

Back Country Permits Computerized

By Bob Flewelling

In the summer of 1973 a computerized system was initiated for processing backcountry use permits from North Cascades NP. The system, developed at the University of Washington, NPS/CPSU, had as its immediate goal the provision of summary information for management on backcountry use. In 1974, three more parks — Mount Rainier, Olympic, and Mount McKinley (now Denali) — were added to the project. In 1977, computer processing responsibilities were turned over to the Washington D.C. office, to be done on a Service-wide basis. This service was discontinued in 1980, and once again backcountry permits from Pacific Northwest parks were processed through the CPSU. Since that time, permit processing services have been extended to include Grand Canyon NP, whereas Mount Rainier NP has developed its own on-line computerized system.

For most parks, at present, backcountry permits data are processed only at the end of each calendar year. The system generates a set of tables summarizing backcountry use and user characteristics for individual months and for the entire year. The tables produced in a standard run summarize the following:

Travel zone use: number of parties, people, and visitor nights for each travel zone in the park; entry and exit point use; number of parties camping each night of year; number of people camping each night of year; origin of visitors; length of stay in the backcountry; and group sizes.

The computerized system can produce any number of specialized information tables as well, tailored to the specific needs of individual parks.

The permits from all parks involved are sent to the University of Washington, where their information is transferred to magnetic disk files via data entry terminals . . . a task performed by a professional data entry service.

Data processing is done on a large mainframe computer system (CDC Cyber) at the University of Washington. The tables are printed on standard 11" x 14" computer output paper and sent to backcountry managers in the parks. Both the data and copies of

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the final reports are saved on computer files for future access.

Programs for processing permit data are written in Fortran Extended, Version IV. The programs contain rudimentary documentation. Although most medium to large computers do process Fortran programs, some changes in the programs, requiring an experienced programmer, would be needed to accommodate a transfer to other regions on other computers.

Probably most important to managers and/or district rangers is information on the amount of use in various backcountry areas. Although field personnel usually have a fairly accurate idea of how much use is occurring where, the computer outputs quantify this information and portray it objectively. Use information is especially valuable in low use areas where no backcountry personnel may be stationed. Statistics for each travel zone help guide assignment of seasonal personnel to areas where they are most needed. These figures also may help management decide where interpretive programs, trail maintenance, bridge repair, horse facilities, etc., are needed. Use statistics also help identify areas receiving intense visitation and can aid management efforts toward visitor redistribution. Finally, when integrated with physical impact or wildlife data, use statistics can be important in setting and defending use limits where resource protection becomes an acute concern.

Information on the origin of visitors also may help identify where public information efforts can be most worthwhile and where public input should be solicited when required for management decisions. The burden of year-end reporting requirements can be lightened considerably if accurate permit data are available.

North Cascades has constructed special travel zone codes for the 84 climbing peaks within that park. Their codes allow for designation of whether each climbing group reached the summit of each peak attempted. Keying on these codes, a special program generates a climbing summary table for that park. A table of boat use statistics also is produced for North Cascades.

Only slight use of backcountry permit data in applied research efforts has yet been made, although it would seem that much potential exists. A valid concern to research efforts is the accuracy of data. Studies of backcountry permit compliance have yielded estimates of compliance ranging from 72 to 97 percent. Discrepancies between individual permits and actual itineraries are an additional source of

error. Thus backcountry permit data must be used with some degree of discretion.

As resource managers become increasingly familiar with computerized information bases and their applications, the various uses of backcountry permit data may become better defined. Permit data offer a number of potential specialized applications specific to needs of individual parks. An important component of the effort with Pacific Northwest Region has been the opportunity for interaction between park managers and data analysis personnel. Park managers must be creative and communicative with their ideas as to how they might make use of permit data. Conversely, those responsible for data analysis must be equally able to work and communicate with park personnel in seeing that permit data are analyzed and presented in meaningful ways.

Recent acquisitions of microcomputers within the parks may change the centralized role now held by a single large computer. Use of microcomputers for storing and processing permit data is especially appealing to parks that have backcountry reservation systems or travel zone limits. A good microcomputer system can be programmed to handle a permit reservation or allocation system, provided proper care and testing go into the design of the system and trained personnel are available to implement it.

An important feature of this type of system is that permit information may be saved as it is entered for future analysis. Considerable effort would be required to develop programs at the CPSU, although it could be done. Mount Rainier NP implemented its own computerized permit system in 1983, and was able to summarize the permit data using programs developed on contract.

Centralized processing of permit data will most likely continue to be an important service for parks which do not require an on-line computerized system of their own. Such parks would include those that do not have a backcountry reservation or use limit policy. For parks which do develop these capabilities, it would still be reasonable to consider eventual transfer of data files to a large computer for more extensive processing or storage for future analysis.

Unfortunately useful, accurate, computerized information management systems are not likely to be implemented easily or cheaply. All too often computer equipment and software are purchased with high expectations, only to result in frustration and disappointment. Developing tailored systems involves time and trained programmers, and without adequate personnel allocation progress is bound to be slow. Prepackaged systems and software often are not capable of meeting individualized needs without at least some

degree of tinkering. Thus trained programmer help is nearly always necessary. Contract programming is an option in some cases, although explicit definition of the tasks involved and products desired is essential.

At the other extreme are large, centralized data management efforts with little or no opportunity for interaction between data processing personnel and the users of the information. Such attempts remove the data processing burden from individual parks, but may be so far removed and unresponsive to individualized needs as to be of marginal use. Certain types of very standardized resource management data are appropriate for this level of processing, although even here good communication among involved parties is essential in the initial stages.

An efficient approach to a number of data processing needs in resource management involves strong communication between parks and regions. Organizations with similar types of data and similar needs,

may find they can share the costs of development. Ease of transference from one organization to another depends on the similarity of the informational needs and computer equipment of the organizations involved. In most cases, there will be differences. Adaptations will be necessary, and personnel will be needed to accomplish them. Given these limitations, much effort may still be saved through the sharing of ideas and technology.

As computerized information bases come to play a larger role in natural resources management, it will become apparent that careful, sometimes painstaking, efforts are involved to obtain high quality results. Concern for quality begins at the data collection stage and is required throughout the process. Costs of developing useful systems need not be excessive, but they do need to be approached with the proper resources, personnel, and expectations.

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