

OPINION

Biological Diversity Act, 2002: Shadow of permit-raj over research

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It is too late in history of the world to think that there is time to produce ordered classifications of all plants, animals, fungi and micro-organisms, and then to employ these classifications to seek new kinds of generalities while these organisms are still extant.

–Peter Raven¹

The United Nations Convention on Biological Diversity (Rio de Janeiro, on the 5th day of June 1992) reaffirms the sovereign rights of the States over their biological resources and the contracting parties have further agreed to develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity. Being a signatory to the Convention, India has passed the Biological Diversity Act, 2002² to promote conservation of biological diversity, sustainable use of its components and equitable sharing of benefits arising out of the use of biological resources. But a close perusal reveals that the Act would seriously hamper biodiversity research in India, especially taxonomic work – both qualitatively and quantitatively.

Scientific investigation of biodiversity is an essential prerequisite for its conservation, management and sustainable utilization. Conservation without knowing what we are conserving is nothing but looking for a black cat in a dark room. The Convention on Biodiversity (CBD) emphasizes the need for identification and monitoring of the components of biodiversity besides organizing and sharing the gathered information. The governments of the world recognizing the CBD have affirmed the existence of a taxonomic impediment to the sound management and conservation of biodiversity. Removal of this impediment is a crucial step in the proper implementation of the Convention's objectives. Although there have been many global attempts to overcome the taxonomic impediment during the past decade, taxonomy in India is grossly disorganized³. India being a megadiversity centre with its enormous number of practising biologists, should ideally have been the leader in the field of taxonomy. Unfortunately, due to the neglect and raw

deal meted out to this branch of biology in the post-colonial period, a vast majority of organisms in India still remain unknown and undescribed⁴. Except for mammals, birds and higher plants, our expertise in taxonomy, especially that of invertebrates which form the lion's share of the biota, is far from adequate. This taxonomic impediment is directly linked to the shortage of taxonomists. No country ever possessed sufficient expertise to identify nearly all the 1400 families of insects and 350-plus families of plants. So far the world taxonomists were addressing this problem by best using the tradition of collegiality and reciprocity existing in the taxonomic world, by sending specimens to experts across the world for identification.

Quality taxonomic research requires extensive collaboration and cooperation among specialists and institutions across continents, as the type specimens of even closely related species may be held in museums in different continents. Species and genera with extensive geographical distribution breaching political boundaries of nation states make biological systematics truly international in theory and practice. Hence the exchange or loan of specimens between specialists of even politically rival countries is common practice. For accurate generic and species determinations, it is essential to study specimens from across political boundaries and continents. This is especially true in the case of invasive species, agricultural pests, disease vectors and other cosmopolitan taxa. For example, examination of the types of about 250 genera from dozens of museums across the globe had to be done before ascertaining the identity of a new genus of flea beetle distributed from Thailand through Myanmar to South India⁵. Collaborations with scientists from advanced countries are also required to imbibite the latest in taxonomic theory and practice, which have undergone rapid changes over the past three decades with the advent of cladistics that uses a variety of molecular and computational techniques to address the problems in classification. Two important discoveries of the decade, the purple frog family *Nasikabatrachidae*⁶ and the new insect order

*Mantophasmatodea*⁷ would not have been possible without international collaboration of scientists.

The international treatise on 'Removing (the Darwin Declaration 3–5 February 1998, Darwin, Australia)⁸ signed by the Director, Zoological Survey of India on behalf of the Government of India, calls for encouraging partnerships among institutions in developed and developing countries so as to promote scientific collaboration and infrastructure rationalization. Unfortunately, the Biological Diversity Act, 2002 seriously curtails the scientific freedom of individual taxonomists by putting Draconian regulations on the free exchange of specimens for taxonomic research and threatens to strangle biodiversity research with legal as well as bureaucratic control. The Biological Diversity Act itself is bringing in a new kind of impediment to taxonomic research by impinging upon the ability of taxonomists to do fieldwork, to obtain specimens for comparative studies and even to safely deposit the type specimens in the museum of their choice. For exchange or loan of specimens with an overseas institution or specialist, permission has to be obtained from the National Biodiversity Authority (Biological Diversity Act, Section 20). An active taxonomist has to simultaneously collaborate with many individual scientists as well as institutions. Separate permission for each collaboration and exchange of material is warranted according to the current law, which is practically impossible. Application in the prescribed format with a fee of Rs 10,000 is mandatory to obtain the permit to transfer specimens outside the country (Biological Diversity Act, Section 20(2); Biodiversity Rules, 2004, Section 19(2)⁹). This is another blow from the Act to the already fund-starved taxonomists, especially self-financed amateurs. Though the law in its present form is difficult to implement, it is certain that the Biological Diversity Act will be an apt weapon in the hands of inept bureaucracy to harass practising taxonomists besides leading to corruption, as rightly pointed out by Gadgil¹⁰. The Biological Diversity Act has brought in a

new era of permit-raj that would stifle any meaningful research in biodiversity and related areas in India. In a country like India where expertise is almost completely lacking, type specimens are unavailable and even collections and technical literature is lacking, unreasonable over-protection by erection of an iron wall would be counterproductive and completely dampen any chances of revival of taxonomy in India.

Several provisions are included in the Biological Diversity Act to prevent biopiracy and challenge patenting of biological material of Indian origin by foreign multinational corporations. It also has built-in provisions for benefit-sharing with indigenous communities who are the guardians of biological diversity and the knowledge associated with it. The Act conveniently overlooks the benefits that the nation has gained through free access and utilization of exotic germplasm of plants and animals. In fact all revolutions – green, white and blue – that salvaged India from starvation and hunger and led us to the safety of self-sufficiency and food security, would have been impossible without exotic biological material. The green revolution started with the cultivation of dwarf *japonica* rice varieties which later led to the development of a large series of high-yielding rice varieties derived by cross breeding dwarf, short-duration exotic varieties with the long-duration, tall, indigenous varieties. Similarly, crop improvement programmes in wheat and maize also took-off based on exotic varieties. White revolution was made possible through massive cross-breeding programmes with exotic breeds of cattle like Brown Swiss, Jersey, Holstein-Friesian, etc. Indian farmers cultivate a large number of exotic crops and even today continue to introduce and domesticate foreign plants and animals for commercial utilization. Cocoa, rubber, vanilla, stevia, anthurium, numerous varieties of orchids and other commercial floricultural crops and many species and breeds of livestock and poultry (Japanese quail, Yorkshire pig, white leghorn chicken, white chinchilla rabbit,

Italian honey bee, etc. to name a few) have become popular among farmers.

Biological control of noxious weeds and insect pests is another area where introduction and utilization of exotic species become inevitable. All the above examples would clearly illustrate that we have gained much more through free access and exchange of biological materials from other countries and we will have to continue to depend on biological materials from other countries for the continued improvement of our crops and livestock to sustain increment in productivity to meet the basic demands of the ever-growing population. Agricultural research organizations throughout the country use exotic germplasm in crop and livestock breeding. National research organizations under the Indian Council of Agricultural Research and the State Agricultural Universities procure and maintain exotic species and varieties of commercial importance, as most of the plant and animal breeding programmes are entirely dependent on exotic germplasm. With the introduction of the Biological Diversity Act, we have completely lost the moral authority to use these materials without the formal permission and benefit-sharing with the respective countries of origin.

It is true that the biodiversity is invaluable from every point of view. But a lion's share of the biodiversity does not have any direct commercial importance. Most of the research in basic sciences like taxonomy does not yield any monetary returns at all (the chief reason for its decline!), but significantly advances the horizons of knowledge. Hence basic research which only generates knowledge and not profits should be viewed in a different perspective and be excluded from the ambit of the Biological Diversity Act. Bio-prospecting for commercial utilization should be separated from basic scientific pursuit without any commercial objective. Within the current framework of Biological Diversity Act, it is still possible to pursue quality biodiversity research by doing away with bureaucracy. Instead of insisting on permits for individuals and projects, laboratories and institutions in-

involved in biodiversity research should be permanently exempted from seeking permits. There is need for a national debate involving taxonomists, biodiversity researchers and policy makers to amend the law or make provisions or exemptions in the law for biodiversity research.

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