

Microcomputers Afford Flexibility

By R. Gerald Wright

The use of large mainframe computer systems linked to dedicated terminals at remote sites is not common in the National Park Service. In part this is because many parks are geographically isolated, semi-autonomous units often connected to low grade telecommunication lines. Another reason is that the resource-oriented educational backgrounds of many NPS personnel have traditionally de-emphasized the use of computers. Finally, there is a managerial suspicion of large, complicated, centralized computer systems.

The advent of low cost, powerful microcomputers is rapidly changing this picture. In recent years, parks have been acquiring a variety of microcomputer systems, either on their own or as part of regional office programs. These computers are being used for several tasks. One application, the management of resource data bases, is discussed below.

As many park personnel are aware, the management of park data bases is an arduous task. Manual compilation, update, and filing of information has long been the norm. The result is that data, particularly

historical data, often are unavailable when needed. In an effort to remedy this situation, several Service-wide resource information systems were established in recent years. These included systems for back-country use data, bear information, threats to the parks and pesticide data. All were tied to a central mainframe computer. The problems in the use and maintenance of these systems reflect, to a large degree, those inherent in any centralized data base. The systems were constructed to include all possible contingencies and, thus, were complex and difficult to alter and update, particularly as they grew in size. It was also hard for individuals using these data bases to verify the accuracy of the data entered.

The result has been that many of the centrally-maintained data bases have been abandoned in favor of systems that keep relevant portions of the data base accessible to the individuals who have the greatest involvement with those parts. As an example, bear information for Glacier NP would be entered and stored on a microcomputer at Glacier. These latter data bases are called distributed systems.

Distributed systems are ideal for organizations that have large numbers of geographically separated units. Each unit, e.g. the park, stores its own data; thus data entry and retrieval time is minimal, and communication problems and costs are significantly reduced. Equally as important, the park assumes the responsibility for accurately updating the data and maintaining its portion of the total data base. The impact of changes in personnel responsible for maintaining a data base is lower in distributed systems for, in the event of disruptions, only a portion of the total data base is affected.

Distributed data bases are typically hierarchically structured, with the most detailed information kept at the local level. Syntheses of these data are made available at higher management levels, e.g., regional offices and WASO. Compatible formats for coding and storing the different data types are necessary for such a system to operate smoothly. Analyses and integration of data sets are easier, and individuals who lack training and experience in indexing information are aided by having a uniform format to follow.

One way to achieve uniformity is to develop common formats for specific data types and distribute them on diskettes compatible with the respective computers to the parks. Where appropriate, existing commercial software, such as MULTIPLAN, could be used for this purpose. In special cases, data specific software may have to be developed internally. For example, the Southeast Regional Office recently developed a museum records cataloging program for parks written in dBase II. The development of a common format and accompanying software for specific data sets could be directed by a Service-wide committee, such as the Natural Resource Information Management Working Group, working in concert with appropriate disciplinary experts.

The rapid proliferation of microcomputers in the NPS undoubtedly will continue to increase. Many parks already are developing their own or adapting commercial software to meet their data management and inventory needs. Efforts to assure compatibility of data storage, at least at the regional level, need to be undertaken quickly, before the problem gets out of hand. Implemented correctly, distributed data bases can be a real aid to the data storage and retrieval needs of the parks and also provide necessary information to other management levels.

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