

Everglades System Facilitates Data Transfer

By Rick Dawson

In the process of managing the natural resources of Everglades NP and Ft. Jefferson National Monument, many types of information are generated. This information may have its genesis in formal research studies or in natural resources monitoring programs. However, all of these data can be used to assess the condition of the resource and evaluate corrective or mitigative measures. The massive loads of data gen-

erated in the programs involved are currently being put on two data management systems.

One system (512K CPU, 8 interactive terminals, 80MB hard disk drive, .75MB triple floppy disk drive, 9-track tape drive, drum plotter, card reader, and high speed matrix printer) is housed at the South Florida Research Center and primarily handles data concerned with research studies. The other system (256K CPU, 8 interactive terminals, 80MB hard disk

drive, 50MB dual floppy disk drive, daisy wheel printer-plotter, and high speed matrix printer) is housed in the Resource Management section and primarily processes data accumulated from monitoring and resource manipulative studies and programs. Both systems are Wang Model 2200 MVP 16 bit processors and are equipped with AIMS PLUS software packages. Since the systems are essentially identical, data between the two are transferred easily for integration and analysis.

The major resources problems affecting the park currently are centered around water management, fisheries management, endangered species monitoring, management of exotic vegetation, fire management, and backcountry campsite utilization. Additionally, programs are being developed to handle budgeting and personnel, training, case/incident reporting, special use permits, and collecting permits. Both systems are capable of supporting word processing; the resource management system is equipped with the Wang word processing software.

Utility of the current hardware is twofold: data entry, editing, and analysis; and, data management for use on mainframe systems. These two uses are critical since many of the studies that contribute data to their respective databases require preliminary statistical analysis in order to test for significance and generate resource fitness reports.

However, many of the problems being studied, along with the resource use and abuse being monitored, may be influenced by water management strategies. Therefore, to gain a clear understanding of various ecosystem forcing functions it will be necessary to integrate many varied databases with those collected and assembled by the hydrology research group. This integration may require pre-treatment prior to analysis on a time shared mainframe.

The databases on-line on the research center system are: hydrology, wildlife, marine resources, and vegetation. Of these, hydrology is the largest and most complex. It is subdivided into files dealing with water depth at monitoring stations, discharge, estuarine tidal data, temperature, and precipitation. The analyses to which these data are subjected are mostly standard statistics but include reports and predictions of flow/discharge.

The system provides data for a monthly synopsis of hydrological conditions which is distributed to all park divisions. The water resources database occupies about 17MB of storage.

The wildlife database handles collected information on ospreys, bald eagles, alligators, and freshwater fishes. In the case of ospreys and eagles, nest activity is recorded with subsequent analyses for population size, nesting success, and environmental parameters that may affect their productivity. Data collected on alligators records such parameters as nesting success, food habits, and age-growth. Freshwater fish data are concerned primarily with food habit studies. The majority of the analyses performed on the data are to determine the major prey items for each species along with the frequency of occurrence and percent volume of the prey items.

The research marine resources database contains information from on-going studies on shrimp abundance and seasonal distribution; coral reef water quality; and, sportfish age-growth. All these studies require standard statistical analyses to be performed on their data sets. The application of these products will be to determine habitat preference (shrimp), impact of onshore development and human impact on coral reefs; and, length-age relationships/mortality of selected sportfish populations. This database oc-

cupies about 5MB of storage.

The research vegetation database concerns itself with data generated from evap-transpiration studies. These data will be used to determine the amount of water loss through evapo-transpiration for the eventual development of a park water management model. This database requires 2MB of storage. Much of the software used for the analysis of research databases is custom designed for a specific database and a desired product; however, there is an increasing level of use of the AIMS PLUS applications generator for routine data management functions.

The resource management databases are marine resources, fire, vegetation, and backcountry campsites. The marine resources database consist of data collected by recreational fishermen creel census, mandatory catch log reporting by commercial and professional guide fishermen, fish length measurements, boat trailer ramp counts, actual boat counts (aerial census), and commercial/guide fishing permit-fee information. These data are managed to be reported on a variable time increment basis with standard statistical treatment of the database selected. This database contains 40MB of data collected from 1958 to the present. Uses for these data are to monitor harvest and effort on the park fishery. Also, they can be conveniently integrated with the research age-growth database for a more detailed analysis of finfish populations and their response to environmental and human impacts. The database has the ability to generate the 270 commercial and professional guide fishing permits issued per year.

The fire database is concerned with management of the extensive library of fire data collected by the park since 1952. This database occupies about 5MB. The vegetation database stores data collected on park exotic vegetation and farmland reclamation projects. These data are analyzed to determine the extent and effects of exotic vegetation control work and to document successional vegetation changes on abandoned farmlands within the park. They occupy about 7MB of storage.

The backcountry campsite database utilizes information collected from the backcountry permit program and provides data on site use at backcountry facilities. It requires about 4MB for storage. Most of the fisheries and backcountry use databases are analyzed with custom designed software, whereas, all of the fire, vegetation, and budgeting software has been generated using AIMS PLUS.

Coincident to the maintenance and use of these databases, we are currently developing programs for the entry and analysis of Case Incident Reports and fish kill investigations. On both systems resides software for the tracking of funds, budget projections, and FTEs.

Besides providing the capabilities for more efficient management and storage of data collected by monitoring and research programs, the real benefit of these two identical systems lies in the relative ease of transfer of data between researchers and resource managers. This integration of data will deliver the ultimate goal of both programs, which is an increased understanding and more competent management of an extremely complex ecosystem. The tool to accomplish this goal will probably be a fully integrated model of the Everglades ecosystem. The development of such a model would be impossible without versatile and adequate automatic data processing equipment.

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