconsistent Red List classifications, for example when uncertainty arises from errors in processing and translating descriptive information (such as locality) into numerical data (Akçakaya & al., 2000). Nevertheless, the assignment of a DD status can be avoided for nearly all taxa with limited label data. The majority of South African DD assessments were attributed either to “poor taxonomy” or were applied to taxa known only from the type collection and/or material gathered long ago. The former case underscores the need to integrate conservation assessments with taxonomic reevaluation and revision, as well as the urgency of synthesizing an authoritative checklist for the world (i.e., to reach Target 1 of the GSPC) as a precursor for fulfilling Target 2. The problem of assessing taxa known only from a limited number of specimens and/or from old material will be encountered very frequently, especially in poorly inventoried floras, and may involve as much as 20% of the world’s plant diversity. But relegating these taxa to DD status would lead to a gross underestimate of the percentage of the world’s plants that are threatened, and would severely compromise efforts to inform directly the conservation planning process. In fact, most of these species can and should be assessed, at least on a preliminary basis, as either EX, CR, EN or VU using available collections data. For example, a species known only from its type collected 100 years ago in what is now a highly transformed urban area could arguably be evaluated provisionally as EX. Similarly, a taxon known only from one or two specimens collected at a single locality or region that is now badly degraded and/or fragmented, but which still has some native vegetation, could be given a provisional assessment of CR/EN. And a species known only from its type gathered in a remote area that remains intact could be assessed provisionally as VU based solely on its very restricted area of occupancy. This simple, practical approach would generally preclude the need to classify plants as DD, as suggested by Schatz & Lowry (2004). We propose that the Data Deficient category should be applied only in cases of unresolved taxonomy or uncertain locality information.

TURNING IDEAS INTO ACTION: EXPERIENCE FROM MADAGASCAR

Madagascar is recognized as a global biodiversity hotspot (Myers & al., 2000; Mittermeier & al., 2004) and a top priority for conservation, with an exceptionally rich and highly endemic biota (Goodman & Benstead, 2005) that is severely threatened (Ganzhorn & al., 2001). The 2004 IUCN Red List contains only 360 native plant species from Madagascar, including 156 species from the previous edition (IUCN, 2004), less than 3% of the ca. 12,000–13,000 indigenous vascular plant species. Most species assessed to date are either palms or legumes evaluated for the WCMC World List of Threatened Trees (Oldfield & al., 1998) using outdated 1994 criteria.

The task of assessing the remainder of the Malagasy flora will be almost impossible without expanded training and capacity-building to ensure broader participation from the taxonomic community, as called for in the “cross-cutting” GSPC Target 15. Increased efficiency is also necessary, and can be achieved by focusing initially on national endemics, which are obvious priorities. “Rare”, i.e., restricted range species are generally more likely to be threatened (Callmander & al., unpubl.), and using the best available evidence, most widespread species can be assessed as Least Concern (LC). Target 2 does not require comprehensive IUCN assessments for the “first cut”, and the GSPC (2003) suggests that priority be given to endemics. Formal inclusion of species on the IUCN Red List may require additional effort and may not be feasible for many taxa, given the manpower constraints within the Red List Secretariat and the sheer volume of assessments that would need to be processed. Regional or taxon-based SSC Specialist Groups, such as the recently formed Madagascar Plant Specialist Group, constitute the final authority for Red listing. While the members of these volunteer groups are remarkably dedicated, they nevertheless face being overwhelmed by the task of validating and processing large numbers of assessments. Burton (2003) asks: “Should we not, instead, be getting on with conserving threatened species, regardless of which precise category they are in?” This would be greatly facilitated by conducting preliminary assessments to compile a list that simply distinguishes between species that are “threatened/potentially threatened” and those that are “not threatened” (=LC), without going through the formal process of applying the more detailed and time-consuming IUCN Red List criteria.

As systematists, we understand that taxonomic frameworks are, by definition, never “carved in stone”, and that new collections (and new eyes) will inevitably lead to their revision (and often expansion) by refining and re-evaluating hypotheses in the light of new data (Schatz, 2002) — a job that we are uniquely qualified to

undertake. Most of us also understand the link between taxonomy and conservation, and realize that conservation assessments based upon “old” taxonomy will usually be inadequate or fallacious. As taxonomic frameworks evolve, conservation assessments will have to be revised as well. Likewise, the availability of new material will necessitate updated assessments, as exemplified by the Malagasy endemic *Takhtajania perrieri* (Winteraceae), which was assessed as EN shortly after its rediscovery in 1997 (Schatz & al., 1998), but should now be revised to Vulnerable (VU D2) based on additional information from the sizeable population in the Anjanaharibe-Sud reserve and the discovery of another population (albeit extremely small) ca. 100 km away on the Masoala peninsula.

HOW WILL WE KNOW WHEN THE GSPC TARGETS HAVE BEEN ACHIEVED?

Reaching Target 1, “Understanding and documenting plant diversity”, involves an open-ended, ongoing process and thus does not have a definable end point. By contrast, we can measure progress toward Target 2, which will be achieved when preliminary conservation assessments have been made for all known plant species. The necessary data are available in the world’s herbaria, but the process must be streamlined and accelerated, without sacrificing rigor and accuracy, if we hope to finish by 2010. One approach would be to focus on the “rarest” species, which on average are likely to be the most threatened, i.e., at the greatest risk of extinction. Mapping their distributions will reveal irreplaceable sites, which, in most cases, will harbor multiple threatened species (Callmander & al., unpubl.; Schatz, 2002). Conservation action at these sites in turn offers the most effective way to achieve the *in situ* conservation called for in Target 7. By identifying the most threatened species and the areas where the greatest number of them can be conserved, we—the taxonomic community—have the capacity to make a unique and timely contribution to fulfilling the ambitious goals of the GSPC.

ACKNOWLEDGEMENTS

The authors thank Janice S. Golding (University of Oxford, U.K.), Prof. Philippe Küpfer (Université de Neuchâtel, Switzerland), and Wendy Strahm (IUCN) for their tireless support before and during this study. This first author’s work was supported by the Swiss National Science Foundation (Grant n° PBNE2-102378), and that of the second and third authors by the U.S. National Science Foundation (DEB 0102727).

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