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Progress with computerization of the National Herbarium, Pretoria

J. W. MORRIS & O. A. LEISTNER

SUMMARY

The authors present the computerized data storage and retrieval system (DMS file handling system on the Burroughs B 6700 computer) being developed at the herbarium of the Botanical Research Institute at Pretoria (PRE). Numbers are being assigned to all taxa from the rank of genus downwards. Encoding of label data has started, and the rate and cost of the procedure are estimated.

RÉSUMÉ

Les auteurs présentent un système de mémorisation et recouvrement des données et de recherche par ordinateur qu'ils sont en train de perfectionner au Botanical Research Institute à Pretoria (PRE).

Des numéros ont été attribués à tous les taxons à partir des genres aux rangs inférieurs. La codification du matériel a été commencée. La rapidité et le coût de l'exécution ont été calculés.

The herbarium of the Botanical Research Institute at Pretoria (PRE) houses an estimated 500 000 herbarium specimens, most of which are from Southern Africa, and has an annual accession of about 20 000 specimens. During the last thirteen years some 19 000 numbers have been accessioned in the Botanical Garden, and the holdings of the Mary Gunn Library comprise some 4600 books and about 500 journal titles.

In order to facilitate and in some cases to make possible retrieval of information from these collections and to streamline the accessioning of new information a computerized data storage and retrieval system is being developed. This will incorporate the collections of the Institute mentioned above into a single data base (Fig. 1). In the present paper, only aspects concerning the herbarium will be described. Pioneer work done during the past four years has shown some of the potential of such systems in biological data processing (Crovello & MacDonald, 1970; Hall, 1972; Gómez-Pompa & Nevling, 1973; Morris, 1974).

The first steps taken by the Institute towards the implementation of such a system were reported on during the 1970 AETFAT Congress at München. Edwards & Leistner (1971) described a degree reference system for citing biological records for Southern Africa and Morris & Leistner (1971) gave details of an index of localities for the region which they have compiled.

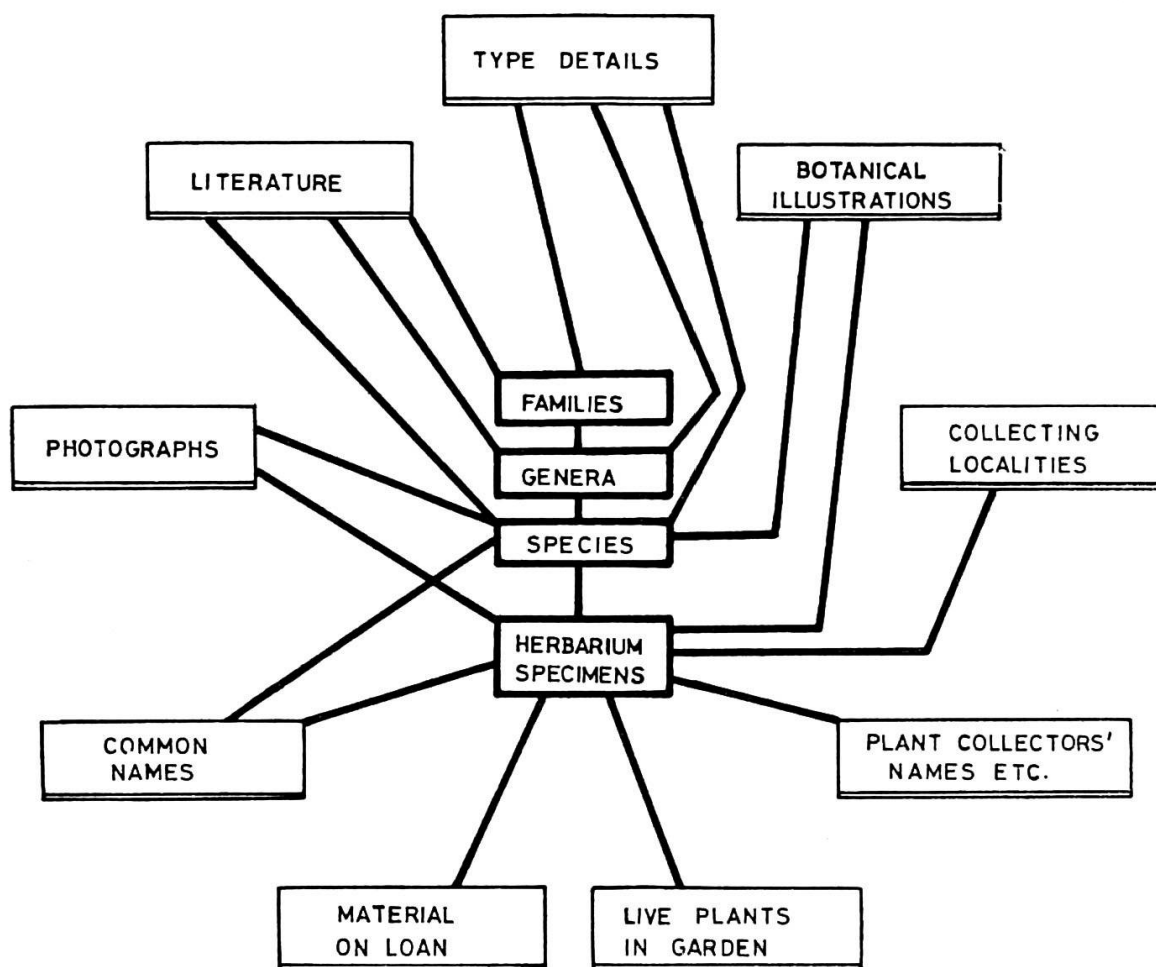


Fig. 1. — Scheme of data base envisaged for PRE.

To facilitate the handling of plant names, numbers are being assigned to all genera, species and subspecific taxa (ferns and Angiosperms) found in Southern Africa. Genera are given numbers with seven digits. The first four are taken from the system of de Dalla Torre & Harms (1900-1907). The four digits are followed by a stop and three noughts, e.g. 0065.000 *Aponogeton* (65). Genus numbers created by adding figures in existing de Dalla Torre & Harms numbers are retained but the last digit remains "0", to accommodate further subdivisions, e.g. 8136.060 *Kohautia* (8136/6). Letters used to create new genus numbers are replaced by numbers in which the last digit remains "0", e.g. 7568.010 *Walafrida* (7568a). In *Poaceae* the first three digits of all genus numbers are 990 while the last four digits are derived from the unpublished Kew System for numbering grasses. A stop is again given after the first four digits, e.g. 9903.962 *Allolepis*. In *Mesembryanthemaceae* the first four digits are 2405 followed by a stop. Further provisional subdivision is made by numbering in the alphabetical sequence as given by Jacobsen (1970), e.g. 2405.014 *Astridia*. Species and infraspecific taxa are assigned a number of twelve digits of which the first seven are the generic number. The complete genus number is followed by a dash. Species and infraspecific taxa are arranged alphabetically and numbered in that sequence.

The last two digits are "00" to allow for sub-division, e.g. 9902.860-00600 *Eragrostis curvula*.

During June 1974 a start was made with encoding label data of the estimated 450 000 herbarium specimens from Southern Africa housed in the National Herbarium. The task is being undertaken by a team of 30 who work 16 hours per week during evenings. By the end of November 1974 over 100 000 specimens had been encoded at a cost of RO. 20 (US\$ 0.35) per label. The coding norm at present is 14 labels per hour per encoder. We estimate that the encoding of the S. A. material will be completed in little more than two years.¹

The data base will be implemented on the Burroughs B 6700 computer of the Department of Agricultural Technical Services, Pretoria. The DMS file handling system is being used for creating the data base. An unfortunate consequence of using a proprietary system such as this is that the data base will not be easily transferable to a computer of different manufacture. The decision to use DMS and write our own software retrieval package was taken because existing advanced packages like IBM/GIS were either bound to non-Burroughs computers or were not adequate for the complex data base we envisage.

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¹ Note added in proof: 200 000 specimens encoded by June, 1975.

