RECREATION VISITOR INVENTORIES: KEY INFORMATION FOR CAPACITY MANAGEMENT

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Abstract: A major change in recreational carrying capacity management during the 1990's has been a shift from emphasis on capacity planning to capacity decision-making. This has been developing because of a need for decision information in a shorter time frame and at lower cost than long-term planning processes. A recreation visitor inventory system has been developed and tested on river, lake, and land situations. The system involves identifying different conditions (and usually different users) on various parts of a management area, through visitor counts and interviews. This place-specific inventory information can then be analyzed in the context of providing and maintaining a recreation opportunity spectrum of choices for visitors. The process of gathering and utilizing this information is outlined as a recreation management information system (RMIS) following concepts from business management decision systems.

Introduction

One of the more worrisome problems for recreation area managers is recreation carrying capacity. As recreation use of an area increases, concerns arise about limiting use or taking other management actions. Manager's efforts to deal with these concerns often become controversial, leading to public meetings and court cases. Consequently, the capacity issues are often not dealt with, and problems associated with increasing use aggregate.

A recreation visitor inventory system, similar to tree or wildlife inventories has been developed (Chilman 1983). It has been tested in river, lake, and land situations (Chlman and others 1996). Essentially, the inventory system involves identifying different conditions (and usually different users) on various parts of the area as management sub-units, and then counting and interviewing visitors at places where they exit the area. This place-specific inventory information can be immediately useful for management decisions, and then be incorporated into management planning, using the recreation opportunity spectrum (ROS) concept.

The process of gathering and utilizing this information for capacity management is outlined as a recreation management information system (RMIS) system and its development will be discussed, along with applications on river, lake, and land areas. Advantages for managers appear to be reducing capacity controversies, and increasing management credibility.

Methods

Because manager understanding and communication of data collected and procedures used has been found increasingly important due to more conflict situations, the research design has been participant observation, negative case analysis (Kidder 1981). The researcher uses a hypothesis about how a process works and then tests it in a series of case situations, revising the hypothesis as needed. In the research discussed here, the researcher participated as a recreation data specialist with field level managers in their decision-making.

The capacity process selected as a hypothesis for testing in the lake carrying capacity research was Quality Upgrading and Learning (QUAL). The hypothesis was that the process would work in the same way in lake situations as it had in river and terrestrial applications. The process was developed and tested during 20 years research at Ozark national Scenic Riverways in Missouri (Chilman et al. 1996). It also had been tested at Lark Tahoe, California and Land Between the Lakes, Kentucky. A key aspect of the process is the development of a system for collecting place-specific social data - the

numbers ant types of visitors on specific parts of the management area, and the visitors' perceptions of conditions and changes occurring (Chilman 1983).

The QUAL process places emphasis on two aspects of quality of visit experiences: the reasons for choice of the specific place for the desired recreation activity (what is important to the visitor for the experience), and changes observed in the area in important visit attributes, if the visitor is a repeat visitor.

The key step in carrying capacity planning, as in other resource management such as wildlife, is inventory of existing conditions. This systematic measurement and documentation of existing conditions (physical-biological, social, managerial) can then be used as a basis for discussion of desired conditions (management objectives).

Examination of conditions on large land or water areas usually shows diverse conditions on various parts (or zones) of the areas, which can then be managed to provide diverse recreation opportunities for different kinds of recreation visitors. This allows visitors more specific choices of visit experiences, and hence higher quality in fulfillment of their preferred experiences. The concept of providing a recreation opportunity spectrum (ROS) is well-established (Manning 1985).

Social inventories (systematic visitor counts and interviews at specific places) are especially important for recreational capacity planning, and especially for lake situations. While physical and biological data has often been obtained for procedures for recreational areas, very little systematic social data has been gathered. Simple, low-cost social data collection procedures for large land and water areas have been developed and tested in various situations (Chilman 1983, Chilman et al. 1995). Essentially, they involve determining user types in each zone, and how and where to do sample counts and surveys.

To place these inventories in a modern management decision-making framework, and to enable manager training and communication, the steps to implement the inventories are outlined as a Recreation Management Information System (RMIS) in Figure 1. An example of more detailed elaboration of each step may be obtained by contacting the lead author of this paper.

RECREATION MANAGEMENT INFORMATION SYSTEM (RMIS)
A Systematic Process for Gathering and Utilizing Visitor Data for Recreation Area Management Decisions

STEP I. DESIGN (with mangers)
1. Select/recruit study supervisor.
2. identify concerns/questions to be answered by the study.
3. Examine study area, determine user groups and sampling points.
4. Develop a survey sampling plan and boat count schedule.
5. Develop survey instruments and count forms.
6. Prepare press release for local news media.

STEP II. DATA COLLECTION
1. Train field data collectors.
2. Maintain quality control during data collection.
3. Train and supervise data collectors in data coding and entry.
4. Prepare monthly summary reports.

STEP III. DATA ANALYSIS AND REPORTING
1. Summarize and categorize cleaned and edited survey data.
2. Prepare preliminary report for managers' review.
3. Tally.
4. Discuss report, modify as needed.
5. Prepare final technical report for distribution.

STEP IV. DISCUSSION OF DATA, FOLLOW UP (with managers)
1. Discuss to determine whether data and data collection procedures are clearly understood.
2. Discuss implications, alternatives for management objectives.
3. Discuss needs for additional or other kinds of data, ways to improve data collection and sample.
4. Design data collection for following year.

Figure 1. Recreation Management Information System

Results

The results of this decision-oriented approach can be illustrated by examples at three locations: Ozark

National Scenic Riverway in Missouri, Table rock Lake in Missouri, and St. Croix National Scenic Riverway along the Wisconsin/Minnesota border. Essentially, we focused on capacity decisions that the managers needed to make, assisted the managers by gathering social inventory data relating to those decisions, and worked with the managers to enable them to understand the data and how it was collected and how it could be useful in their decision processes. The managers' experiences with social data in those initial decisions helped them with other later decision-making and planning efforts.

Capacity Management at Ozark National Scenic Riverways (ONSR)

A more detailed discussion of this case can be found in Chilman et al. (1996). The long-term capacity research project conducted at ONSR since 1972 has been basic to our understanding of capacity concepts and processes.

Ozark National Scenic Riverways includes 134 miles of the Current and Jacks Fork rivers in south central Missouri. Management by the National Park Service (NPS) began in 1964 when ONSR was established. Large numbers of canoeists were attracted by the spring-fed rivers and outstanding scenery.

In 1972, a 5-year research program was initiated to determine impacts of the canoeists on the river environment and on the other river users. The program included use monitoring, environmental impacts, social considerations (including perceptions of crowding), and water quality (Marnell et al. 1978).

The influx of large numbers of visitors wanting to canoe at ONSR gave rise to several persons establishing canoe rental operations. The NPS saw the need to regulate those operations through issuing concession permits to operate. Lawsuits by local rental operators began in local courts in 1976 and continued to Federal Court in St. Louis in 1982, challenging NPS authority to regulate canoe rentals as 'arbitrary and capricious'. Following appeals, the Federal court case was decided in favor of the NPS in 1984. Important evidence in the case was systematic sampling of canoeists to determine that perceptions of crowding had increased from 47% in 1977 to 61% in 1979.

Following the court decision that NPS had authority to regulate canoe rentals, a planning team developed a River Use Management Plan (USDI1989). This plan was based on use data showing different levels of use on various sections of the rivers. Ten management zones were identified. Utilizing the recreation opportunity spectrum (ROS) concept, three different use densities were determined and distributed on various zones of the river to provide choices for visitors: some prefer high densities, some medium, some low. A brochure describing the choices was provided.

Since 1986, a system of use monitoring measurements has been carried out as pr the QUAL capacity model. Approximately one-third of ONSR has been monitored-counts and short (one-page) surveys of river users-each year on a three-year cycle. Canoe use has been shown to be stable during that time, with some localized increases I tube floaters and fishing boats.

The major decision faced by NPS managers was the need to regulate canoe rental operators. Research data, especially social data on perceptions of crowding, helped to establish a management plan. A social monitoring system helps to answer concerns about changes occurring and provide a stable capacity management situation.

Capacity Management at Table Rock Lake (TRL)

Table Rock Lake is a large (approximately 70 miles long, 745 miles of shoreline) lake in the Ozark forest of southwest Missouri. It is managed by the U.S. Army Corps of Engineers (COE).

The town of Branson located near TRL dam is an entertainment Mecca, with some 30 music halls and other attractions. Because of Branson, the managers of TRL receive proposals for development and recreational use on the lake. The managers needed data on numbers and types of users on various parts of the lake and their perceptions of conditions. In addition to Branson, four other communities with different interests and traditions were located at various places around the lake.
In 1992, the COE received a proposal for recreational float-plane rides on TRL. Visitors would have the experience of taking off from water, flying over the lake and landing on the

water. A 3-month trial permit was issued. Researchers did interviews of campers, homeowners, and fishermen near the plane takeoff area. Following a public meeting attended by approximately 200 people where the research data was presented, the COE made the decision to terminate the float-lane operation.

During that same year, a 3-year program of data collection on place-specific visitor numbers and perceptions of conditions began on the entire lake. The data was used in subsequent public meetings to add more "ducks" (amphibious vehicles that drive visitors to TRL from Branson, out onto the lake and around and then back to Branson) and to add boat docks in restricted areas. Both of those development proposals were not allowed by the COE.

At the Congress on Recreation and Resource Capacity held at Snowmass Village in Colorado from November 29 to December 2, 1999, Kenneth Foersterling, COE manager for TRL, discussed several ways that he had used the social inventory data for capacity decisions. One example was increased law enforcement patrols on TRL by State of Missouri Water Patrol. The TRL Water Patrol staff was increased from 5 to 12 officers, based on survey data showing visitors were concerned about water safety. These data were used in lobbying efforts by local groups and political representatives to increase the patrols and thus the quality of recreation experiences for visitors.

Thus the managers at TRL learned how the social data was collected and utilized in the float-lane decision issue. They learned how to use the data in subsequent capacity decision-making. Plans now are to initiate a social monitoring system to learn whether changes in visitor numbers, types or perceptions have occurred.

Capacity Management at St. Croix National Scenic Riverway (SCR)

St. Croix National Scenic Riverway encompasses 252 miles of the St. Croix and Namekagon Rivers. The St. Croix River is along the Wisconsin/Minnesota border near Minneapolis/St. Paul, and the Namekagon River (99 miles) in Wisconsin flows into the Upper St. Croix. The Riverway has been managed by the National Park Service (NPS) since its establishment in 1968.

In 1998, NPS became aware they would need to place canoe rental operations under permit. The SCR 1998 General Management Plan also calls for a capacity management plan to be developed. NPS managers at SCR learned of the capacity research done at ONSR, and called on ONSR researchers to help set up a social data collection system to assist their decision-making planning.

The major problem was a limited SCR management budget that did not include funding for a major new data collection effort. After several meetings, a 5-year research contract was worked out to use one or two data collectors each summer to gather data on portions of the river. If baseline visitor numbers and surveys were done on all sections of SCR before the 5-year period ended, monitoring remeasurements would be conducted to look for changes occurring.

During summer 1999, visitor counts and surveys were done on the Namekagon. Different use densities were found on various sections of the river, and one very high-density use area was identified for management attention. During summer 2000, social inventory data was carried out on the Upper St. Croix River down to Highway 70 near Grantsburg, Wisconsin. Preliminary findings suggest (1) that high-quality river use experiences can occur at existing use levels, and (2) that a system of various zone densities can be managed to provide a recreation opportunity spectrum type of capacity management plan.

One of the apparent deterrents to lack of social inventories for decision-making and planning has been management budget reductions in recent years. The SCR approach suggests that low-cost systems can be developed, especially if lawsuits may be a strong possibility. The information also can be useful in various decision situations, and aids manager credibility.

Discussion

This change in focus from capacity planning to capacity decision-making has been successful in these times of more public participation, political pressures with shorter time frames for responses, and reduced management operating budgets. The OUAL process is a simplified system, for improved manager understanding and communication and for lower costs.

It is curious that systematic social inventories have not been developed, similar to other resource inventories for decision-making. This may reflect a lack of knowledge by social scientists of diversity of wildland conditions, and resource inventory procedures. Or it may reflect a lack of training of recreation managers in inventory and decision-making processes.

Recreational carrying capacity management for large land/water areas can be viewed as not one decision but several interrelated decisions, often about different parts of the area and different people there. By beginning to attack these complex situations with some initial decision data, later decisions and planning can be faced with much more confidence and credibility by the managers.

Recreational capacity decisions are decisions about people's access to opportunities and the quality of their experiences there. As such, they need to be developed with recreation visitors' participation, and communicated to people involved. Place-specific social data should be a central part of that communication.

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