

'Endangered science', 'vanishing tribe' and 'tax-on-me'

Krishnakutty and Chandrasekaran¹, in their article on morphological taxonomy, have aptly called it 'endangered science'. About 13 years ago, Khoshoo² used the word 'vanishing tribe' for taxonomists and according to Saldanha, taxonomy is unfortunately now regarded as 'tax-on-me'. Combined together, these three terms themselves speak about the bleak future of taxonomy in Indian universities.

Working in the field of angiosperm taxonomy since the last one and a half decades, there were several occasions when I realized that taxonomists are now second-rate scientists and taxonomy is an ignored science. There are two recent instances. When I rediscovered a presumed extinct angiospermic species near snow-line in the Himalaya and communicated it to a reputed science journal in India for publication, it was rejected indicating the apathy of journal towards taxonomic work. The second instance was about a research proposal for bioprospecting angiospermic flora. Initially there was no full-time taxonomist to identify targetted taxa and the need of a taxonomist was realized only at the eleventh hour. Obviously the taxonomic part was considered non-essential or second rate.

Taxonomists are generally easily accessible and taken for granted. They identify numerous plant specimens of undergraduate, postgraduate and research students, chemists, biochemists, microbiologists, biotechnologists, ecologists, horticulturists, environmentalists, breeders, geneticists, foresters, plant pathologists, medical herbalists, and many more without expecting any acknowledgement, which in fact they do not get most often. Taxonomic skills and expertise develop gradually after experience of several years and the identification and scientific name designated by a taxonomist in fact unlocks the door of knowledge about that plant. People usually forget that 'all wisdom begins by calling all living (including humans) and non-living things by their proper names'².

In our scientific field people are rated on the basis of the number of projects that they handle, total outlays, sophisticated high-tech laboratories that they run, expensive equipment they have, etc. in addition to their contributions to science. However, exclusively taxonomic works do not get financial assistance until some other attractive studies (other than taxonomy) are added to it. Additionally, laboratories of morphological taxonomists (particularly of higher plants) neither require nor have expensive equipments, due to lack of which they do not earn high reputation and fail to attract good students for research. Their real treasures are the herbarium specimens which they collect after a great deal of toil in the field, but these collections are considered as stacks of hay by many people.

The urge among many scientists to follow the newest approaches in biological sciences in an attempt to exploit the greenest pasture of research, has caused in many universities, an imbalance in the biological sciences to the extent that systematics (taxonomy) has been neglected³. Biotechnology and its widening branches are the greenest pastures now (though their productivity and sustainability need to be tested for longer periods in India), while taxonomy is an 'apparently' dried pasture. It has survived and remained productive for a long period of more than 250 years (and not 300 years) after the start of Linnaean taxonomy, which itself started after the three best publications of Linnaeus – *Systema naturae* (1735), *Genera plantarum* (1737) and *Species plantarum* (1753). This apparently dried pasture of morphological taxonomy will, in reality, remain sustainably productive until the last species on the earth is collected and described, which appears to be a distant goal as we are able to explore only one-seventh of the total species present on earth. Collection, description, identification and classification of the last species on earth will end, 'α-taxo-

nomy', representing the 'exploration and discovery phase' of taxonomy, but the other two phases, i.e. the 'synthesis' and 'experimental phase' will continue. While many developed countries have already completed α-taxonomy (in higher plants) and reached synthesis and experimental phases (molecular taxonomy, cyber taxonomy, world monographs), we are unfortunately shrouded in a fear of premature death of taxonomy in its first phase of exploration and discovery.

Up to the early 1980s Indians made world-class contributions to modern taxonomy², but afterwards, the country started losing good taxonomists as they gradually shifted their attention to other fields of biological sciences. Now the situation has further worsened as new-generation of taxonomists are missing.

Until the last species in the country is collected, identified, named and classified, morphological taxonomy has ample scope provided that scientific journals acknowledge the taxonomic works, taxonomists are rated at par with other scientists, and taxonomic works get adequate funds to continue exploration and compilation of biodiversity data. We must change our mindset of treating taxonomy as an obsolete science and this science should not be strangled by legal as well as bureaucratic control⁴.

1. Krishnakutty, N. and Chandrasekaran, S., *Curr. Sci.*, 2008, **94**, 565–567.
2. Khoshoo, T. N., *Curr. Sci.*, 1995, **69**, 14–17.
3. Hedberg, I., *Systematic Botany, Plant Utilization and Biosphere Conservation*, Almqvist & Wiksell, Stockholm, 1979.
4. Prathapan, K. D., Rajan, P. D., Narendran, T. C., Viraktamath, C. A., Arvind, N. A. and Poorani, J., *Curr. Sci.*, 2008, **94**, 170–171.

D. S. RAWAT

Department of Biological Sciences,
G.B. Pant University of Agriculture and
Technology,
Pantnagar 263 145, India
e-mail: drds_rawat@yahoo.com