Hurdles for conservation science in India

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India, one of the 17 megadiversity countries in the world, harbours a high level of biodiversity. This biodiversity is also unique: four of the 34 global hotspots of biodiversity, the Western Ghats, the Himalayas, the north-eastern India, south of Brahmaputra, along with Andaman Islands, and the Nicobar Islands, part of the Sundaland hotspot are located within the country. The biodiversity hotspots contain an unusually large proportion of endemic species as compared to other parts of the world. Another unusual feature of the biodiversity hotspots is that all of them suffer a high rate of habitat degradation. The megadiversity countries and the biodiversity hotspots in particular, can make remarkably unique contributions to science. Equally important, the rapid degradation of habitats in the hotspots makes it imperative that science be pursued vigorously in these habitats so that we can devise adequate measures to curtail rapidly diminishing biodiversity and protect unique biotas from the onslaught of humanity.

The practice of biodiversity science in India, however, faces a number of hurdles as outlined in two papers appearing in this issue of *Current Science*. Madhusudan *et al.*[1] point out the problems the field researchers face in obtaining permission to undertake critical biodiversity research in protected areas. Permission is often arbitrarily denied by individuals acting at the behest of the state, without recourse to appeal or review. Worse, often such individuals are not qualified to evaluate the merit or the shortcomings of the research. As a result, important research that can foster science, assist managers and policy makers in making decisions regarding conservation and management, and benefit society by providing solutions to our environmental dilemmas is being severely hampered. The article by Madhusudan *et al.* is noteworthy in three respects. First, it represents the viewpoint of a broad segment of the scientific community as evidenced by the large number of co-authors. Equally impressive is the range and diversity of scientific institutions with which the co-authors are affiliated. Second, they make the important point that both natural and social sciences are equally affected by the current procedures to get approval for research. Third, the authors provide constructive proposals to remedy the current unacceptable procedures to seek and obtain permission.

The second article by Prathapan *et al.*[2], representing a wide constituency of scientists, too deals with bureaucratic hurdles to science that stem from the recently enacted Biological Diversity Act (2002). Ironically, the Act came into force in response to the requirements outlined in the Convention on Biodiversity (CBD), which emphasizes the importance of documenting biodiversity in the countries that are a party to the Convention. Yet, an unintended consequence of the Biological Diversity Act is to stifle taxonomic research that forms the basis of the full inventory of life on earth. As pointed out by the authors, many provisions of the Act will place impractical conditions on the exchange of specimens for identification of taxa. This has already happened; taxonomists have been unable to get quick approval from the National Biodiversity Authority for sending specimens outside the country for identification.

There are very few branches of science that are as fundamental to conservation and management of biodiversity as taxonomy. During the last four decades, the science of taxonomy has been neglected, despite urgent calls for its resurrection[3,4]. The CBD rightly accords due importance to taxonomic work, but the National Biodiversity Act designed to meet the provisions of CBD, if not implemented with care, would defeat the very purpose of the CBD, and further scuttle the already languishing field of taxonomy in India.

Bureaucratic hurdles to the conduct of science are unacceptable anywhere, but more so in a democratic country like India. Arbitrary procedures without any possibility of appeal or review strike at the roots of our democratic traditions. Our democratic system should have no room for protocols that do not allow the due process, or cause inordinate delay in conducting research.

Undue interference is particularly unfortunate when many in the government are trying to seek more and more inputs from natural and social scientists. The Ministry of Environment and Forests, Government of India, has increasingly involved scientists in planning and implementation of several projects. At the level of states too, at least the institution I am affiliated with, the Ashoka Trust for Research in Ecology and the Environment (ATREE) receives tremendous support and cooperation from the forest departments, and many individual officers. Nevertheless, the scientific community at large faces severe problems, particularly at the local level.

Delay in permission or outright denial to do research in protected areas carries a high cost to the society. There are few areas of science as critical as conservation science for the well being of wild species as well as human societies. The unprecedented rates of loss or changes in natural habitats call for more, not less research. The resolution of enormously complex problems that lie at the interface of wilderness and humanity require cohesiveness, not divisiveness among various segments of the society.

A nation that aspires to be a global knowledge power[5] cannot afford to have archaic procedures to conduct research in one of the major and critical sub-disciplines of science.

India's unique biodiversity, enormous traditional knowledge, and the richness of interactions between humans and natural ecosystems can enable its scientific community to make unusual and innovative advances in conservation science[6]. India's scientists, freed from hurdles, can make the country a global leader in conservation science. The government bureaucracy that largely funds Indian science must exercise its responsibility to foster field based research.

1. Madhusudan, M. D. *et al.*, *Curr. Sci.*, 2006, **91**, 1015–1019.
2. Prathapan, K. D. *et al.*, *Curr. Sci.*, 2006, **91**, 1006–1007.
3. Khoshoo, T. N., *Curr. Sci.*, 1995, **69**, 14–17.
4. Narendran, T. C., *Resonance*, 2000, **5**, 60–68.
5. Mashelkar, R. A., *Science*, 2005, **307**, 1415–1417.
6. Bawa, K. S., *Curr. Sci.*, 1993, **64**, 205–207.

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