Manual field recording of floristic data, for phytosociological studies, entails re-encoding data on computer encoding forms, transfer to magnetic tape and finally loading onto the mainframe computer for multi-variate analyses. The time taken from re-encoding to access on the mainframe computer can be from one to six weeks. Classification of data while fieldwork is in progress, therefore, becomes impracticable in the summer-rainfall areas because fieldwork generally takes place in the relatively short growth period and the delays in computer access would limit fieldwork considerably if data were classified during this period. A serious disadvantage of classifying vegetation only after completion of fieldwork is that vegetation units are often either undersampled, resulting in invalid syntaxa, or oversampled resulting in wasted labour and expense. Furthermore, the potential for errors is increased by re-encoding the data.

These problems were overcome by using computerized field-data capture where data is recorded directly onto a hand-held computer and loaded onto the mainframe computer on return from the field. Multivariate analysis techniques used are the PHYTOTAB program (Westfall *et al.*, 1982), which are compatible with both the DECORANA (Hill, 1979a) and TWINSPAN (Hill, 1979b) programs. Preliminary classification using either PHYTO20 or TWINSPAN can then be available within a day of returning from fieldwork.

The system used for field-data capture is the Sharp PC 1 500 computer with an additional 8K expansion memory module, printer/cassette interface, cassette recorder and programmable RS232C interface. The program PHYTOCAP, written in BASIC, is used for recording floristic data in the PHYTOTAB (Westfall *et al.*, 1982) format. The program features

include automatic line number allocation, sample and/or subsample numbers, alphanumeric species codes, cover-abundance values, data pertinent to individual species, data display, data printing in two formats, halting and continuing program execution, line editing, saving data to tape and loading data from tape. Furthermore, data input is verified for errors such as sample number length, species omission and cover-abundance omission. The user is also informed when five lines of memory are left. The capacity of the computer is 70 lines which is approximately 14 relevés or samples with 40 species per sample, which is generally more than adequate for the floristic data recorded in one day.

Field procedure includes quadrat location, quadrat demarcation, floristic sampling, voucher specimen collection and environmental parameter sampling. The Sharp PC 1 500 computer is used for floristic sampling. Species for which voucher specimens exist are input as a four-letter genus code and a three-letter species code. Species for which voucher specimens are required are tagged with pre-numbered, specimen number, adhesive address labels and input as a left-justified specimen number. Specimen collection is effected after completion of floristic data recording. This process ensures a smooth flow of data input and reduces the possibility of species being overlooked. Environmental parameters are recorded directly on a field data sheet. It is envisaged that a second Sharp PC 1 500 be used for recording environmental parameters and as a standby machine. Memory capacity currently precludes the use of a single machine for both floristic and environmental data.

After a day's recording the computer is attached to the printer/cassette interface, which remains in the vehicle. A printout of the floristic data is obtained of each sample for stapling to the field data sheets which form the hardcopy for eventual permanent safe-keeping at the Botanical Research Institute, Pretoria. The data are then transferred to C 15 cassettes, when the computer can be cleared for the following data set.

Loading data to the Burroughs B 7 900 mainframe is effected by means of a Burroughs ET 1 100 terminal, RS232C interface and a transfer program called DATATRAN written by S. J. Crafford. Data are read from the cassette and simultaneously transmitted at 300 Baud.

The advantages of this system of data recording include the cost-saving production of preliminary classifications for optimum sampling as well as the labour- and cost-saving of not having to re-encode data. The potential for errors is also reduced by the reduction in data handling. Documentation and taped copies of the program are available from the author. Please forward a blank C 15 cassette for copying.

ACKNOWLEDGEMENTS

The author thanks Dr J. C. Scheepers for comments and suggestions and Mr S. J. Crafford for writing the program DATATRAN.

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