

E-book review

Sasyabharathi (Dakshinamnaya): A Database on Plants of South India. K. N. Ganeshiah and R. Uma Shaanker, University of Agricultural Sciences, GKVK, Bangalore.

Floral diversity forms a vital base in economy and generates a variety of stakeholders who in turn need information and counsel for its sustainable utilization. The taxonomic databases are developed to provide the needed information to varied clients professionally and effectively. The information is to be analysed in the context of intended use and the format in which this is to be presented is to be decided prudently. There is great activity around the world to build taxonomic databases including virtual herbaria and *Sasyabharathi* is one recently developed database aimed at consolidation of published floras from Southern India.

The database opens through a title page 'Distribution, Taxonomy and Diversity of Plants of South India' followed by second screen that has six modules, namely, 'Political Boundary', 'Gridwise Search', 'Biotic Zone Search', 'Thematic Maps' 'Images' and 'Textform Search' which facilitate data access of users' choice. One can generate the list of species for a sought-out political region/grid/biotic zone through first three modules. Though the database broadly covers regions that one can look for, sadly, the Eastern Ghats is not included in biotic zone map. The thematic maps exhibit the number of families/genera/species in different colour intensities, but these maps have no taluk boundaries. Species densities projected in all maps are based on the floras consulted and without checking whether the names are synonyms or correct names. Therefore all the maps built based on political boundaries, biotic zones, grids and diversity densities (thematic maps) infer not true but, sometimes, bloated figures. For example, Western Ghats and Kerala are shown to possess 10,468 and 13,738 species respectively while the actual estimates are ca 4000 + for both. The 'textform search' enables one to look in for species through common names and conventional taxonomic hierarchy. An exhaustive list of 800 languages/regions is used to search for desired species based on common names. This is a favoured facility and even a commoner can reach the species of his interest with little difficulty and through multiple options. But, there are obvious

omissions and at times no verification in their inclusion. The familiar *Strobilanthes kunthianus* (= *Phlebophyllum kunthianus*), widely known as 'Kuringji' and distributed in Southern India is not assigned any common name. The common names given for *Nymphaea nouchali*, besides the correct local name 'Nilotpalam', include 'Allithamarai' and 'Vellambal' (Tamil), which in fact apply to *N. pubescens*. The images account for 2676 species but are not labelled when displayed. Some are comparable to live specimens to establish effortless identities. Foresters and people in related professions can be benefited as image module provides good photos with correct names attached. But the identities in some cases are wide of the mark and do not fit in to declared family even! The image assigned to *Delonix elata*, in reality, is of *Melia azedarach*. There is no provision to look for infra-specific taxa in image module search but can be viewed through textform search. Other lapses noticed include that six names appear in Nymphaeaceae – *Nymphaea lotus*, *N. nouchali*, *N. pubescens*, *N. rubra*, *N. stellata* and *N. stellata* var. *cyanea*. Two of them, *N. lotus* (auct. non L., 1753) and *N. stellata* are synonyms of *N. pubescens* and *N. nouchali* respectively but are given separate images. The image for *N. lotus* looks like an aroid; for *N. nouchali*, two of them look like *N. pubescens* (2 and 4) and for *N. pubescens* one of them looks like *N. rubra*. Both for *N. stellata* and *N. stellata* var. *cyanea* only the same image is shown as it is an inner contradiction as image cannot be one and the same for two recognized taxa. The image of fruits of popular *Coccinia grandis* (Ivy Gourd) is shown for *Melothria heterophylla*. *Aponogeton* and *Najas*, with 10 and 5 species respectively, have poor representation and poor quality images (4 and 1 respectively). One should consider standardized resolution and appropriate enlargement for smaller specimens to develop a good image database.

All modules, except 'thematic maps', are linked either to family, genera or species information. The species details encompass modules namely, 'Taxonomic Hierarchy', 'Maps', 'Images', 'Distribution Data', 'Synonym Data', 'Common Names' and 'Flora List'. The compilers have used data from ca 200 regional/sub-regional floras and from the *Flora of British India*. We perused a few selected cases and for Annonaceae members, 71 floras have been consulted to draw distribution data. The database irrationally adopted both *Annona squamosa* and an

orthographic variant *Annona squamosa* as correct names and linked them to separate distribution maps. Orissa, Chattisgarh, Kerala and Tamil Nadu are excluded for one or both the names. The plant is native of Central America and West Indies and is naturalized almost throughout India. The discrepancy in distribution is due to adopting both the names. Inconsistencies are noted in *Polycarpea* spp. too. *P. diffusa* is an endemic and confines to coastal and sub-coastal plains of Southeastern Tamil Nadu but the map indicates its occurrence in Kerala and Maharashtra too. The inclusion of Kerala is based on Ahmedulla and Nayar (1986) and Maharashtra based on Edgeworth and Hooker (1874) who mentioned Western peninsula under distribution (broadly Southern India and not Maharashtra, *sensu* authors). *P. spicata* also confines to coastal areas of Goa (Diu), Gujarat (Saurashtra) and Tamil Nadu (Gulf of Mannar) but the compilers included Karnataka and Maharashtra too. They have given the basis of Rao (1985) for Karnataka but the cited work refers to only Diu and never Karnataka. Maharashtra was included again based on Edgeworth and Hooker (*l.c.*) who included Western peninsula by which they meant broadly Southern India and not Maharashtra. These errors need correction. Data on species names, synonyms, distribution and other details are keyed in to an access based multi-relational database. A drawback in the database is its failure to bring in authors' citation in the name, as they are desired for purpose of precision. The database is devoid of plant descriptions as well as phenology and has no utility in identification of a material based on descriptions.

The concept of synonymy is treated very differently and the compilers chose to adopt highly unconventional categories – the correct, probably correct, synonym, probably synonym and undecided and some of which do not exist in taxonomic literature. In this database, about 8136 names appear as correct, 2758 as probably correct, six as synonyms, 2264 as probably synonyms and 574 as undecided. When we looked for *Strobilanthes ciliatus* in the database, the name that appears under valid name (what the compilers of the database meant is correct name) is *Nilgirthus ciliatus*. They derived the valid names (correct names) based on the application of the name in different floras. In this case, in six floras – *Flora Cannanore* (Ramachandran and Nair, 1988), *Flora Karnataka* (Sharma *et al.*, 1984), *Flora Sindhudurg* (Kulkarni, 1988), *Flora Tamil*

Nadu (Henry *et al.*, 1984), *Indian Medicinal Plants* (1995), *Medicinal Plants of India* (Yoganarasimhan, 2000), the name *N. ciliatus* was used as the correct name while *S. ciliatus* as a synonym. Only in *Flora Nilambur* (Sivarajan and Mathew, 1997) was *S. ciliatus* adopted as the correct name while reducing *N. ciliatus* as a synonym. Based on this ratio of 6 : 1 the output data predicts that *N. ciliatus* as 'probably correct name' and *S. ciliatus* as 'probably a synonym'. The judgment here is based on the number of floras included in the database and the names applied in them and has no relevance whatsoever in establishing the correct names. The prevalent situation with reference to this specific case can be explained. Bremekamp (1944) segregated *Strobilanthes* Blume into 54 genera. Many species of *Strobilanthes*, including *S. ciliatus* have been shifted to these segregate genera. Thereafter many Indian authors followed Bremekamp's classification. This concept was totally rejected in recent years for various reasons and the broader *Strobilanthes* Blume was restored. In all future works, it is very likely that *S. ciliatus* will be adopted as the correct name reducing the other as a synonym. Furthermore in this evaluation, floras that refer to both *Strobilanthes ciliatus* and *Nilgirianthus ciliatus* either as the correct name or as a synonym are taken into consideration ignoring the floras, which dealt with only one of these two. This method further added anomaly and what compilers should have understood is that old names can be referred to in new floras but not new names in old floras! The purpose of a name is to act as an easy reference and any ambiguity attached to it will have a bearing on other modules of database. A plant may have different names in different floras but when there is an agreement on the correctness of the identification and the classification adopted, there should be only one correct name. What we see in the literature are correct names, synonyms and basionyms. Synonyms are two or more names that are applied to the same taxon. Among synonyms, only one can be correct, in general, the oldest one as per the principle of priority. The later synonyms become what are called the synonymy of species and no other categorization is acceptable or workable in taxonomy. The designers, as stated earlier, have used the term 'valid name' equivalent to 'correct name'. This may again cause confusion as these terms have established connotations in taxonomy. In monographs and revisions, a group is

thoroughly scrutinized and often concepts change with reference to circumscription of genera and species. As a consequence, status of names change from correct name to synonym or vice versa and new combinations and new names may also appear. While writing floras, people usually adopt names based on prevailing and agreed concepts and the same would be reflected in their works published during different times.

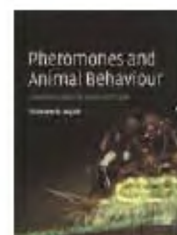
The glaring lapses in synonymy have a repercussion on distribution data. The names, *Strobilanthes kunthianus* and *Phlebophyllum kunthianus*, which refer to the same plant are treated distinctly both as probably correct names showing different and segregated distribution data based on names and neither being complete. This is one case cited as an example and there could be many. The database provides distribution maps at state and district levels and certain suppositions adopted in distribution component made the maps of little consequence in case of endemic species. For example, *Stenosiphonium wightii* Bremek., an endemic species restricted to Tirunelveli Hills of Tamil Nadu (Kalakkadu, Kannikatti and Kuttrallam), the entire Tamil Nadu is highlighted in the distribution map at state level and entire Tirunelveli at district level. On the other hand, *S. cordifolium*, which is relatively widely distributed in Tamil Nadu is shown distributed throughout Tamil Nadu and with little difference to the distribution of *S. wightii*. The database should have taken care of indicating actual localities for endemic species, as it had keyed in distribution data at grid level that corresponds to 12 km × 12 km. In grid-wise search, districts, e.g. Chennai (Tamil Nadu), Anantapur and Adilabad (Andhra Pradesh), Amravati (Maharashtra) and Bangalore (Karnataka) contain no records. It does not mean that these areas have no plants. This situation is due to the exclusion of herbarium references and sometimes the published or unpublished floras. Floras for Anantapur, Adilabad, Bangalore and Chennai do exist. Moreover the flora list in the database shows the inclusion of Flora Madras City and its Immediate Neighborhood, but no plants are shown in this region. How these are excluded in the database is not known.

The database has carried some invalid reports as it depended on limited floras and revisionary works were not consulted. *Stenosiphonium setosum* and *S. parviflorum* were considered two distinct species till Carine and Scotland (2000) in their revi-

sion merged *S. parviflorum* under *S. setosum*. Such decisions in revisions have a bearing in projecting distribution data as the areas reported for both the species should be considered together in the distribution data of *S. setosum*. Misapplication of names based on wrong identities mentioned in floras also needs some verification before inclusion. All these could be done only when taxonomists are involved as they are principal data generators and capable to recognize and solve problems in literature. We feel that involvement of taxonomists or partnership with taxonomic institutions is indispensable in developing taxonomic databases with greater focus and to avoid undesired confusion, particularly with reference to identity and nomenclature.

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Pheromones and Animal Behaviour. Communication by Smell and Taste. Tristram D. Wyatt, Cambridge University Press, Cambridge, UK, 2003. 408 pp. Price: \$50.

Beauty itself, as with faces, is not simple: perfumes can be handsome (Mitsouko), graceful (Calandre), gorgeous (Joy), comely (Shalimar), radiant (Tommy Girl), exquisite (Après l'Ondée), stunning (Angel). Reader beware: Paradox is, to paraphrase something once said about Scriabin's music, a perfume of 'almost unbearable loveliness.'... What I find all the more irritating is that Paradox isn't even 'my type'. It is, after all, yet another fruit salad of the type that has kept perfumers gainfully employed since Deci-Delà But this fruit salad does something that it has no right to do; break hearts.

Luca Turin quoted in
The Emperor of Scent, Chandler Burr