POINT OF VIEW

Responsible species description: A change of attitude is needed to facilitate and improve access to biological material

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Abstract It remains one of the primary responsibilities of taxonomists to describe and concomitantly disseminate information about the novelties they discover through their research efforts and associated herbarium and field work. However, given the present-day emphasis on benefit sharing concerning access to components of biodiversity, taxonomists should be much more circumspect when conducting field- and other work in foreign countries. It is imperative that project proposals submitted for consideration for support or funding take cognizance of the needs of taxonomists and biodiversity specialists in the countries in which fieldwork is to be conducted.

Keywords access to biodiversity; taxonomy; systematics

■ INTRODUCTION

The importance of allowing access to components of biodiversity for purposes of fundamental research and facilitating the execution of global thrusts, such as the potentially profoundly useful and informative barcoding of life on earth, has recently received attention in the printed media (Smith & al., 2007; Schindel, 2010). Still, in the corridors of power of many governmental structures around the world, there is lingering suspicion when (especially non-national) researchers apply for collecting permits that will allow them unrestricted, or even regulated, access to biodiversity. This certainly applies to permits required for bio-beneficiation research, but increasingly even for permits required for fundamental taxonomic and related work (Crouch & al., 2008; Figueiredo & Smith, 2010). This affects the work of many researchers as it creates stumbling blocks in legally obtaining material for study. However, little has been written about the responsible collecting of material required for, among other things, the description of new species, a primary activity that—arguably more than any other—initiates the dissemination of information on biodiversity: names remain critically important to allow the identification, understanding, use and conservation of, and communication about, bio-resources.

In the wake of the establishment in 1992 of the Convention on Biological Diversity (CBD), collecting of material in foreign countries and describing them as new to science without the involvement or even knowledge of taxonomists from the country of origin of the material (Sebsebe Demissew & al., 2011), became not only a reproachable practice but increasingly an illegal one, if based on material obtained without a permit. Big budget bio-exploration and other projects conducting business—including collecting widely (and even legally)—in a biodiversity-rich country, still means the intellectual development of taxonomists in that country is not necessarily enhanced. This invariably leads to resentment. The short answer to this conundrum is to involve indigenous taxonomists in this activity. It is often quite easy to do so.

Sadly, there is a widespread lack of taxonomic expertise, even in some otherwise advanced countries. In such cases—and they are not restricted to the developing world—other mechanisms of the much vaunted 'benefit sharing' that CBD documentation refers to (http://www.cbd.int/cop10/), must be implemented. One practical example is to involve senior postgraduate students from the country that is interested in acquiring the material, and to have them work with students identified in the country from which collecting is required. And where no indigenous expertise exists it would be prudent for the visiting group to assist in securing the involvement of students from the country that holds the material.

While some host countries may facilitate and encourage international collaboration, others do not, or are suspicious of foreign involvement in in-country research. To be successful and receive wide support in the host country, projects require adequate motivation, ideally describing a jointly crafted, win-win scenario. This is a general requirement for any type of project, of course, and foreign scientists should be prepared to defend their objectives. Biodiversity studies are often not big projects, but rather small team initiatives. For these, institutional- or even individual-level collaboration can always be established. With the range of internet resources and search engines now available, identifying potential partners and contacting them have become much easier tasks. The excuses of

lack of a local contact person or response that are still given by solitary collectors who obtain material from the foreign country, shipped straight to their backyard or personal herbaria, are simply no longer valid or acceptable.

Once a mechanism for sharing benefits has been agreed upon, it is important that collectors follow a code of good conduct. The following guidelines are offered as suggestions to ensure best-practice and good ethics when taxonomic projects, which will more than likely lead to the description of entities new to science, are conducted.

■ RESPONSIBLE SPECIES DESCRIPTION

1. Obtain material legally. — The days of the lonely collector visiting foreign countries and returning with boxes full of preserved and living material to be described and deposited, and sometimes grown and/or bred, in his or her own country, are fortunately *almost* over. There are still cases of disregard for the requirements of local authorities and scientific communities, and the smuggling of specimens no doubt still occurs. Nevertheless, the perpetrators are finding it more difficult to publish their findings when the material on which their manuscripts are based was illegally or inappropriately obtained. Increasingly, editors of journals, and even referees of scientific papers, are questioning the publication of novelties based on material obtained through unethical or unlawful collecting practices. In fact, the exemplary role that editors of journals that accept manuscripts in which new species are described can play must not be underestimated: they can and should refuse the consideration of manuscripts that do not cite the numbers of collecting permits, for example.

When devising your taxonomic research project, if its scope includes foreign countries, ensure that the decision-making structures on the biodiversity of the country where the species occur are consulted.

2. International collegial collaboration. — New species are often found when a revision is conducted based on herbarium material received as part of inter-institutional loans, without the author ever visiting the area where the species occurs. In other instances, the species are found by botanists that undertook (or studied the material from) expeditions to poorly explored areas. While in the former case collaboration with local botanists is more complicated, in the latter it is essential. As a general principle, taxonomists from foreign shores should involve local taxonomists when describing new species from material obtained in the field. Work with them as they need to be equipped to recognize, study and, ultimately, watch over the species described. Put simply therefore, in-country taxonomists should be offered an opportunity to collaborate when new species are described as a result of collecting expeditions. Their capacity should be built as far as possible (Smith & Figueiredo, 2009). It is not only the right thing to do; it is the essential thing to do. The invited taxonomists should of course be able to make intellectual input into the description.

In-country taxonomists may well be interested to collaborate in your project. Involve them.

3. Representative, but responsible collecting. — One often comes across herbarium specimens where "Only specimen encountered in the wild" is written on the label. Especially in such instances, where entities are known from a limited number of individuals or populations only, collecting should be done with due consideration for the impact the preparation of (a) specimen(s) will have on a population. In their eagerness to get as much material as possible, collectors often disregard the frequency and population sizes of the plants (or animals) being targeted for collecting, but will nevertheless still proceed to collect single existing individuals or even whole populations.

Collect only the material you need for your study and a sensible number of duplicates.

4. Swiftness. — At least for some species groups, biodiversity seems to be disappearing at a higher rate than at which it is being described (Spicer, 2009). The time it takes to get a new species description published can be quite long. Obviously, this is due to the research needed to ascertain the status of the new entity and to describe and (often) illustrate it, but also to other time-consuming issues such as demands of the international codes of nomenclature (such as the Latin description or diagnosis for plants, see for example Figueiredo & al., 2010a, b, c—but this is fortunately something of the past from 1 January 2012 onwards, see Smith & al., 2011) and finally the long waiting periods in some journals, often due to slow peer-reviewing systems and unresponsive referees. If, to this normal (and already rather long) period that stretches from identifying the species as new, to having it published, one adds the time that the author of the species took to finish the study (commonly called the time he/she 'sat' on the material) the total time can reach half a dozen years, if not a decade! By then the species may already be severely threatened or even extinct because no conservation measures can be taken to protect an unknown entity. Some researchers regard this type of 'job reservation' as a way to sterilise the research landscape, passively (and often even actively) preventing any other interested parties to gain access to relevant material, both living and preserved.

Do not sit on material for years without describing from it those species that are new to science.

5. Information dissemination. — Information on newly established species must be disseminated as widely as possible. Publishing a new species should not be considered complete as soon as the paper is printed. Such papers are often submitted to (but should not), and appear in, foreign journals that are easily overlooked by the local scientists who may even not have access to them. The information to be disseminated should assume several forms: collected specimens, photographs, and the actual publication.

Make sure that at least the biodiversity collections (such as natural history museums and herbaria) with an interest in the material described receive reprints and/or pdf versions of the published descriptions once they have appeared. Also ensure that the biodiversity collections consulted are duly acknowledged for having allowed access to material.

6. Return duplicate specimens to institutions in the country of origin. — It is still very common to find examples in the literature of species being described in foreign countries

with all the material being retained in that country (see for example Figueiredo & Smith, 2010). An oft heard excuse is that local conditions to keep the specimens safe, and curate them, are lacking. This level of argumentation is increasingly unacceptable. Local entities are entitled to those collections and only by placing them under their responsibility and control can the process of capacity-building bear fruit, along with the realisation that local conditions to preserve collections must be improved.

Specimens should be distributed and not kept as duplicates in your home herbarium. It is important that other researchers have access to physical (not to mention electronic images of) type material. Therefore, ensure that duplicates are sent to several museums and/or herbaria. Of course, type material must be returned to the country where the species occurs.

7. … and for the hosts being approached to collaborate. — When invited to collaborate with visiting scientists, use the opportunity to learn, make useful input, and do not expect additional monetary payment for your efforts. It is your job, and also your responsibility. If you are a poor collaborator, your attitude will serve as a deterrent to foreign specialists being prepared to work with you. You, and the biodiversity you are custodian of, will be the big losers.

■ CONCLUSION

The Southern African Botanical Diversity Network project (SABONET), an essentially South-South capacity building initiative showed that *joint projects* with upfront *agreed objectives* that lead to *mutual benefits* have the best chance of collaboration success (Siebert & Smith, 2004). These principles are not yet as widely subscribed to as one would expect, and several past (and sadly current) practices in the field of documenting biodiversity have given rise to animosity, especially among taxonomists from biodiversity rich, but resource-poor countries. They are usually ready to collaborate, but are often denied the opportunity. Nowadays mentioning the name of an institution or individual in the fine print of the acknowledgements of a paper is no longer sufficient, if it ever was.

■ ACKNOWLEDGEMENTS

Six anonymous referees are thanked for commenting on the submitted manuscript.

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