

## Some observations on a report on scientometric analysis on Botanical Survey of India

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We happened to go through the article titled 'Botanical Survey of India (1971–2010): a scientometric analysis' by M. Pathak and A. K. Bharati<sup>1</sup>. The organization under reference (Botanical Survey of India, hereafter, BSI) is one of the oldest institutions engaged in taxonomic/revisionary/monographic research and its core job revolves around exploration, inventorying and documentation of phyto-diversity of the country. Having worked for almost three decades in this institution, we pertinently felt that the Survey's performance analysis which has been the prime objective of the cited article should have been based essentially on accomplishing targets envisaged in the core mandate and to a slighter and proportional extent on secondary mandates. But reading through it gave us the impression that the said analysis got entirely side tracked due to lack of comprehensive coverage of Survey's major outputs and also due to application of the popular conviction/formula without a review of relevance to the organization concerned on which it is applied. What is certainly a lapse on the part of authors is drawing the data solely from *Web of Science (SCI-Expanded)* for the considered period (1971–2010). Though it (*SCI-Expanded*) is known for rich inclusion of journals (8,631 across 164 disciplines), this database evades important journals of taxonomy, especially from India. What must have prompted the authors in its application for analysis lies in its explicit advantage in cited reference search (search mode 'Bot Survey\*\*\*\*\*') to track earlier research and for multiple parameter evaluation. The organization was evaluated based on publications, citations, average citation per paper, apart from many others. As the analysis suggests, a total of 423 papers were published by BSI in 40 years that accounts to 10.57 papers per year. This appeared dejectedly low particularly in the light of the Survey's magnitude with 80-odd scientists working for it, and it has so little to say and goes with only 10 articles a year!

*Core journals' exclusion:* A check on the list (*SCI-Expanded*) reveals that

the core journals in taxonomy specially, from India were excluded and when included, the stress went on journals focusing on molecular taxonomy. The journals excluded are the *Bulletin Botanical Survey of India*, *Rheedea*, *Indian Journal of Forestry*, *Indian Forester*, *Journal of the Bombay Natural History Society*, *Journal of Economic and Taxonomic Botany*, *Journal of the Indian Botanical Society*, all from India, and *Journal of Japanese Botany (Japan)*, *Economic Botany*, *Journal of Arnold Arboretum (USA)*, *Reinwardtia* (Indonesia), *Garden's Bulletin Singapore* (Singapore) and *Taiwania* (Taiwan) are from other countries. The analysts thus had left out large contributions of scientists unaccounted.

*Implications:* While limiting consideration with publications in the journals listed in *SCI-Expanded*, the analysts had left out unkindly the contributions of very important workers partly/fully who were otherwise known for their productivity in BSI. It is difficult to name them individually but we tried our analysis for five active workers for the said period on whose publications we could lay hands on. Their publications (Chowdhery, H. J.: 137; Daniel, P.: 75; Nair, V. J.: 102; Nayar, M. P.: 147; Sanjappa, M.: 92) collectively go far beyond the estimated 430 numbers for the entire BSI. In fact, the contributions towards books/book chapters, contributions on red data sheets and contributions in conferences were in fact left out in this count. This discrepancy in analysis is due to exclusion in the said database of journals where the contributions of these scientists had appeared. The number of publications of Survey scientists in the above journals is substantial. Had the authors realized this shortfall, they would have made some amends in accounting that could have avoided evident anomaly in the overall estimation of number of articles. We have examined the proportion of publications by these scientists in the included journals. This is truly decimal, with Chowdhery (0.18), Daniel (0.17), Nair (0.14), Nayar (0.07) and Sanjappa (0.27) contributing only a minor fraction in the included journals (*SCI-Expanded*) and

hence what is projected in the referred article is about 10% of the total contributions.

*Taxonomy, more local in relevance:* Until recently, most Indians were unable to access taxonomy journals published from outside. Even a visit to nearest BSI library would help them limitedly as only a few of them could be accessed. The taxonomy publications on Indian plants are expected to be used more locally or countrywide than those in other parts of the world (vice versa is true for others). Scientists working on tropical plants and/or those engaged in global taxonomic revisions, checklists and by organizations like IUCN, CITES, also use this data for global assessments. Thus, taxonomy is said to be more local in relevance and universal in application (of names) and it prompts taxonomists to publish in accessible journals so to help out Indian users in plant identification and other associated issues. Such publications in remotely published foreign journals might gain them the desired impact score thereby profiting them in career/profession, but not happened that way!

*Journal preferences:* As core taxonomic journals especially from India are left out, journal preferences by BSI scientists projected in the article also went wide off the mark; the article concluded that *Current Science* is the most preferred journal. Breathed so long in taxonomy and of taxonomists, we are certain, that this is not the preferred journal by taxonomists and *Current Science* never published hard core taxonomy articles. The reviewers of *Current Science* often observe, when the submissions relate to flora or nomenclature, that the content is not appropriate for it. Though we have no access to see all the 469 articles extracted for performance evaluation, the ones projected for *Current Science* are truly great escapes or from secondary mandates. Also, what we have realized is that the preferences of scientists essentially depend primarily on the groups they work on and to a lesser extent on journal's regularity, reputation and response and much less significantly by other criteria.

*Citation counts and other factors:* Another strange finding of the analysis is the list of articles that had earned more than 10 citations. Most of these articles concern to secondary areas (leaf morphology, ethnobotany and ecology) and not to core area of research of the organization. The article projects that BSI competence lies in allied branches and not in core area of taxonomy, flora and nomenclature, revisions, discovery of new species and report of new records. *Science Citation Index (SCI)* and *Journal Citation Reports* published by Thomson Reuters are truly trendy but these measures generated serious reservation/disapproval from scientists engaged in taxonomy. Many issues including limitations were deliberated on the application of impact factor in assessing taxonomic work<sup>2</sup>. Only a few of the established taxonomy journals, hardly 30, have appeared under botany (33), biology (286) or plant sciences (209) disciplines which makes *SCI* index inappropriate for applications in taxonomy. One good thing that has happened with analysis is that it has vindicated our claim that this application is not appropriate for taxonomic institutes. The analysis on publication share by different regional centres, and authorship pattern too had no bearing on productivity but can be taken for statistical interest.

*BSI contribution in documentation:* As stated before, many published books in the form of floras are left out in assessment. The taxonomic accounts of more than 100 families of flowering plants (out of c. 250 currently known to occur in India) for the Flora of India, Revisionary studies on 45 families (some partly)

in the form of Fascicles (1–25) and various state/district/protected area floras (in all 33 volumes of state floras + 32 volumes of district floras + 80 of protected areas) were nowhere visible in the assessment process. These publications are used by teachers/students/foresters and other academicians in identification of plants of their interest but this pragmatic utility on a day-to-day basis of these publications go far beyond citation indices. Apart, the Survey has discovered over 800 new species, subspecies and varieties and 29 new genera and a new family since its reorganization in 1956. These contributions are nowhere reflected in the present analysis. A detailed account on BSI contributions was dealt earlier by us<sup>3</sup>.

*The herbaria:* The contribution in terms of developing and maintaining herbaria (the most used analogue databases) was totally ignored in the assessment. These analogue databases developed by the scientists of BSI are practically used by plant scientists in general and taxonomists in particular. The Central National Herbarium and all Regional Centres all together maintain about 3 million specimens in harsh weather conditions, which is a herculean task by itself.

The Government of India initiated during the 10th Plan an All India Coordinated Project on Capacity building in Taxonomy (AICOPTAX) on 15 thematic areas with 15 coordinators along with 62 collaborators. Significant achievements include: More than 1001 (major) + 322 (minor) field exploration tours were undertaken augmenting National reference collections by 53,715 numbers; 457 taxa new to science and 463 new to India

were reported; 7 books and 348 papers and 64 book chapters got published; about 450 persons trained in taxonomy and 105 of them were awarded Ph.D. This is truly a well-intentioned collaboration that has given boost in the documentation of neglected groups.

When an analysis is planned, what is needed is to look for appropriate method looking at the situations, reality and specific cares required with respect to organization. We feel the authors would have done the job much better had they involved a person with an insight of organizational working to identify and take care of specific issues. The Survey definitely deserves a better deal in its appraisal and not in the way the article projects which was sent and hurriedly accepted (sent on 6 February and accepted on 11 February). They should have taken all publications of *BSI* including flora volumes (the core output of *BSI*) and other miscellaneous publications besides research papers in selected journals for a realistic assessment.

1. Pathak, M. and Bharati, A. K., *Curr. Sci.*, 2014, **106**(7), 964–971.
2. Venu, P. and Sanjappa, M., *Curr. Sci.*, 2011, **101**(11), 1397.
3. Sanjappa, M., Venu, P. and Prasanna, P. V., *Curr. Sci.*, 2010, **99**(4), 418–419.

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