

Uplands Research Lab Computers Versatile

By John Peine

What a difference a year makes! Uplands Field Research Laboratory at Great Smoky Mountains NP purchased an IBM PC with all the standard accouterments early last year. Just as importantly we hired Mark MacKenzie a Ph.D. candidate in plant ecology from the University of Tennessee, to computerize as many of our program functions as possible. As a result, the computer plays a role in all laboratory functions now.

Our primary computer application is, of course, research data entry and analysis. The computer has been programmed to be self prompting, allowing anyone with or without computer experience to enter data. We have developed a system for data management that includes clear documentation, duplicate sets for storage and realistic programming of resources for data entry and analysis. We also advertise that the data are available for outside scientists to use — data marketing if you will, to get as much mileage out of it as we can. Eight different field studies were being conducted simultaneously last summer, involving over 40 people. Within six weeks of the end of the field season, all data were entered and proofed, and within four months, all data analysis was complete. Our high-speed printer and phone modem has allowed us to hook up with the University of Tennessee main frame computer to analyze our data using the larger, more sophisticated statistical packages.

We have also used the IBM PC to write a number of programs which allow us to perform analysis other than statistics. Programs have been written to esti-

mate fish population size from electroshocking data, summarize vegetation data collected from field sampling, and to randomize creel surveys. We hope to develop a program to estimate mast crops.

Another research application of the IBM PC is computerization of the vascular plant check list. It is hoped that when this data base is completed we will have ready access to information on rare and endangered species in GRSM, along with other information pertaining to plant species within the park.

We receive, and print daily, reports over the telephone line from our Look Rock air quality station. Parameters reported include SO_2 , O_2 , TSP, meteorological data, and data from teloradiometers. We hope to include data from a continuous pH monitor for wetfall. We plan to receive satellite data from the USGS transmitted from a remote weather station on Clingmans Dome.

Our most ambitious application of the IBM PC is to use the remote sensing and cartographic data base being developed for the park by the Geographic Information Systems Unit in Denver. We want a hands-on terminal for this data base which will eventually include vegetation, topography, watersheds, stream systems, disturbance history, soils, geology, roads and trails, buildings, etc! A demographer at the University of Tennessee is helping on this.

Not only has the IBM PC been used for research, but it also has been used for a number of administrative activities. The mailing list for the annual science meeting has been computerized and identified by various categories. Now, 400 to 500 mailing labels can be printed in about 30 minutes. We are currently in the process of creating programs to simplify the budgeting and bookkeeping operations at Uplands. A data base program also is being developed to store inventory information in order to track the location and condition of equipment used by the Lab.

Peine is a sociologist and director of the Great Smoky Mountains Upland Lab.