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Characterization of Park Visitors, Visitation Levels, and Associated Economic Impacts of Recreation at Bull Shoals, Norfolk, and Table Rock Lakes

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Final report

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Abstract: Planning for future needs of recreation visitors presents many challenges at federal lakes that have a mix of public (federal, state, and local) and private recreation providers, and where ongoing regional growth and other trends are influencing visitor number and activities. Under these circumstances, a periodic assessment of lake recreation is often used to document current recreational patterns and identify ongoing and emerging trends that could or should influence recreation planning and investment decisions. This study provides a broadly scoped examination of park-based recreation at Bull Shoals, Norfolk, and Table Rock Lakes, so that present and emerging recreation needs can be included in the broader planning efforts for the upper White River watershed of Arkansas and Missouri. This study was based on survey data collected from recreation visitors and other current data collected by lake managers as part of their visitor monitoring programs. This report provides estimates of annual visitor use levels, profiles of visitor spending, and the economic impact of visitor spending on the region surrounding the lakes. The report also examines visitor recreation patterns, visitor perceptions of lake and park attributes that affect the recreational experience, and visitor-perceived trends on the lakes and in the parks, and the impact of these trends on the park visitors who recreate on these lakes.

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Preface

This work was performed by the U.S. Army Engineer Research and Development Center (ERDC) with substantial participation and support from Corps of Engineers Mountain Home and Table Rock Lake Project staffs and Missouri Department of Conservation (MDOC) and Arkansas Department of Fish and Game (ADFG) fisheries policy and management staffs.

Funds for this study were provided by the U.S Army Corps of Engineers, MDOC and ADFG, through the U.S. Army Engineer District, Memphis, for support of the White River Basin Comprehensive Study. Managers for this study at the Memphis District were initially Timothy Flinn and later, Edward Lambert and Paul Hamm. The study was implemented through the U.S. Army Engineer District, Little Rock, where it was managed initially by Tony Hill and later by Jonathan Long.

The survey tools and procedures used in this study were developed as prototypes for visitor use monitoring at Corps recreation lakes nationwide. Because of the need for updated visitor use monitoring tools at Corps lakes and the applicability of the tools and procedures developed as part of this study for meeting those needs, funds for development of data acquisition tools and analysis procedures were provided by the Corps of Engineers Recreation Management and Support Program (RMSP), a program funded by Corps of Engineers Operations and Maintenance General Appropriations.

This report was prepared by Richard Kasul, ERDC Environmental Laboratory (EL); Dr. Daniel Stynes, Department of Community, Agriculture, Recreation, and Resource Studies, Michigan State University; Dr. Lichu Lee, Bowhead Information Technology Services, Inc. (BITS); Dr. Wen Chang, Institute for Water Resources; and R. Scott Jackson, Christine Wibowo, Sam Franco, and Kathleen Perales, ERDC-EL. It was submitted for publication on September 10, 2008.

Helpful reviews of this report were provided by Jim Henderson and Dr. David Price, ERDC-EL.

This work was performed under the general supervision of Dr. Michael Passmore, Chief, and Dr. David Price, Acting Chief, Ecological Resources Branch; EL; Dr. David Tazik, Chief and Dr. Timothy Lewis, Acting Chief, Ecosystem Evaluation and Engineering Division, EL; and Dr. Elizabeth C. Fleming, Director, EL. At the time of publication, Ms. Antisa Webb was Chief, Ecological Resources Branch, EL and Mr. Edmund Russo was Chief, Ecosystem Evaluation and Engineering Division, EL.

COL Richard B. Jenkins was Commander and Executive Director of ERDC during the study and COL Gary E. Johnston was Commander and Executive Director at the time of publication. Dr. Jeffery P. Holland was Director.

Unit Conversion Factors

Multiply	By	To Obtain
acres	4,046.873	square meters
miles (nautical)	1,852	meters
miles (U.S. statute)	1,609.347	meters

1 Introduction

This study is a part of the White River Basin Comprehensive Study, which was authorized by the U.S. Congress for the purpose of assessing water and related land management needs in the White River Basin in Arkansas and Missouri. The overall study is concerned with identifying both short- and long-term management needs associated with navigation, flood damage reduction, feedlot runoff, hydropower, ecosystem restoration and protection, recreation, critical aquifer protection, and agricultural water supply issues. The present report provides data for the recreation component of the study for three Corps of Engineers reservoirs located on the upper White River. They include Table Rock, Bull Shoals, and Norfolk Lakes (Figure 1).

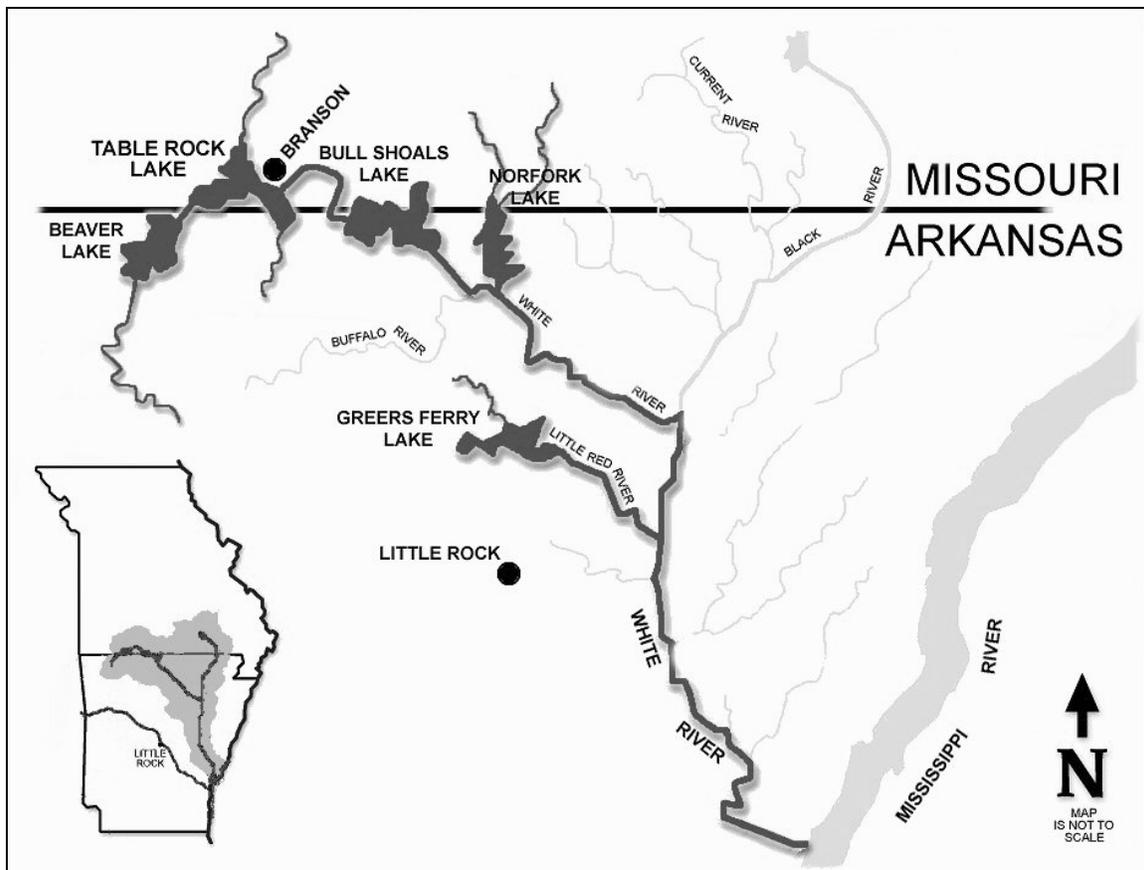


Figure 1. Corps of Engineers reservoirs located in the White River watershed. This study included Table Rock Lake, Bull Shoals Lake, and Norfolk Lake, all of which occur in the upper White River watershed on the boundary separating the states of Arkansas and Missouri.

The purpose of this study was to provide current data on recreation use, visitor satisfaction, and the economic impacts of recreation on Table Rock, Bull Shoals, and Norfolk Lakes. In addition, the resource management agencies requested additional information about lake visitors for recreation and natural resource planning and management, which was also collected as part of this study.

This study was a joint effort of the U.S. Army Corps of Engineers, Missouri Department of Conservation, and Arkansas Department of Fish and Game. The goals and general approach to the study were laid out by an inter-agency planning team of recreation and fisheries policy and management staff from the participating agencies. Participants in the planning effort were Gene Gardner, Missouri Department of Conservation (MDOC); Charles Kuyeda and Mark Oliver, Arkansas Game and Fish Commission (AGFC); Tim Flynn, U.S. Army Corps of Engineers (USACE), Memphis District Office; Jack Johnson and Tony Hill, USACE Little Rock District Office; Tracy Fancher and Jon Hiser, USACE Mountain Home Project Office (MHPO); and Ken Foersterling, Marilyn Jones and Greg Oller, USACE Table Rock Project Office (TRPO). The U.S. Army Engineer Research and Development Center was asked to help refine the study approach developed by the planning team and oversee its implementation.

Outdoor recreation at Corps of Engineer lakes occurs in different recreational settings distinguished primarily by mode of visitor access and the activities that are supported by available recreational facilities. From this perspective, most of the recreation occurring at a lake is associated with recreational settings comprising lakeshore parks (including marinas), access points (public boat ramps), informal recreation sites, private boat docks, and lakeshore resorts. Methods for obtaining information about recreation use of the lake or lakeshore typically differ for the recreational settings that have various modes of visitor access. This study addressed visitors associated with lakeshore parks (including associated marinas), access points, and informal lakeshore access sites, which are all primarily accessed by vehicle. Of these, lakeshore parks were of primary interest because they provide the most available source of public access to the lake and lakeshore and require greater public resources to manage and maintain.

The study was based primarily on a year-long survey of recreation visitors conducted at each of the lakes between 16 October 2004 and 15 October 2005. The survey consisted of an exit survey of vehicles leaving the lakes and a companion mail survey of these same visitors. The survey instruments were developed in cooperation with Ron Reitz and Heather Scroggins (MDOC), Ken Shirley (AGFC), Greg Oller (TRPO), and Jon Hiser (MHPO). The survey instruments were approved for use in this study by the U.S. Office of Management and Budget under the authority of OMB Approval No. 0710-00001. The survey was conducted at recreation parks and access points identified by MDOC, AGFC, MHPO, and TRPO staff. Contract data collection personnel were acquired for this study by USACE project staff. The exit surveys at Bull Shoals and Norfolk Lakes were performed under the supervision of Roger Howell (MHPO) and the exit survey at Table Rock Lake was performed under the supervision of Rodney Raley and Larry Hurley (TRPO). Monthly vehicle traffic volume was recorded by MHPO and TRPO staff at permanent traffic meter locations associated with each of the recreation parks and access points.

An additional survey of vehicle traffic volume was conducted using temporary traffic meters at the informal recreation sites. An existing inventory of informal recreation sites at Table Rock Lake was updated by TRPO staff for use in this survey. An inventory of informal recreation sites at Bull Shoals and Norfolk Lakes was developed by Ken Shirley (AGFC), and Roger Howell and Jon Hiser (MHPO). Traffic meter installations and monthly traffic volume readings associated with this survey activity were conducted by MHPO and TRPO staff in conjunction with traffic monitoring activities at permanently metered recreation areas.

2 Study Area

This study took place at the three Corps of Engineers multiple-use reservoirs on the upper White River whose shoreline boundaries occur partly in Arkansas and partly in Missouri (Figure 1). These three reservoirs (Table Rock Lake, Bull Shoals Lake, and Norfolk Lake) were constructed between 1941 and 1958. They are currently authorized for flood control, hydroelectric power generation, water supply, recreation, and fish and wildlife. These lakes are an important source of outdoor recreation opportunities in the region.

Norfolk Lake

Constructed in the 1940's on the Norfolk River, a tributary of the White River, Norfolk Lake was the first Corps of Engineers reservoir to be built in the upper White River watershed. The smallest of the three reservoirs in this study, Norfolk Lake has approximately 380 miles of shoreline and 22,000 acres of water surface area at maximum conservation pool level. More than 90 percent of its lakeshore miles and surface acres occur in the state of Arkansas.

The Corps of Engineers, Arkansas Department of Fish and Game, Missouri Department of Conservation, and Fulton County, AR operate more than 25 recreation areas along the lakeshore and the tailrace immediately below Norfolk dam. The Corps of Engineers Mountain Home Project Office operates 11 multiple-use parks that offer both day-use and camping recreation opportunities. Most of these parks have a boat ramp(s), picnic and group shelter facilities, swimming beach, playground equipment, and camping facilities. However, service levels vary. Five offer modern restrooms with showers and flush toilets, and camping pads with electrical and water hookups. The other six have restrooms that lack flush toilets and showers, and three of these have primitive campgrounds lacking the hardened pads, electrical service, and water hookups available at the modern campgrounds. The Corps of Engineers also operates six day-use parks offering varying types of facilities and levels of service as well as five access points that provide only a boat ramp and vault toilet. There are eight concessionaire-managed marinas located inside the higher-end, Corps-managed, multiple-use and day-use parks.

Additional recreation sites on the lake are managed by other agencies. The Missouri Department of Conservation operates access points at Bridges Creek and Liner Creek. The Arkansas Department of Fish and Game operates an access point at Calamity Beach. Fulton County, AR operates the Boggy Creek Access Point. The U.S. Fish and Wildlife Service operates the Norfolk National Fish Hatchery below the dam, a facility that is open to the public.

Bull Shoals Lake

Bull Shoals Dam, completed in 1951, is located on the upper White River approximately 42 river miles upstream of the location where the Norfolk Lake tailwaters enter the White River. With 740 miles of shoreline and 45,440 acres of water surface area at maximum conservation pool level, Bull Shoals Lake is the largest in surface area and second largest in shoreline miles of the four Corps of Engineer reservoirs on the upper White River. Both Arkansas and Missouri have substantial acres of surface waters and miles of shoreline occurring in their state boundaries.

Outdoor recreation on Bull Shoals Lake is available at approximately 30 recreation parks and access points located on Corps-owned lands along the Bull Shoals lakeshore and the tail race immediately below Bull Shoals Dam. Sixteen of these are multiple-use recreation areas that provide a mix of day-use and camping recreation opportunity.

Eleven of the multiple use parks are operated by the Corps of Engineers Mountain Home Office. These parks all have a launch ramp, playground, picnic and group shelter facilities, drinking water, modern flush toilet facilities, and campsites ranging in number from 30 to 88, most with electrical service. Several also have a swimming beach. Five other multiple use parks are operated by other government agencies. One of these is the Bull Shoals State Park operated by the Arkansas Department of Parks and Tourism. The other four are operated by county or municipal government agencies. Of 11 marinas located on Bull Shoals Lake, 10 are located inside Corps-managed multiple-use parks.

In addition to the multiple use parks, there are two major day-use parks, one operated by the Corps of Engineers and the other by the City of Bull Shoals, AR. There are also seven access points operated by the Arkansas Department of Fish and Game.

Table Rock Lake

Table Rock Lake is uppermost on the White River of the three reservoirs included in this study. Table Rock Dam is located approximately 23 river miles upstream of the upper end of Bull Shoals Lake. Completed in 1958, Table Rock Lake has 43,100 surface acres of water and 747 miles of shoreline, most of which are located in the state of Missouri. While the region surrounding the upper portion of the reservoir is still largely rural in character, the growth of Branson, Missouri into a major tourist destination has resulted in substantial population, recreation, and tourism growth near the eastern (lower or downriver) portion of the lake.

Table Rock Lake has 24 public recreation areas. Of these, 19 are managed by the Corps of Engineers Table Rock Lake Project Office, two (Table Rock State Park and Shepherd of the Hills Fish Hatchery) by agencies of the State of Missouri, one (Big Bay Recreation Area) by the U.S. National Forest Service, one (Beaver Recreation Area) by the town of Beaver, Arkansas, and one (Kimberling Park) by a private concessionaire. A total of 16 of these areas are multiple-use parks that support both day-use and camping recreation. These parks typically have a boat launch ramp(s), picnic and group shelter facilities, swimming beach, playground equipment, restrooms with showers, and RV camping pads with water and electrical service. Four parks that lack camping facilities are designated as day-use recreation areas. Four additional low-visitation day-use areas function primarily as lake access points. There are 11 concessionaire-managed marinas on the lake; nine of these located inside Corps-managed, multiple-use parks.

Because of its proximity to the city of Branson, sightseeing is an important part of the mix of recreational opportunities available at recreation areas on Table Rock Lake. Three of the recreation areas included in this study have tourism-related recreation facilities that attract sightseeing visitors. One of these areas is the Shepherd of the Hills Fish Hatchery that is managed by the Missouri Department of Conservation. Fish hatchery visitors can observe trout being hatched and reared in ponds and tour the onsite visitor center to learn about trout natural history and management. A second area receiving sightseeing visitation is the Corps of Engineers Dewey Short Visitor Center that is located at the Corps of Engineers Project Office. The third area is the Long Creek Recreation Area, where boat tours of the lake are offered by a private concession operator. All three of these sites are present on bus tour routes.

Two additional sources of significant sightseeing visitation were not included in this study. One is the Kimberling Park Tour of Lights, an annual drive-through Christmas lights display that has historically drawn large numbers of sightseeing visitors to Kimberling Park from October through December. This event was ongoing during this study, but has since been discontinued. Also excluded from this study were visitors to the Branson Belle Showboat, a concession-managed dining and tour boat operating from lakeshore lands leased from the Corps of Engineers that is not associated with any designated recreation area.

Informal lakeshore access sites

Each lake has informal lakeshore sites used by visitors for recreation or lake access. Corps project staff from Mountain Home and Table Rock Lake Project Offices and fisheries management personnel from the Arkansas Game and Fish Commission and Missouri Conservation Commission identified 20 informal lakeshore recreation and access sites on Bull Shoals Lake, 12 on Norfolk Lake, and 71 on Table Rock Lake. Though they provide some of the same recreation opportunities as the parks and managed access points, these unmanaged sites have no public recreation facilities, and often, no recreation facilities of any kind. Many of these sites, especially at Bull Shoals and Norfolk Lakes, are associated with isolated areas of lakeshore that are recreational gathering spots for local residents (Figure 2). Other informal recreation sites, especially at Table Rock Lake, occur at private launch ramps that are associated with community boat docks (Figure 3). Community docks are multi-slip facilities owned in common by several lakeshore property owners. Boat ramps are allowed under the terms of community dock permits so that dock co-owners may launch and trailer boats kept at the dock. Many community docks are located adjacent to residential neighborhoods, where people from non-member households use the associated launch ramp for recreational boat access to the lake. Since they are not managed for recreational purposes by any public agency, the level of recreation use at these sites is not well-known.



Figure 2. Informal lakeshore recreation site on Table Rock Lake used by visitors for camping, picnicking, and swimming. Boats are launched from the natural shoreline.



Figure 3. Private boat ramp associated with a permitted boat dock at Table Rock Lake. Many of these ramps are used by area residents to access the lake for day-use boating.

3 Methods

This study focused mainly on obtaining current information on visitor use and spending for each of the lakes. These data were used to assess the economic impacts of park visitors to the three lakes. The study also documented visitor characteristics and perceptions that are important for multi-agency recreation planning and management. It is especially challenging to obtain rigorous estimates of visitor use in a complex recreational setting. Therefore the data collection effort was primarily designed to obtain the data needed to estimate visitor use levels.

Estimating visitation at lakes and adjoining public lands often employs several different methods, each one suited to measuring use associated with a different class of visitors. This study focused on visitors at public parks, access points, and informal lakeshore recreation sites. These visitors typically arrive and depart by vehicle, allowing them to be assessed by a common approach. Included in this group were traditional day-use park visitors; overnight visitors, including campers; recreational boaters and anglers who accessed the lake using a boat launch facility or marina; and sightseers.

Visitor surveys

The primary source of data for this study was a one-year survey of visitors conducted at each lake. A pair of interviewers assigned to each lake conducted a traffic stop survey in conjunction with the permanent traffic counters installed near vehicle exits at recreation parks and access points.

In this survey, all vehicles departing during scheduled sampling periods were stopped and interviewed by a trained interviewer who followed an interview script programmed into a laptop computer. Every departing vehicle was classified as a recreation vehicle, returning recreation vehicle, non-recreation vehicle, refusal, or passed vehicle. A vehicle was classified as a recreation vehicle if the occupants had just completed their visit to the lake and were engaged in some recreation activity while there. Information about the number and ages of people, length of visit, and activities was then obtained from the occupants of recreation vehicles. The interview process also distinguished day-use and overnight visits. Overnight visits required one or more nights on the lake or in a recreation area located on

Corps-owned land managed by the Corps of Engineers, a concessionaire, or an out-grant partner. Many overnight visits occurred at campgrounds, but have occurred in resorts located on Corps-owned lands or on boats somewhere on the lake, or at a marina. A day-use visit consisted of a trip completed without an overnight stay on the lake or at a recreation area located on Corps-owned land.

Upon completion of each interview, a questionnaire and stamped, self-addressed mailing envelope were offered to the occupants of each recreation vehicle. The questionnaire included questions about visitor demographics, attitudes and perceptions about the lake and recreational environment, trends affecting recreation, trip spending, and more detailed information about recreational activities. The mail questionnaire was formatted to show the name of the project in the title and questions, but was otherwise the same for each project. The questionnaire formatted for use at Table Rock Lake is shown in Appendix A.

Between 16 October 2004 and 15 October 2005, 140 sampling periods were scheduled at Bull Shoals and Norfolk Lakes and 154 were scheduled at Table Rock Lake. Each sampling period comprised a 3-hr time interval in which all departing vehicles were stopped and interviewed. Sampling periods were selected using a probability-based sample selection process. The sample selection process began by separating all possible sampling periods (i.e., all area x time interval possibilities) into groups that served as sampling strata. These strata were formed based on type of area (Table 1), season of year (Oct-Mar, Apr-Sept), and day of week (Mon-Fri, Sat-Sun). Strata sample sizes were then assigned, usually in proportion to anticipated use levels (Table 2). Samples within strata were then selected with probability proportional to the anticipated use levels, subject to a sampling restriction permitting only one area on a lake to be sampled on any given day and a second sampling restriction requiring an equal number of samples to be selected for each time-of-day sampling period. The selection process produced a set of samples with known selection probabilities.

Table 1. Metered public-use recreation areas included in recreation survey.

Bull Shoals Lake		Norfolk Lake		Table Rock Lake	
Recreation Area	State	Recreation Area	State	Recreation Area	State
Multiple-Use Parks		Multiple-Use Parks		Multiple-Use Parks	
Beaver Creek	MO	Bidwell Point	AR	Aunts Creek	MO
Buck Creek Park	AR	Cranfield Park	AR	Baxter (Park)	MO
Bull Shoals Park	AR	Gamaliel Park	AR	Beaver	MO
Dam Site Park	AR	Henderson Park	AR	Big Bay	MO
Highway 125	AR	Howard Cove	AR	Big M	MO
Kissee Mills	MO	Jordan Park	AR	Campbell Point	MO
Lakeview Park	AR	Panther Bay	AR	Cape Fair	MO
Lead Hill Park	AR	Quarry Park (River side)	AR	Cow Creek	MO
Oakland Park	AR	Robinson Point	AR	Cricket Creek	MO
Point Return	AR	Tecumseh Park	MO	Eagle Rock (Booth)	MO
Pontiac Park	MO	Udall Park	MO	Eagle Rock (North)	MO
River Run Park	MO			Indian Point (Booth)	MO
Shadow Rock	MO	Day-Use Parks		Long Creek	MO
Theodosia Park	MO	Buzzard Roost	AR	Mill Creek	MO
Tucker Hollow	AR	George's Cove	AR	Old Hwy 86	MO
		Quarry Park (Lake side launch)	AR	Viney Creek	MO
		Quarry Park (Lake side marina)	AR	Viola	MO
Day-Use Parks					
Bull Shoals City Park	AR	State Fish Hatchery	AR		
Bull Shoals State Park (Day-use site)	AR	Tracy Park	AR	Day-Use Parks	
Highway K Park	MO	Woods Point	AR	Baxter (Marina)	MO
				Indian Point (Harbor)	MO
				Indian Point (Marina)	MO
Minor Day-Use Areas		Minor Day-Use Areas			
County Road 15	AR	Ford Cove	MO	Moonshine Beach	MO
Lowry Park	AR	Hand Cove Park	AR	Resident Office Overlook	MO
Spring Creek	MO	Niles Landing	AR		
Woodard Park	MO	Pigeon Creek	AR	Minor Day-Use Areas	
		Red Bank Park	AR	Big Indian	MO
				Coombs Ferry Access	MO
Individually Sampled Areas					
Bull Shoals State Park (Main)	AR			Joe Bald	MO
				Kings River	MO
				Individually Sampled Areas	
				Kimberling Park	MO
				Visitor Center / Waterfront Park	MO
				State Fish Hatchery	MO
				Table Rock State Park	MO

Table 2. Allocation of 454 3-hr sampling periods in traffic-stop survey.

Sampling Locations	Seasons	
	16 Oct 04 - 01 Mar 05	01 Apr - 15 Oct 05
Table Rock		
Multiple-Use Parks	24	32
Day-Use Parks	12	16
Minor Day-Use Areas	6	8
Table Rock State Park	6	8
Kimberling Park	6	8
Visitor Center / Waterfront Park	6	8
State Fish Hatchery	6	8
Total	66	88
Bull Shoals		
Multiple-Use Park	36	48
Day-Use Park	12	16
Minor Day-Use Areas	6	8
Bull Shoals State Park	6	8
Total	60	80
Norfolk		
Multiple-Use Parks	42	56
Day-Use Parks	12	16
Minor Day-Use Areas	6	8
Total	60	80

Measuring traffic volume

Corps of Engineers project offices monitor traffic volume at areas used for recreation. Access roads associated with recreation parks and many access points have pneumatic hose or magnetic loop counters from which vehicle traffic volume is recorded every month. The pneumatic hose counters detect and enumerate the passage of axles, usually two for each vehicle and one or more for any trailers they are towing. The magnetic loop counters detect and enumerate individual vehicles without regard to whether they are towing a trailer. The traffic monitoring program at each lake encompasses all recreation parks and many lake access points. Recreation areas managed by concessionaires, state agencies, and county and municipal governments as well as the Corps of Engineers are included in the monitoring program. This study utilized the monthly traffic volume counts from October 2004 through September 2005 in estimating visitor use levels at recreation parks and access points on each of the three lakes.

Several access points at Bull Shoals and Norfolk Lakes did not have permanent traffic counters because visitor use was very low and their remote locations made the cost of monitoring too high relative to recreation use. At these areas on Bull Shoals and Norfolk Lakes and at the informal lakeshore recreation sites on all three lakes, a survey employing temporary traffic counters was used to obtain an estimate of total traffic volume. The temporary meter survey was conducted from October 2004 through September 2005 by Corps of Engineers management staff from the Mountain Home and Table Rock project offices. In this survey, pneumatic hose counters were placed at selected sites for two consecutive months, then moved to other sites for another two months based on a sampling plan that assigned meters to both sites and bi-monthly periods at random within strata corresponding to anticipated traffic volume levels of low, medium, or high. Eight temporary traffic counters were used to sample 38 sites at Bull Shoals and Norfolk Lakes and 12 counters were used to sample 71 sites at Table Rock Lake. The traffic volume counts obtained using this process were expanded from the sample to the sampling frame to produce estimates of aggregate traffic volume associated with the entire site inventory for each lake. In a few instances, a monthly traffic count was not obtained from a meter because of vandalism or meter malfunction. If only one monthly value for the two-month meter set was missing, the missing value was inferred by imputation. If both months were missing, the entire sample was omitted from the analysis.

Estimating visitor statistics

Analysis of survey data focused on classification statistics for vehicle departures, visit-related statistics, visitor perceptions, visitor demographics, and trip spending associated with recreation visits to the lake. Most of the statistics estimated with data obtained as part of the traffic stop survey were computed using the complex survey analysis tools in SAS/STAT® software, Version 9.1.3 for Windows, Copyright © 2002-2003, primarily the SURVEYMEANS and SURVEYFREQ procedures (SAS Institute, Inc.). Estimating traffic counter calibration statistics and visitor statistics from the exit survey incorporated the stratified two-stage sample design used to collect the data. Because sampling periods were selected with unequal selection probabilities, sample statistics were produced using Horvitz-Thompson estimators with sampling weights equal to the inverse of the sample selection probabilities, with post-weighting adjustments for vehicle non-response (passed vehicles and refusals). Standard errors presented for sample statistics are those computed by SAS/STAT software for the

sampling design described above. The first-order Taylor-linearization approximation employed by SAS/STAT SURVEYMEANS and SURVEYFREQ procedures to estimate standard errors incorporated variation associated with sample-to-sample (first stage) outcomes, but ignored the variation associated with vehicle-to-vehicle (second stage) outcomes within samples. Except for activity participation statistics, which were computed as described above, sample statistics for quantitative data collected from the mail survey were computed separately using SPSS 14 for Windows, SPSS Inc., Chicago, IL. Narrative responses to open-response questions asked in the mail survey were categorized using SPSS Text Analysis for Surveys, Version 2.0, SPSS Inc. Chicago, IL.

Estimates of visitation and participation in the camping/overnight activity utilized the classifications of day-use and overnight visitors obtained in the traffic stop survey. As a consequence of the definitions employed to classify overnight visits, trips involving overnight stays on the lake or in parks located on Corps-owned lakeshore lands were treated as overnight visits, while daily trips to the lake involving overnight stays in lodging not located on Corps-owned lands were treated as successive day-use visits to the lake.

Estimating visitor use

Visitor use was estimated as visits and visitor hours, where one visit denotes a recreation trip to the lake by one person for any length of time, and a visitor hour denotes the total number of hours one visitor spends in the park or on the lake during the visit. Using these definitions, three day-use visitors who depart the area in a vehicle after spending 2 hr in the park would be credited with three visits and six visitor hours (3 visits x 2 hr). Similarly, a departing camping party of three that stayed two nights would be credited with three visits and 144 visitor hours (3 visits x 2 nights x 24 hr).

In general terms, visitor use at each lake was estimated as:

$$\text{Visits} = [\text{Total Vehicles}] \times [\text{Pct Recreation Vehicles}] \\ \times [\text{Mean visitors per recreation vehicle}],$$

$$\text{Visitor Hours} = \text{Visits} \times [\text{Mean length of stay per visit}], \quad (1)$$

where traffic volume was enumerated by magnetic loop counters, or

$$\text{Visits} = [\text{Total Axles}] \times [\text{Pct Recreation Axles}] \times [\text{Mean Axles per recreation vehicle}] \times [\text{Mean visitors per recreation vehicle}],$$

$$\text{Visitor Hours} = \text{Visits} \times [\text{Mean length of stay per visit}], \quad (2)$$

where traffic volume was enumerated by pneumatic hose counters.

In these generalized equations, *Total Vehicles* and *Total Axles* indicate total traffic volume as measured by vehicle traffic counters. These values are regarded as census values for the parks and access points included in the Corps of Engineers traffic volume monitoring program. They are treated as estimated values subject to sampling variability for the access points and informal lakeshore sites included in the temporary meter survey.

All other statistics in these equations are estimated load factors obtained from the traffic stop survey data, where

$$\text{Pct Rec. Vehicles} = 100\% \times \Sigma [\text{Rec.Vehicles}] / \Sigma [\text{Returning Rec.Vehicles} + \text{Non-Rec Vehicles}]$$

$$\text{Pct Rec Axles} = 100\% \times \Sigma [\text{Rec. Axles}] / \Sigma [\text{Returning Rec. Axles} + \text{Non-Rec Axles}]$$

$$\text{Mean Axles per Rec Vehicle} = \Sigma [\text{Rec Vehicle Axles}] / \Sigma [\text{Rec. Vehicles}]$$

$$\text{Mean Visitors per Rec. Vehicle} = \Sigma [\text{Recreation Visitors}] / \Sigma [\text{Recreation Vehicles}]$$

$$\text{Mean Length of Stay per Visit} = \text{Mean Hours Per Day-Use Visit, or} \\ \text{Mean Nights Per Camping Visit.}$$

Economic impact analysis

Regional economic impacts were estimated using the Recreation Economic Assessment System (REAS) model (U.S. Army Corps of Engineers 2008). This model applies sector-specific multipliers to total spending to compute direct and secondary economic effects expressed in terms of sales, jobs, labor income, and value added. Sales represent sales to firms in the local region. Jobs include part-time and full-time jobs with seasonal positions adjusted to annual equivalents. Labor income covers wages and salaries, payroll benefits, and incomes of sole proprietors. Value

added is the sum of labor income, profits and rents, and indirect business taxes. Direct effects cover impacts on firms that receive the visitor spending, while total effects also include the indirect and induced effects of these sales. Multipliers used in the REAS model were estimated for each lake with the IMPLAN system using 2001 county level economic data (Minnesota IMPLAN Group 2000). It was assumed that sales, income, and value added multipliers remained the same through 2005. Jobs-to-sales ratios were adjusted using price indicators for each economic sector.

Total lake spending was estimated as the product of total visitation and mean visitor spending for each of seven visitor segments. The segments consisted of two local segments comprising visitors living ≤ 30 miles from the lake and five non-local segments of visitors living > 30 miles away. The visitor segments were:

- Non-local Day Trip: party coming from beyond 30 miles on day trips
- Non-local Pass-Through Trip : party reporting an overnight stay on the trip, but no nights within 30 miles of the lake
- Non-local Camping Trip: party staying overnight in the local area and reporting local camping expenses
- Non-local Motel Trip: party staying overnight in the local area and reporting local motel expenses
- Other Non-local Overnight Trip: party reporting a local overnight stay, but no local lodging expenses. These parties could be staying in a seasonal home or with friends or relatives on a boat or in unpaid lodging. Many reported staying in a seasonal home.
- Local Day Trip: party within 30 miles of the lake that did not report an overnight stay away from home on the trip.
- Local Overnight Trip: party within 30 miles reporting an overnight stay on the trip

In classifying trips away from home, day-use trips involved no nights away from home; overnight trips were separated into classes based on nights spent less than 30 miles from the lake and the type of lodging for which expenses were reported. In the economic impact analysis, non-local visitors reporting both hotel and camping expenditures in the local area were assigned to the segment with the greater spending.

Reported spending associated with very large parties or extended stays are often unreliable. In addition, very high spending may result from inclusion

of airfares, purchases of durable goods, or other expenses not considered here as local trip expenditures. Therefore, the spending analysis omitted a total of 139 outlier cases where the number of people in the party was more than 8, nights reported within 30 miles of the lake was more than 8, total spending within 30 miles of the lake was more than \$5,000, or any individual spending category within 30 miles of the lake was more than \$1,000.

4 Results

Survey data

Survey personnel completed 428 of 434 scheduled 3-hr sampling periods during the traffic stop survey, including 140 of 140 at Bull Shoals Lake, 138 of 140 at Norfolk Lake, and 150 of 154 at Table Rock Lake. Over 18,000 vehicles were encountered during the survey (Table 3). The occupants of more than 11,000 (67 percent) of these vehicles agreed to be interviewed. Forty-five percent (5,942) were recreation vehicles containing occupants who were just completing a recreation visit to an area or the lake. Occupants of these vehicles underwent the detailed traffic stop interview to document their recreation visit. Eighty-nine percent (5,273) of interviewees agreed to take a mail survey, and 36 percent (1,864) completed and returned the mail survey.

Trip expenditures suitable for the spending analysis were obtained from 1,725 mail surveys, including 715 from Bull Shoals Lake, 417 from Norfolk Lake, and 732 from Table Rock Lake. These cases were assigned to visitor segments in the numbers available (Table 4).

Non-response bias can produce misleading survey results when the survey non-response rate is high and survey results for respondents differ substantially from what would have been observed in non-respondents, had they chosen to participate in the survey. There were two main sources of unit (or case) non-response in this study, one applicable to the traffic stop survey and one to the mail survey. In the traffic stop survey, an average of 37 percent of vehicles encountered during sampling were not classified either because the vehicles did not stop to be interviewed (28 percent) or they refused to participate (9 percent) in the interview (Table 3). Interviewers indicated that some repeat visitors who had already been surveyed on a previous trip refused to be interviewed again. This pattern would result in a sample that under-represents frequent visitors in the sample of visits.

Table 3. Outcome of sampling effort.

Survey Type	Bull Shoals	Norfolk	Table Rock	Total
Traffic Stop Survey				
Total Vehicles	5,676	3,778	8,671	18,125
Passed Vehicles	976	1,507	2,535	5,018
Refusals	809	517	377	1,703
Pct Passed Vehicles and Refusals	31%	54%	34%	37%
Total vehicles classified	3,891	1,754	5,759	11,494
Non-recreation vehicles	1,001	49	1,508	2,558
Returning recreation vehicles	1,112	349	1,533	2,994
Recreation vehicles	1,868	1,356	2,718	5,942
Pct Recreation vehicles	48%	77%	47%	52%
Mail Survey				
Distributed	1,841	1,066	2,366	5,273
Returned	715	417	732	1,864
Pct Returned	39%	39%	31%	35%

Table 4. Complete mail questionnaires available for spending analysis.

Visitor Segment	Bull Shoals	Norfolk	Table Rock	Total
Non-local day trips	68	50	108	226
Non-local pass-through trips	15	7	17	39
Non-local camping trips	46	49	83	178
Non-local motel trips	52	19	211	282
Non-local other overnight trips	49	23	78	150
Local day trips	371	209	148	728
Local other overnight trips	58	35	29	122
Total	659	392	674	1,725

In the mail survey, 65 percent of those receiving a mail survey did not return it, including 61 percent at both Bull Shoals and Norfolk Lakes and 69 percent at Table Rock Lake (Table 3). Comparison of traffic stop survey results between mail survey recipients who did and did not return mail surveys indicated that the respondents were slightly more likely to come from within 30 miles of the site and had slightly higher rates of participation in recreation activities with the exception of sightseeing. Non-respondents were more likely to be on an overnight trip. Parties with visitors age 62 or older were more likely to return the mail survey, while parties with visitors under the age of 18 were less likely to return it. In general it appears that the mail survey slightly under-represented parties

with children and sightseers and casual visitors who were not engaged in any of the usual recreation activities available on Corps of Engineers lakes.

Visitor use levels at metered recreation parks and access points

Vehicles exiting a metered recreation park or access point that met the classification criteria for recreation vehicles averaged 38 percent at Table Rock Lake, 42 percent at Bull Shoals Lake, and 70 percent at Norfolk Lake and the number of visitors per recreation vehicle departure averaged 2.1 at Bull Shoals and Norfolk Lakes, and 2.6 at Table Rock Lake over the 1 year period of the survey (Table 5). Application of these rates to the total vehicle exits yields estimated total annual visits (\pm percent standard error) at metered recreation parks and access points of approximately 905,000 (± 5 percent) at Bull Shoals Lake, 1,206,000 (± 4 percent) at Norfolk Lake, and 2,139,000 (± 5 percent) at Table Rock Lake from October 2004 through September 2005 (Table 6). Incorporating the mean length of stay per visit yielded an estimated total annual visitor hours of 6.0 million (± 10 percent) at Bull Shoals Lake, 11.5 million (± 16 percent) at Norfolk Lake, and 20.7 (± 29 percent) at Table Rock Lake.

Visitor use levels at Table Rock Lake included 528,000 visits and 542,000 visitor hours associated with the Port of Lights Tour held from October through December at the concession-managed Kimberling Park. This event was a drive-through Christmas lights display sponsored in part by Kimberling City (Table 6). This annual sightseeing event was held during the year that lake visitation was estimated, but has since been discontinued. It accounted for approximately 25 percent of the annual recreation visits and 3 percent of visitor hours at Table Rock Lake from October 2004 through September 2005.

Four recreation parks at Table Rock Lake were surveyed separately because they had unique features or because they comprised a large share of the project visitation. Of these, Table Rock State Park accounted for an estimated 355,000 (± 15 percent) annual visits and 3.5 million (± 24 percent) visitor hours of use. The recreation site containing the Shepherd of the Hills Fish Hatchery accounted for 261,000 (± 10 percent) annual visits and 481,000 (± 16 percent) visitor hours of use. Kimberling Park received 126,000 (± 32 percent) visits and 1.3 (± 29 percent) million hours of use, excluding the sightseeing visitation associated with the Port of Lights Tour. The Corps of Engineers project office site, which includes the Dewey Short Visitor Center and associated lakefront walkway, received an

Table 5. Statistics associated with recreation vehicles and visitors at developed recreation areas.

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Bull Shoals Lake														
<i>Vehicle Traffic Statistics</i>														
Prop. recreation vehicles	0.42	0.025	0.37	0.445	0.45	0.044	0.40	0.032	0.42	0.032	0.53	0.043	0.46	0.026
Prop. camping vehicles	0.03	0.008	0.03	0.014	0.06	0.016	0.04	0.010	0.01	0.007	0.00	0.000	0.01	0.004
Prop. day-user vehicles	0.38	0.026	0.34	0.046	0.39	0.047	0.36	0.033	0.41	0.030	0.53	0.043	0.45	0.025
<i>Aggregate Recreation Vehicle Statistics</i>														
Prop. camping vehicles	0.08	0.020	0.09	0.039	0.13	0.037	0.11	0.027	0.02	0.015	0.00	0.000	0.01	0.009
Prop. day-use vehicles	0.92	0.020	0.91	0.039	0.87	0.037	0.89	0.027	0.98	0.015	1.00	0.000	0.99	0.009
Occupants per departing recreation vehicle	2.06	0.072	2.09	0.148	2.36	0.084	2.21	0.889	1.57	0.071	1.82	0.114	1.67	0.628
Age distribution: <18 yrs old	0.18	0.019	0.19	0.037	0.23	0.023	0.21	0.022	0.06	0.020	0.10	0.027	0.08	0.017
18 - 61 yrs old	0.56	0.016	0.56	0.029	0.60	0.021	0.58	0.018	0.43	0.042	0.54	0.047	0.48	0.030
62+ yrs. Old	0.27	0.027	0.25	0.054	0.17	0.207	0.21	0.030	0.51	0.053	0.36	0.048	0.44	0.038

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Aggregate Recreation Vehicle Statistics</i>														
Prop. recreation vehicles towing a boat	0.15	0.017	0.17	0.032	0.18	0.021	0.17	0.020	0.09	0.037	0.13	0.054	0.10	0.032
<i>Camping Vehicle Statistics</i>														
Length of stay (nights)	3.18	0.276	3.24	1.124	2.68	0.266	2.93	0.473	6.77	0.168	4.00	2.000	6.74	0.170
Occupants per departing camping vehicle	2.00	0.077	1.88	0.078	2.14	0.118	2.02	0.081	1.73	0.188	a	a	1.74	0.177
Prop. camping vehicles towing a boat	0.34	0.064	0.48	0.128	0.22	0.041	0.34	0.067	0.27	0.179	a	a	0.26	0.177
<i>Day-user Vehicle Statistic</i>														
Length of stay (hours)	2.42	0.135	2.21	0.215	2.43	0.222	2.31	0.152	1.69	0.217	1.90	0.256	1.78	0.168
Occupants per departing day-user vehicle	2.07	0.078	2.11	0.163	2.40	0.092	2.24	0.100	1.57	0.073	1.82	0.114	1.67	0.064
Prop. day-user vehicles towing a boat	0.14	0.016	0.14	0.028	0.17	0.023	0.15	0.019	0.08	0.038	0.13	0.054	0.10	0.032

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Norfolk Lake														
<i>Vehicle Traffic Statistics</i>														
Prop. recreation vehicles	0.70	0.03	0.71	0.04	0.66	0.05	0.69	0.03	0.72	0.03	0.75	0.05	0.73	0.08
Prop. camping vehicles	0.06	0.01	0.08	0.03	0.08	0.02	0.08	0.02	0.04	0.02	0.03	0.02	0.04	0.02
Prop. day-user vehicles	0.64	0.04	0.63	0.04	0.58	0.06	0.61	0.03	0.68	0.01	0.72	0.06	0.69	0.08
<i>Aggregate Recreation Vehicle Statistics</i>														
Prop. camping vehicles	0.09	0.019	0.11	0.036	0.12	0.039	0.11	0.026	0.06	0.036	0.04	0.030	0.05	0.024
Prop. day-use vehicles	0.91	0.019	0.89	0.036	0.88	0.039	0.89	0.026	0.94	0.036	0.96	0.030	0.95	0.024
Occupants per departing recreation vehicle	2.08	0.05	2.18	0.09	2.35	0.08	2.25	0.06	1.62	0.06	1.98	0.10	1.79	0.06
Age distribution: <18 yrs old	0.18	0.02	0.24	0.04	0.22	0.02	0.23	0.02	0.04	0.02	0.15	0.04	0.10	0.02
18 - 61 yrs old	0.55	0.02	0.52	0.04	0.64	0.02	0.57	0.02	0.43	0.04	0.60	0.02	0.52	0.03
62+ yrs. Old	0.27	0.02	0.25	0.05	0.15	0.02	0.20	0.03	0.53	0.05	0.25	0.04	0.38	0.04
Prop. recreation vehicles towing a boat	0.21	0.02	0.26	0.05	0.21	0.02	0.24	0.03	0.11	0.03	0.21	0.05	0.16	0.03

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Camping Vehicle Statistics</i>														
Length of stay (nights)	3.27	0.41	3.09	0.40	2.90	0.22	3.00	0.23	5.59	3.80	2.43	0.28	4.61	2.22
Occupants per departing camping vehicle	2.43	0.12	2.28	0.17	2.96	0.19	2.56	0.12	1.92	0.37	1.96	0.17	1.96	0.24
Prop. camping vehicles towing a boat	0.18	0.04	0.19	0.05	0.25	0.06	0.22	0.04	a	a	0.13	0.06	0.05	0.04
<i>Day-user Vehicle Statistics</i>														
Length of stay (hours)	2.43	0.11	2.41	0.16	2.95	0.21	2.62	0.14	1.89	0.21	2.21	0.34	2.06	0.21
Occupants per departing day-user vehicle	2.04	0.05	2.16	0.10	2.28	0.08	2.21	0.07	1.60	0.06	1.98	0.10	1.78	0.06
Prop. day-user vehicles towing a boat	0.21	0.02	0.73	0.05	0.20	0.02	0.24	0.03	0.12	0.04	0.21	0.06	0.16	0.03
Table Rock Lake														
<i>Vehicle Traffic Statistics</i>														
Prop. recreation vehicles	0.38	0.04	0.38	0.07	0.45	0.04	0.41	0.04	0.19	0.05	0.38	0.11	0.26	0.06
Prop. camping vehicles	0.09	0.03	0.12	0.06	0.09	0.03	0.11	0.04	0.01	0.01	0.00	0.00	0.01	0.00

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Table Rock Lake														
<i>Vehicle Traffic Statistics</i>														
Prop. day-user vehicles	0.29	0.03	0.26	0.05	0.36	0.04	0.30	0.04	0.18	0.06	0.37	0.11	0.25	0.06
<i>Aggregate Recreation Vehicle Statistics</i>														
Prop. camping vehicles	0.23	0.075	0.31	0.122	0.19	0.053	0.26	0.082	0.05	0.041	0.01	0.004	0.03	0.020
Prop. day-use vehicles	0.77	0.075	0.69	0.122	0.81	0.053	0.74	0.082	0.05	0.041	0.99	0.004	0.97	0.020
Occupants per departing recreation vehicle	2.60	0.013	2.56	0.237	2.86	0.103	2.68	0.143	2.03	0.189	2.02	0.219	2.03	0.146
Age distribution: <18 yrs old	0.22	0.02	0.21	0.027	0.25	0.024	0.23	0.02	0.07	0.04	0.18	0.05	0.13	0.04
18 - 61 yrs old	0.64	0.01	0.64	0.017	0.63	0.018	0.64	0.01	0.59	0.09	0.68	0.06	0.64	0.05
62+ yrs. Old	0.14	0.02	0.14	0.030	0.12	0.019	0.13	0.02	0.33	0.10	0.14	0.01	0.24	0.09
Prop. recreation vehicles towing a boat	0.20	0.04	0.15	0.06	0.27	0.05	0.20	0.05	0.03	0.01	0.35	0.13	0.20	0.06
<i>Camping Vehicle Statistics</i>														
Length of stay (nights)	2.61	0.16	2.82	0.12	2.12	0.27	2.63	0.25	a	a	3.00	2.25	3.59	0.10

Attribute	Months													
	Overall Annual		Apr - Sept						Oct - Mar					
			WD		WE		Overall Apr - Sep		WD		WE		Overall Oct- Mar	
	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
<i>Camping Vehicle Statistics</i>														
Occupants per departing camping vehicle	3.28	0.17	3.22	0.24	3.48	0.22	3.30	0.16	2.08	0.12	1.84	0.22	2.04	0.10
Prop. camping vehicles towing a boat	0.12	0.03	0.09	0.02	0.19	0.07	0.12	0.03	a	a	0.04	0.04	0.01	0.01
<i>Day-user Vehicle Statistics</i>														
Length of stay (hours)	2.52	0.22	2.37	0.34	2.90	0.35	2.60	0.17	1.18	0.08	2.51	0.42	1.89	0.26
Occupants per departing day-user vehicle	2.39	0.12	2.26	0.22	2.71	0.10	2.46	0.15	2.03	0.20	2.02	0.22	2.03	0.15
Prop. day-user vehicles towing a boat	0.22	0.05	0.17	0.08	0.30	0.06	0.22	0.06	0.03	0.02	0.36	0.13	0.20	0.06
^a Estimates are not presented where the data were too sparse to calculate a standard error of the estimate.														

Table 6. Estimated total lake visits and associated visitor hours at recreation parks from October 2004 through September 2005.

Lake - Areas	No. Areas	Annual Lake Visits						Annual Lake Visitor Hours					
		Camping		Day-use		Total		Camping		Day-use		Total	
		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Bull Shoals Lake													
Multiple use parks	15	40,979	8,891	592,121	49,060	633,101	45,429	2,923,911	629,767	1,356,170	208,795	4,280,081	542,173
Bull Shoals State Park ²	1	6,138	1,296	58,913	10,204	65,051	9,802	487,181	134,419	93,452	17,902	580,632	136,070
Day-use parks ⁴	3	7,036	3,588	138,241	15,882	145,277	14,267	504,217	206,383	434,077	69,057	938,293	188,588
Minor day-use areas ³	4	0	0	61,961	6,593	61,961	6,593	0	0	201,020	26,390	201,020	26,390
Bull Shoals Lake Total	23	54,154	9,675	851,235	52,978	905,389	49,060	3,915,308	676,217	2,084,718	222,219	6,000,027	590,533
Norfolk Lake													
Multiple use parks	11	105,426	21,378	678,690	48,728	784,117	43,353	8,536,539	1,944,895	1,590,391	174,766	10,126,930	1,862,421
Day-use parks ³	7	2,947	1,279	306,657	15,906	309,604	16,226	141,444	61,379	766,490	69,401	907,934	103,188
Minor day-use areas ³	5	2,887	2,356	109,636	6,253	112,523	6,474	207,838	169,605	211,221	23,564	419,059	182,319
Norfolk Lake Total	23	111,260	21,546	1,094,983	51,638	1,206,243	46,741	8,885,821	1,953,241	2,568,102	189,513	11,453,923	1,874,166
Table Rock Lake													
Visitor Center and Waterfront Park	1	729	769	108,142	8,403	108,871	8,649	34,982	36,900	141,899	14,537	176,882	41,275
State Fish Hatchery ⁵	1	421	448	260,631	25,790	261,052	25,788	70,760	75,248	410,613	35,946	481,373	79,348
Table Rock State Park	1	40,741	14,469	313,925	58,748	354,666	53,904	2,579,387	961,721	889,986	234,324	3,469,373	835,739
Kimberling Park	1	12,101	4,096	114,119	40,954	126,221	41,017	872,507	372,870	418,204	166,752	1,290,712	371,050
Kimberling Park Port of Lights Tour ⁶	-	190	-	527,366	-	527,556	-	1,783	-	539,835	-	541,618	-
Multiple use parks	17	193,152	85,387	337,313	46,238	530,465	78,389	12,318,768	6,043,276	905,590	232,100	13,224,358	5,922,989

Lake - Areas	No. Areas	Annual Lake Visits						Annual Lake Visitor Hours					
		Camping		Day-use		Total		Camping		Day-use		Total	
		Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE	Estimate	SE
Table Rock Lake													
Day-use parks ³	5	13,434	4,314	158,872	15,416	172,305	16,222	985,397	359,812	360,046	63,083	1,345,443	398,578
Minor day-use areas	4	0	0	58,191	11,840	58,191	11,840	0	0	135,734	34,201	135,734	34,201
Table Rock Lake Total ⁶	30	260,767	86,813	1,878,559	91,543	2,139,327	108,977	16,863,584	6,141,792	3,801,908	378,466	20,665,492	6,007,160

- 1 Counts shown are doubled for pneumatic hose counters that record one count for every two axles.
- 2 Visits for the separate day-use loop are included in day-use parks.
- 3 Includes visits to boat launch areas managed by the Missouri Department of Conservation and the Arkansas Game and Fish Commission.
- 4 Includes sightseeing visits to the Fish Hatchery managed by the Arkansas Fish and Game Commission.
- 5 Includes sightseeing visits to the Fish Hatchery managed by the Missouri Department of Conservation and the downstream fishing waters accessible from the fish hatchery access roads.
- 6 The Port of Lights Christmas Tour produces sightseeing visits that occur after dark, and are therefore not captured by the onsite sample survey of visitors conducted as part of this study. Therefore, estimated visitation for Kimberling Park during the Port of Lights season (Oct-Jan) was obtained from the existing Table Rock Lake visitation estimation process.

estimated 109,000 (± 8 percent) annual visits with 177,000 (± 23 percent) hours of use. In the order just presented, these parks accounted for 22 percent, 16 percent, 7 percent, and 6 percent of annual visits and 17 percent, 2 percent, 6 percent, and 1 percent of annual visitor hours at Table Rock Lake, respectively.

Visitor use varied seasonally (Figure 4). At each of the lakes, visitor use was lowest during the winter months of December through February, increased through the spring and summer to peak in July, and then declined through the fall months. The peak recreation season at Corps parks has traditionally been defined as the period between Memorial Day and Labor Day. Approximately 57 percent of annual visits occurred during the 4 months (May-Aug) that encompass the traditional summer vacation season.

Visitor use levels at unmetered access points and informal lakeshore recreation sites

Visitor use associated with the unmetered access points and informal lakeshore recreation sites was approximately 129,000 visits and 462,000 visitor hours at Bull Shoals Lake, 23,000 visits and 80,000 visitor hours at Norfolk Lake, and 238,000 visits and 559,000 visitor hours at Table Rock Lake (Table 7). This source of visitation adds to the annual visits associated with metered parks and access points by amounts totaling 14 percent at Bull Shoals Lake, 2 percent at Norfolk Lake, and, excluding visitation associated with the Port of Lights Tour, 15 percent at Table Rock Lake.

Recreation activities

In the exit interview, the number of people participating in each of 10 active recreation activities and 1 predominately passive activity (wildlife viewing) was recorded. Those who engaged in none of these activities were assumed to be passive sightseers. Participation rates in the passive activities of wildlife watching and sightseeing totaled 36 – 43% at the three lakes, while the participation in one or more active recreation activities totaled 57-64% of lake visitors (Table 8). Participation in each of the 10 active recreation activities varied from 0 to 30 percent and was generally highest in the water contact activities of boating (23-28 percent), swimming (21-30 percent), and fishing (15-22 percent).

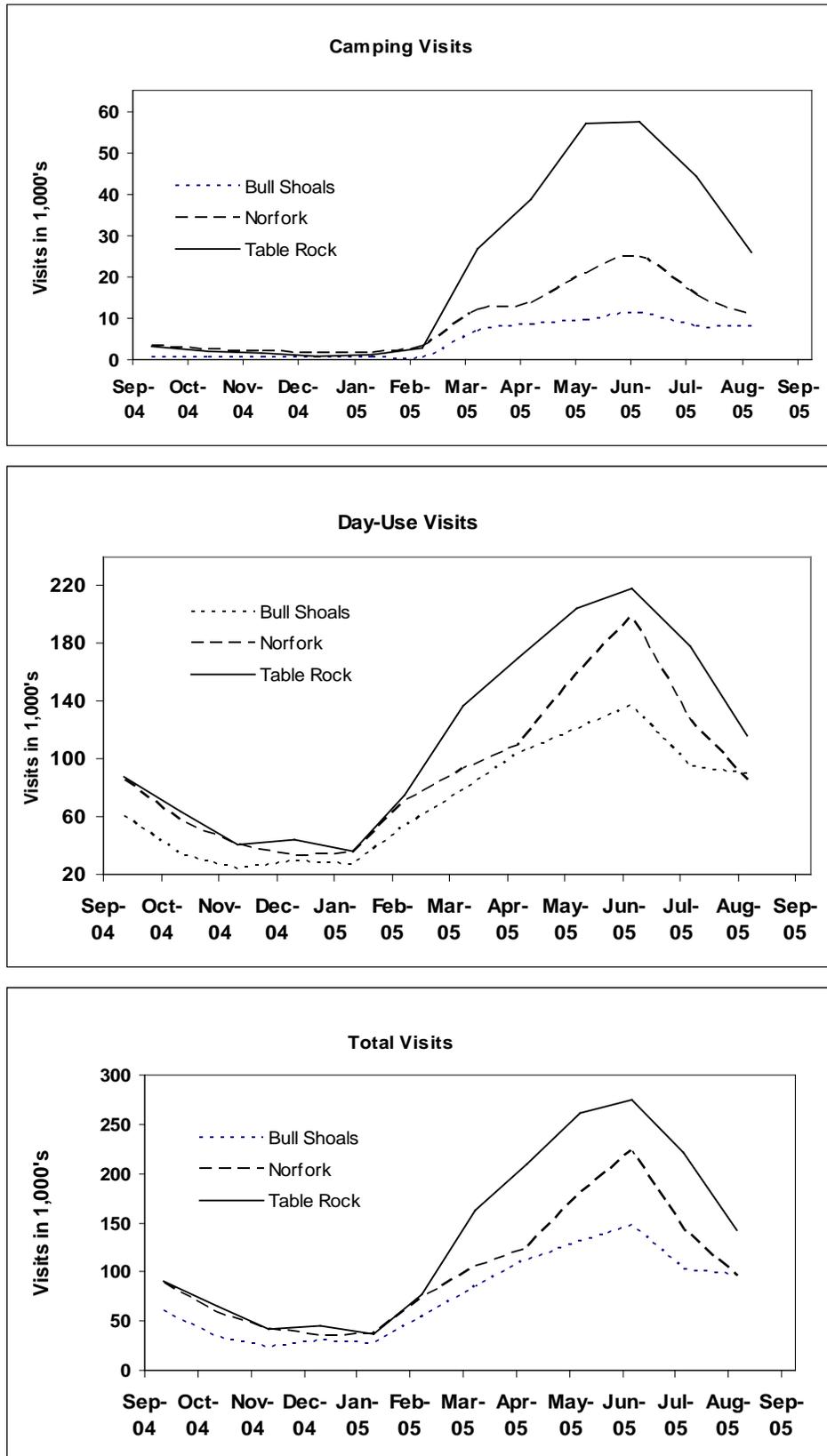


Figure 4. Monthly distribution of day-use and camping visits.

Table 7. Estimates of annual visits and visitor hours associated with informal lakeshore recreation sites.

Lake	No. Sites on Lake	Bi-Monthly Axle Count ¹		Mean Load Factors ²				Estimated Annual Recreation Use			
				Visits Per Axle		Visitor Hours Per Axle		Visits		Visitor Hours	
		Mean	SE	Mean	SE	Mean	SE	Total	SE	Total	SE
Bull Shoals	25	2273.5	430.4	0.70	0.08	2.51	0.39	128,724	29,466	461,677	142,540
Norfolk	13	1156.5	325.6	0.61	0.05	2.11	1.10	23,432	3,669	80,410	84,039
Table Rock	71	2702.4	344.8	0.41	0.10	0.97	0.28	237,727	109,366	559,494	316,586

¹ Counts of all vehicle axles entering and leaving the recreation site.

² Obtained from surveys performed at minor day-use areas on the same lake.

Table 8. Mean participation rate in selected recreational activities during lake visit.

Recreation Activity	Bull Shoals				Norfolk				Table Rock			
	Visitors		Recreation Vehicles		Visitors		Recreation Vehicles		Visitors		Recreation Vehicles	
	Pct.	SE	Pct.	SE	Pct.	SE	Pct.	SE	Pct.	SE	Pct.	SE
Boating	25.1	2.55	23.7	2.30	22.5	2.61	20.8	2.74	27.8	3.12	26.5	2.84
Camping / Overnight	6.0	1.34	5.8	1.29	9.4	1.94	7.8	1.60	17.2	6.72	14.2	5.12
Diving	0.5	0.39	0.8	0.56	0.7	0.28	1.0	0.45	0.5	0.19	0.8	0.29
Fishing	18.2	2.19	20.0	2.57	21.5	2.12	24.7	2.18	14.7	1.74	20.2	2.02
Hiking / Trail Use	1.0	0.36	0.8	0.24	0.7	0.28	0.9	0.35	7.5	1.32	7.0	0.82
Hunting	0.0	0.00	0.0	0.00	0.0	0.00	0.0	0.00	0.4	0.04	0.0	0.03
Picnicking	4.2	1.32	3.8	1.10	2.7	0.60	2.8	0.57	7.9	1.06	6.6	0.95
Pleasure walking / jogging	5.3	0.83	6.5	1.03	5.3	1.23	6.4	1.47	11.9	1.83	12.6	1.55
Swimming	21.2	3.91	14.8	2.93	24.9	4.19	18.5	3.29	30.4	5.44	24.3	4.38
Waterskiing	0.9	0.31	0.6	0.22	2.2	0.63	2.0	0.59	1.2	3.23	5.4	1.24
Wildlife Viewing / Sightseeing ¹	43.2	2.53	43.11	2.2	41.8	3.01	46.0	2.65	35.9	3.12	38.0	2.60
Other	8.4	1.70	8.9	1.84	0.4	0.40	0.3	0.22	19.6	2.18	21.4	1.86

¹ Sightseeing is assumed for visitors who participated in no other listed activity.

While visitors may participate in many different activities during their lake visit, they often come to the lake to engage in one primary activity. Traffic stop survey respondents from each lake who indicated a primary recreation activity most frequently chose wildlife viewing or sightseeing (32-42%), followed by either fishing (12-21%) or boating (12-18%) (Table 9). Water contact activities were given as primary activities by 33-43% of lake visitors. Of these, fishing was chosen as the primary activity (16-21%) more frequently than boating (12-13%) at Bull Shoals and Norfolk Lakes, while boating (18%) was selected as the primary activity

more often than fishing (12%) at Table Rock Lake. While swimming was the most frequent activity of visitors (21-30%) at two of the three lakes (Table 8), it was not often selected as the primary visitor activity (5-8%) at any of the lakes (Table 9).

Table 9. Primary activities of lake visitors.

Primary Activity	Percent		
	Bull Shoals	Norfolk	Table Rock
Boating	12	13	18
Camping	6	7	8
Diving	0	1	1
Fishing	16	21	12
Hiking / Trail use	0	1	2
Picnicking	3	2	2
Pleasure walking / jogging	5	2	6
Swimming	5	8	6
Wildlife viewing / Sightseeing	39	42	32
Other	14	1	14
Total	100	100	100

Camping is one of the more management-intensive recreational activities on these lakes. Camping along with overnight stays on boats and at resorts located in recreation parks comprised 6% ($\pm 1.3\%$) of visits to Bull Shoals Lake, 9% ($\pm 1.9\%$) to Norfolk Lake, and 17 percent ($\pm 6.7\%$) at Table Rock Lake (Table 8). The lower percentage of overnight visits at Norfolk and Bull Shoals Lakes is consistent with these lakes having fewer campsites and regulations prohibiting marina visitors from staying overnight on boats docked at a marina. While overnight visits accounted for a modest percentage of visits at the three lakes, it accounted for a large fraction (65-83%) of total visitor hours (Table 6). This reflects the large number of hours associated with mean length of overnight stays of 2.6 – 3.3 nights per visit (Table 5).

Survey respondents were given a more detailed selection of activity choices in the mail survey than in the exit interview. The more detailed activity choices in the mail survey showed that among boaters, similar numbers of boating parties used boats kept at a marina (19-31%) as used boats launched from a ramp (23-29%) (Table 10). They also showed that among fishers, participation in shoreline fishing (19-31%) was only somewhat less common than fishing from a boat (27-49%). In general, respondents claimed higher

participation levels for many activities in the mail survey than in the traffic stop survey, though participation rates were generally congruent for activities that were the same or similar in both survey modes. As in the traffic stop survey, activity participation was highest overall in the passive recreation activities, which in the mail survey included sightseeing (30-33%), pleasure driving through parks (29-36%), and wildlife or nature observation (23-26%). And like the results of the traffic stop survey, mail survey respondents also had high participation in water contact activities of boating, fishing, and swimming relative to other activities (Table 10).

Table 10. Percentage of recreation parties reporting participation in one or more of 26 recreation activities in the mail survey.

Activity	Bull Shoals		Norfolk		Table Rock	
	Pct.	SE	Pct.	SE	Pct.	SE
Bicycling	5.5	1.5	2.5	0.9	4.8	1.2
Boating from a launch ramp	25.9	2.3	28.8	2.9	22.6	3.3
Boating from a marina slip	30.5	3.0	25.4	4.1	18.6	2.8
Camping in RV or trailer	8.8	1.6	12.7	2.5	11.9	3.9
Camping in tent	6.5	1.7	4.0	1.0	8.0	4.5
Commercial water cruise ride	2.1	0.9	0.3	0.3	1.3	0.5
Fishing from a boat	49.3	3.7	39.4	2.8	26.5	2.9
Fishing from shore / dock / pier	22.4	2.4	24.7	3.2	17.9	2.5
Horseback riding	1.5	1.4	0.0	0.0	0.3	0.2
Hunting or trapping	1.4	0.5	4.3	1.3	1.0	0.7
Jet skiing (personal watercraft)	5.4	1.1	3.3	1.2	5.9	1.7
Kayaking or canoeing	1.7	0.7	2.8	1.1	1.8	0.9
Other activities	7.7	1.9	4.2	1.0	9.2	1.3
Photography	11.5	1.5	11.7	2.1	13.0	2.3
Picnicking	19.6	1.9	22.4	3.0	21.4	3.3
Playing on playground equipment	8.8	1.3	8.3	2.2	8.5	2.2
Pleasure driving through recreation area	35.6	2.3	28.9	2.8	29.5	3.2
Running or jogging	3.9	1.0	3.1	1.2	2.6	0.9
Sail boarding or windsurfing	0.0	0.0	0.0	0.0	0.0	0.0
Scuba diving	2.3	0.8	2.7	0.9	1.5	0.8
Sightseeing	29.9	3.5	29.7	2.5	32.7	3.5
Sunbathing	18.2	2.6	20.5	4.1	28.0	6.4
Swimming	34.6	4.4	37.1	2.7	39.0	6.7
Trail hiking	5.2	1.1	4.7	1.1	9.5	1.5
Walking for fitness or pleasure	26.9	2.8	22.9	3.5	23.7	2.4
Wildlife or nature observation	25.5	2.6	22.9	2.8	23.2	3.1

Further characterization of fishing activity

Fishery resource managers included questions in the mail survey to further characterize fishing activity on the lakes. Results from 751 responses to these questions indicated that most fishing parties consisted of 1 or 2 anglers, averaging just over two anglers per party at each of the lakes (Table 11). About half (44-54%) of fishing parties included youths age 15 or younger. About half (44 – 51%) fished for 4 hr or less, a third (30-36%) fished 5 to 10 hr, and 13-23% fished more than 10 hr.

Table 11. Fishing party statistics.

Statistic	Mean or Percent		
	Bull Shoals	Norfolk	Table Rock
Mean No. Fishers in party	2.15	2.07	2.35
Pct with angler <= 15	45	54	44
Hours Fished (%)			
1	5	6	5
2	11	13	17
3	13	16	14
4	15	16	15
4-10	33	30	36
>10	23	20	13
Species Sought (%)			
Any or all species	25	17	28
Bream / sunfish	12	14	14
Catfish	16	19	10
Crappie	38	32	22
Largemouth bass	35	37	29
Smallmouth bass	27	27	21
Spotted bass	20	19	16
Striped / hybrid bass	5	18	2
Trout	15	16	18
Walleye	29	24	3
White bass	8	19	6
Fishing Method (%)			
Bow fishing	0	0	1
Gigging	1	1	3
Jug line	3	5	2
Rod and reel	93	92	92
Spear fishing	3	3	0
Trout line / set line	4	4	3
N	345	195	211

Most fishing parties at each lake (92-93%) fished with rod and reel. Small numbers fished using jug lines (2-5 percent) or trout lines (3-4%), or by gigging (1-3%). At Bull Shoals and Norfolk Lakes, 3% reported spear fishing.

Anglers sought a variety of species. About a quarter of anglers at each lake (17-28%) were relatively non-selective in their fishing activity. The remainder generally targeted one or more particular fish species. At Bull Shoals and Norfolk Lakes, five species were targeted by one fourth or more of lake anglers. These species were largemouth bass (35-37%), crappie (32-38%), walleye (24-29%), and smallmouth bass (27%). At Table Rock Lake, only largemouth bass was sought by at least one-fourth of lake anglers (29%). While Table Rock Lake had the highest percentage of non-selective anglers (28%), those that were selective appeared to focus their fishing activity around fewer fish species than anglers at Bull Shoals or Norfolk Lakes.

Reported fishing success was similar at all three lakes, with 25-29% of parties reporting no fish caught (Table 12). About a third of parties (30-38%) caught 1–5 fish, and 37-41 percent caught six or more fish. The percentage of fishing parties that kept any fish was 38 percent at Bull Shoals Lake, 32% at Norfolk Lakes and 22% at Table Rock. These statistics suggest that about one-half of fishing parties that caught fish at Bull Shoals and Norfolk Lakes and two-thirds of fishing parties who caught fish at Table Rock Lake did not keep any of them.

Characterization of visitors and visitor groups

Visitor trips that included an overnight stay away from home accounted for 27 percent of visits to Bull Shoals Lake, 19 percent to Norfolk Lake, and 62 percent to Table Rock Lake, while trips with an overnight stay on the lake accounted for 6%, 9%, and 17%, respectively. The difference between these two sets of statistics describes the minimum percentage of visits associated with overnight stays that occurred somewhere other than on the lake. This includes stays in motels near the lake or between home and lake, stays with friends or family in private homes, and stays in resorts beyond the property boundaries of Corps-owned lakeshore. These trips accounted for 21% of visits at Bull Shoals Lake, 10% at Norfolk Lake, and 42% at Table Rock.

Table 12. Angler success and fish retention.

Statistic	Bull Shoals	Norfolk	Table Rock	Total
Fish Caught				
0	29%	25%	25%	26%
1-5	30%	38%	36%	35%
6-10	17%	15%	17%	16%
11-25	14%	15%	17%	15%
26+	10%	7%	6%	7%
Fish Kept				
0	62%	68%	78%	70%
1-5	21%	24%	15%	20%
6-10	9%	4%	4%	5%
11-25	7%	3%	3%	4%
26+	2%	1%	1%	1%

Mean length of stay during the year was 2.4-2.6 hr per day-use visit and 2.6-3.3 nights per camping visitor (Table 5). Seasonal trends were similar at each lake. Length of stay for day-use visits averaged 27-38% longer during the high-use period of April through September than during the low-use period from October through March. Conversely, camping visits averaged 37-130% longer during the low-use months, especially at Bull Shoals Lake (*6.7 nights / visit*) and Norfolk Lake (*4.6 nights / visit*), where seniors comprised nearly half of camping visits during the low-use months.

Ages of lake visitors included 18-22% age 17 or younger, 55-64% age 18-61, and 14-27% senior age 62 or older (Table 5). Visitors in the senior age group comprised a larger percentage of visits at Norfolk and Bull Shoals Lakes (27%) than at Table Rock Lake (14%). The senior age group also comprised a larger percentage of visits during the low-use months of October through March (24-44%) than during the high-use months of April through September (12-21%). Age distributions suggest that Table Rock Lake was relatively more family-oriented (adults and children), while Norfolk and Bull Shoals Lakes were relatively more senior-oriented, especially during low-use months of the year.

The number of visitors per recreation vehicle encountered during the exit survey varied from 1 to 50. Only nine departures had more than eight visitors in a vehicle. Most of these were tour or fishing groups at Table

Rock Lake or diving groups at Bull Shoals Lake that traveled to the lake by van or bus. The mean number of visitors per recreation vehicle was 2.1 at Bull Shoals and Norfolk Lakes and 2.6 at Table Rock Lake (Table 5). At Bull Shoals and Norfolk Lakes, 30-32% of day-use departures and 22-24% of camping departures had one visitor in the vehicle (Table 13). Inspection of the activities associated with the day-use visitors suggests that many were engaged in sightseeing or wildlife viewing. A smaller percentage of day-use (23%) and camping (6%) visitors at Table Rock Lake had one visitor per departing recreation vehicle.

Table 13. Number of people in departing recreation vehicles.

No. Occupants	Bull Shoals		Norfolk		Table Rock	
	Day Use	Camping	Day Use	Camping	Day Use	Camping
1	31.8	23.6	30.0	21.6	22.9	5.8
2	43.9	51.1	48.8	41.5	44.6	46.2
3	11.2	11.8	11.1	14.5	9.6	15.2
4	8.0	6.2	6.8	15.4	14.7	15.3
5	3.3	5.4	2.2	3.0	3.7	5.7
6+	1.8	1.8	1.1	4.0	4.5	11.8
Total	100%	100%	100%	100%	100%	100%
N	1,743	131	1,214	118	1,946	171

In the mail survey, approximately half of respondents (41-58%) indicated that the lake where they were surveyed was the primary destination on their trip away from home (Table 14). Including respondents who described 'other' purposes that matched this category, approximately three-fourths of visits were destination recreation visits to the lake. Another 13-16% of visits included stays in the area with relatives, on business, or in seasonal homes. The largest difference among the lakes was at Table Rock Lake, where 17% of respondents were engaged in a recreation trip in which Table Rock Lake was not the primary destination.

About half (45-63%) of the visits at each lake were associated with visitors who were not familiar with the other two lakes in the study, and even more (61-82%) were not familiar with other Corps of Engineers lakes in the region (Table 15).

Table 14. Primary purpose of trip in which lake visit occurred.

Primary Purpose of Trip	Percent of Responses		
	Bull Shoals	Norfolk	Table Rock
Recreation trip to this lake	46	58	41
Recreation trip, but not primarily to this lake	5	5	17
Seasonal home stay	9	8	9
Visit while passing through area	3	3	6
Visit with relatives, business, etc.	7	5	6
Other ¹	30	21	21
Total	100	100	100
N	690	406	723

¹ Includes 47% living nearby (47%), recreation (34%), passing through area (11%), and marina use (6%).

Table 15. Respondent familiarity with other Corps of Engineer lakes in the region.

Lake	Percent of Responses		
	Very Familiar	Somewhat Familiar	Not Familiar
Bull Shoals ¹	14	41	45
Norfolk ¹	12	25	63
Table Rock ¹	17	38	45
Beaver Lake	6	21	72
Harry S Truman	5	14	81
Lake of Ozarks	10	28	61
Pomme de Terre	4	13	82

¹ Excludes visitors who were surveyed at that lake.

More than half of the visits at each lake (51–56%) were associated with visitors who had been coming to the lake for more than 10 years (Table 16). First-time visitors to the lake comprised 6-20% of visits. In general, Table Rock Lake had at least twice the frequency of first-time and infrequent visitors (1 or 2 trips per year) as the other two lakes. The higher incidence of new and infrequent visitors to Table Rock Lake may reflect the closer proximity of Table Rock to major highway arteries, its greater availability of sightseeing opportunities, and close proximity to the tourist destination of Branson, Missouri.

Proximity to home was the most frequently cited reason for selecting the lake visited (Table 17). It accounted for 31-47% of responses to the ques-

tion asking visitors why they chose to visit the lake where they were surveyed rather than another lake. In addition, reasons closely related to proximity to home accounted for approximately a third of the 12-26% of respondents describing 'other' reasons for visiting the lake. Some of the response options tended to be lake-specific. Noteworthy were the 18% of survey respondents from Bull Shoals that selected this lake because it was less crowded than other lake options, the 9% of Table Rock Lake respondents citing the superior scenery at this lake, and the 11-13% of respondents from Norfolk and Table Rock Lakes that cited their familiarity with these lakes as a principal reason for going there. Nearly half of the large number of write-in responses from Table Rock visitors indicated that their lake visit was associated with other travel or their visit to Branson, Missouri.

Table 16. Previous history of visiting lake where surveyed.

Previous Lake Visits	Percent of Lake Visits		
	Bull Shoals	Norfolk	Table Rock
Years Visiting This Lake			
First trip	10	6	20
Less than 1 yr	6	4	4
Past 1-5 yrs	19	18	15
Past 6-10 yrs	12	16	10
More than 10 yrs	54	56	51
No. trips to this lake in last 12 months			
1	19	14	35
2	10	8	11
3	5	6	9
4	6	4	4
5	5	2	3
6	6	9	5
7	1	1	1
8	2	6	1
9	1	1	0
10	5	7	6
11-20	14	12	11
21-30	8	9	7
31-40	3	3	2
41-50	5	5	2
51-99	3	4	1
≥100	8	9	4
N	617	368	656

Table 17. Reason for choosing the lake where surveyed rather than another lake.

Reason for Choice of Lake	Percent of Responses		
	Bull Shoals	Norfolk	Table Rock
Closer to home	35	47	31
More scenic than other lakes	5	5	9
Less congested than other lakes	18	6	6
Better quality natural resources	7	5	5
Better quality recreation facilities	4	3	5
More familiar with this lake	6	13	11
Came with someone else	6	4	5
Other ¹	16	12	26
Multiple response	1	4	2
N	682	407	703

¹ Includes living nearby (32%), passing through area or visiting Branson MO (31%), fishing (22%) and various other recreational activities (12%).

Respondent socio-demographics

At all three lakes, respondents to the mail survey were predominately white (95-97%) and non-Hispanic (99%) (Table 18). More than half (54-64%) were male and approximately half (44-60%) were age 55 or older. The majority reported a household income between \$25,000 and \$75,000, with higher incomes more prevalent for Table Rock visitor households. Fewer respondent households of Bull Shoals Lake visitors had children living in them (23%) than households of visitors to Norfolk (30%) or Table Rock (32%) Lakes. Conversely, more respondent households of Bull Shoals Lake visitors contained seniors age 65 or older (36%) than households of visitors to Norfolk (25%) or Table Rock (24%) Lakes.

Visitor perceptions

Visitor perceptions about the lake, the public parks on the lakeshore, and associated recreation facilities are often a function of visitor expectations. Two questions were included in the mail survey to identify some of those expectations. One of these questions asked visitors to rate the importance of eight different underlying benefits they sought from their visit (Table 19). Four were rated “very important” by more than half (52-71%) of respondents. These included time with family and friends (71%), opportunity to get outdoors (58%), rest and relaxation (57%), and opportunity to engage in a favorite outdoor activity (52%). The remaining four categories were all rated “very important” by fewer than half (17-31%) of respondents. These

included seeking excitement or adventure, exercise, opportunity to use recreational equipment, and practicing or learning outdoor skills. These responses taken together indicate that social benefits of outdoor relaxation were of greater importance to lake visitors than the individual benefits associated with exercise, adventure, and learning of skills. Response levels and rank order of the various benefit attributes were very similar for all three lakes.

Table 18. Characteristics of mail survey respondents.

Respondent Characteristic	Percent		
	Bull Shoals	Norfolk	Table Rock
Gender			
Male	60	64	54
Female	40	36	46
Age			
under 18	1	1	1
18-24	3	3	2
25-44	16	21	29
45-54	21	20	23
55-64	27	33	26
65+	33	23	18
Race			
Am Indian or Alaska Native	1	1	2
Asian	0	0	0
Black	0	0	0
Hawaiian or Pacific Islander	0	0	0
White	97	97	95
Other race	0	0	0
Multi-racial	2	1	1
Ethnicity			
Hispanic	1	1	1
Non-Hispanic	99	99	99
Household Income			
Less than \$25,000	19	15	11
\$25,000- 49,999	35	45	26
\$50,000-74,900	23	21	27
\$75,000-99,999	11	10	19
\$100,000 or more	12	10	17
Households Membership			
Children age 17 and under	23	30	32
Seniors age 65 and older	36	25	24
N	676	391	714

Table 19. Visitor ratings of potential benefits of recreation visit.

Importance of Reasons for Visit	No. of Visitor Responses ¹	Mean ²	Response Distribution (Percent)				
			Very Important	Important	Somewhat Important	Not Important	Total
Time with friends or family	1382	3.58	71	21	5	4	100
Opportunity to get outdoors	1556	3.48	58	33	7	2	100
Rest and relaxation	1555	3.45	57	32	8	2	100
Engage in a favorite outdoor activity	1422	3.28	52	31	11	6	100
Excitement/adventure	1306	2.80	31	32	23	14	100
Getting exercise	1360	2.65	27	29	28	17	100
Use recreation equipment	1194	2.62	27	28	23	21	100
Practice or learn outdoor skills	1134	2.25	17	23	28	32	100

¹ Data from the three lakes were combined due to the similarity of responses among the individual lakes.

² Numerical scoring for computation of mean: 4:Very important, 3:Important, 2:Somewhat important, 1:Not important.

The second question addressed the importance of 13 specific lake and park features. They covered the lake environmental setting, natural resources, facilities, and visitors services. Most features were rated as “very important” by half or more of respondents (Table 20). Based on their rank order, most important to respondents were water quality and natural beauty of the area. Next most important were cleanliness and maintenance of park facilities, suitability of facilities for visitor activities, and visitor safety and security. The rank order of these five attributes suggest that quality of environment and scenery were most important to lake visitors, followed closely by quality and suitability of park facilities, and then by visitor services. Also scoring high (sixth in rank) was lack of crowding. There were only minor differences in scores and rank order of attributes among the different lakes.

Some park and lake features may be of greater of importance to some user groups than others. Therefore, importance ratings were compared between boaters and non-boaters, campers and non-campers, and fishers and non-fishers. All user groups ranked water quality as one of the two most important attributes, with five of the six groups rating it as their most important lake and site attribute (Table 21). Five of six groups also rated scenic beauty of the lake as the second - or third-most important attribute. Not unexpectedly, the different user groups also placed a high importance on the resources or facilities closely associated with their activity. Boaters, who were probably referring to boat launch and marina facilities, rated facilities suitable for their activity as the second-most important attribute. Fishers rated quality of fishing their second-most important attribute, while all other groups rated this attribute near the bottom.

Most of the lake and park attributes rated for their importance to visitors were also rated for visitor satisfaction. The attributes rated for satisfaction all received positive ratings of “excellent,” “very good,” or “good” by 73-99% of respondents (Table 22). The rank order of satisfaction attributes was due primarily to how positively respondents rated satisfaction of each attribute. Overall, respondents expressed the greatest satisfaction with natural beauty of the lake, friendliness and courtesy of park staff, suitability of facilities for visitor activities, and water quality. And while still positive in their assessment, respondents were less satisfied with the quality of fishing, lake water levels, and encounters with other lake visitors. Rank order of satisfaction attributes was similar between the lakes, with the two highest ranked and two lowest ranked features the same for each lake (Table 23). The greatest difference among the individual lakes appeared to be satisfaction with crowding levels. In this measure, Bull Shoals Lake both scored (4.2) and ranked (5th) more favorably in satisfaction with crowding levels than either Norfolk (3.8 and 9th) or Table Rock (3.9 and 8th) Lakes.

Table 20. Importance of lake and site attributes for all lake visitors.

Lake or Site Attribute	No. of Visitor Responses ¹	Mean ²	Response Distribution (Percent)				Total
			Very Important	Important	Somewhat Important	Not Important	
Water quality	1,577	3.66	73	22	4	1	100
Natural beauty of the area	1,662	3.59	66	28	6	1	100
Cleanliness & maintenance of facilities	1,591	3.54	63	30	6	1	100
Suitable facilities for my activities	1,550	3.48	59	32	7	2	100
Safety and security	1,519	3.46	59	30	9	2	100
Lack of crowding	1,547	3.36	54	32	12	3	100
Friendliness & courtesy of park staff	1,513	3.34	50	36	11	3	100
Lakeside setting	1,503	3.30	52	31	12	5	100
Reasonable user fees	1,366	3.26	49	33	13	5	100
Close to home	1,502	3.26	58	19	14	9	100
Fishing quality	1,372	3.17	51	25	13	10	100
Water level of lake	1,472	2.97	36	34	21	9	100
Restaurants, shopping, or other attractions nearby or on the way	1,394	2.50	25	24	27	24	100

¹ Data from the three lakes were combined due to the similarity of responses among the individual lakes.

² Numerical scoring for computation of mean: 4: Very important, 3: Important, 2: Somewhat important 1: Not important.

Table 21. Importance of lake and site attributes for different user groups.

Site or Lake Attribute	Boater		Non-Boater		Fisher		Non-Fisher		Camper		Non-Camper	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Water quality	3.75	1	3.63	1	3.66	1	3.66	1	3.62	2	3.66	1
Natural beauty of the area	3.52	3	3.61	2	3.44	5	3.62	2	3.58	3	3.59	2
Cleanliness & maintenance of facilities	3.49	4	3.56	3	3.47	4	3.56	3	3.66	1	3.53	3
Safety and security	3.46	5	3.45	4	3.35	7	3.48	4	3.53	5	3.45	5
Suitable facilities for my activities	3.55	2	3.45	5	3.48	3	3.48	5	3.57	4	3.47	4
Lack of crowding	3.44	6	3.34	7	3.36	6	3.36	6	3.44	7	3.36	6
Lakeside setting	3.33	7	3.3	8	3.12	11	3.35	7	3.43	8	3.29	9
Friendliness & courtesy of park staff	3.27	9	3.35	6	3.28	8	3.35	8	3.47	6	3.32	7
Reasonable user fees	3.24	10	3.27	9	3.2	10	3.28	9	3.39	9	3.25	10
Close to home	3.28	8	3.25	10	3.2	9	3.28	10	2.76	11	3.3	8
Fishing quality	3.16	11	3.17	11	3.55	2	3.04	11	2.9	10	3.19	11
Water level of lake	3.11	12	2.92	12	3.07	12	2.94	12	2.71	12	2.99	12
Restaurants, shopping, or other attractions nearby or on the way	2.27	13	2.57	13	2.21	13	2.57	13	2.39	13	2.51	13
Range of sample sizes	329-392		1026-1280		227-337		1037 - 1322		110-138		1237-1526	

Table 22. Satisfaction of recreation visitors with lake and site attributes.

Site or Lake Attribute	No. of Visitor Responses ¹	Mean ²	Response Distribution (Percent)					Total
			Excellent	Very Good	Good	Fair	Poor	
Natural beauty of the lake	1,601	4.52	62	29	7	1	0	100
Suitable facilities for my activities	1,469	4.20	48	31	17	3	2	100
Water quality	1,477	4.18	48	30	16	4	2	100
Safety and security	1,476	4.16	44	33	19	2	2	100
Lack of crowding	1,479	3.95	40	28	22	7	3	100
Cleanliness & maintenance of facilities	1,452	3.95	38	31	22	6	3	100
Weather conditions	1,537	3.95	40	28	23	7	3	100
Reasonable user fees	1,005	3.84	36	29	24	9	4	100
Encounters with other lake visitors	1,226	3.84	29	33	31	5	2	100
Water level of lake	1,393	3.59	26	27	31	11	5	100
Fishing quality	950	3.38	27	21	24	16	11	100
Friendliness & courtesy of park staff	1,359	4.29	50	33	15	1	1	100
Overall satisfaction with your visit	1,586	4.27	46	36	16	2	0	100

¹ Data from the three lakes were combined due to the similarity of responses among the individual lakes.

² Numerical scoring of computation of mean: 5: Excellent, 4: Very Good, 3: Good 2: Fair, 1: Poor.

Table 23. Satisfaction of recreation visitors by lake.

Rating of Experience	Bull Shoals		Norfolk		Table Rock	
	Mean	Rank	Mean	Rank	Mean	Rank
Natural beauty of the lake	4.6	1	4.5	1	4.5	1
Friendliness & courtesy of park staff	4.2	2	4.3	2	4.3	2
Water quality	4.2	3	4.3	3	4.1	5
Suitable facilities for my activities	4.2	4	4.1	4	4.3	4
Lack of crowding	4.2	5	3.8	9	3.9	8
Safety and security	4.1	6	4.0	5	4.3	3
Cleanliness & maintenance of facilities	3.9	7	3.8	8	4.0	6
Reasonable user fees	3.9	8	3.7	10	3.9	9
Weather conditions	3.9	9	3.9	6	4.0	7
Encounters with other lake visitors	3.9	10	3.8	7	3.8	10
Water level of lake	3.6	11	3.5	11	3.6	11
Fishing quality	3.3	12	3.4	12	3.4	12
Overall satisfaction with your visit	4.3		4.2		4.3	

One way to assess visitor-perceived management needs is to examine the level of agreement between importance and satisfaction scores for the same or similar rating features. This was done separately for campers, boaters, and fishers using the 10 features respondents rated both for importance and satisfaction. Natural beauty of the area was the highest rated satisfaction feature of all three user groups. It also tended to be among the most important. Water quality was also rated high in both importance and satisfaction among all three user groups. Generally, mean importance and satisfaction scores tracked together for most attributes, with those attributes rated lowest in importance also scoring lowest in satisfaction and those rated medium or highest in importance also scoring higher satisfaction (Figure 5). Small inconsistencies between importance and satisfaction scores were evident for two attributes. In one, all three user groups rated cleanliness and maintenance of recreation facilities highly important and slightly below average in satisfaction. In the other, campers rated lack of crowding slightly above average in importance and slightly below average in satisfaction. Among fishers, a larger disparity was evident for quality of fishing. Fishers rated quality of fishing their second-most important attribute and the one with which they were least satisfied.

Visitor-Perceived Trends

Visitors were given the opportunity to describe up to three trends they have observed in the years they have been visiting the lake and to assess the impact of each observed trend as having a positive, negative, or neutral effect on their recreation experience. This question produced approximately 1400 total comments that were summarized by lake and subject matter using a key-word-based content analysis.

Many different trends were noted by visitors, some having a predominately positive and others a predominately negative effect on recreation experience. Some of the most frequently mentioned trends noted by respondents involved improvements in the parks that generally produced a positive impact on visitor recreation experience (Table 24). Respondents at all of the lakes noted improvements in restrooms, campgrounds, launch ramps, and park facilities and maintenance generally. Respondents from Bull Shoals and Norfolk Lakes noted generally positive changes in park grounds and the lakeshore. Respondents from Norfolk and Table Rock Lakes described improvements in roads and parking. Respondents for Table Rock Lake complimented the opening of Moonshine Beach and improvements in trails.

In general, visitors tended to notice facility improvements in the parks and the positive effect of facility improvements on their recreation experience.

Several trends negatively affecting recreation experience were also noted by respondents (Table 24). Deterioration in water quality and/or condition of the lake, an increase in perceived visitor crowding on the lake, more encounters with boats, larger and more powerful boats, adverse lake levels, and greater lake level fluctuations were among the most frequently mentioned negative trends at these lakes. At Table Rock Lake, the deterioration of water quality and increased crowding were the two most frequently noted trends on that lake. A concern expressed by a moderate number of respondents at Table Rock Lake was the increase in private development observable from the lake. Less frequently mentioned at all of the lakes were predominately negative trends associated with fees, park closures, and changes in regulations and policies.

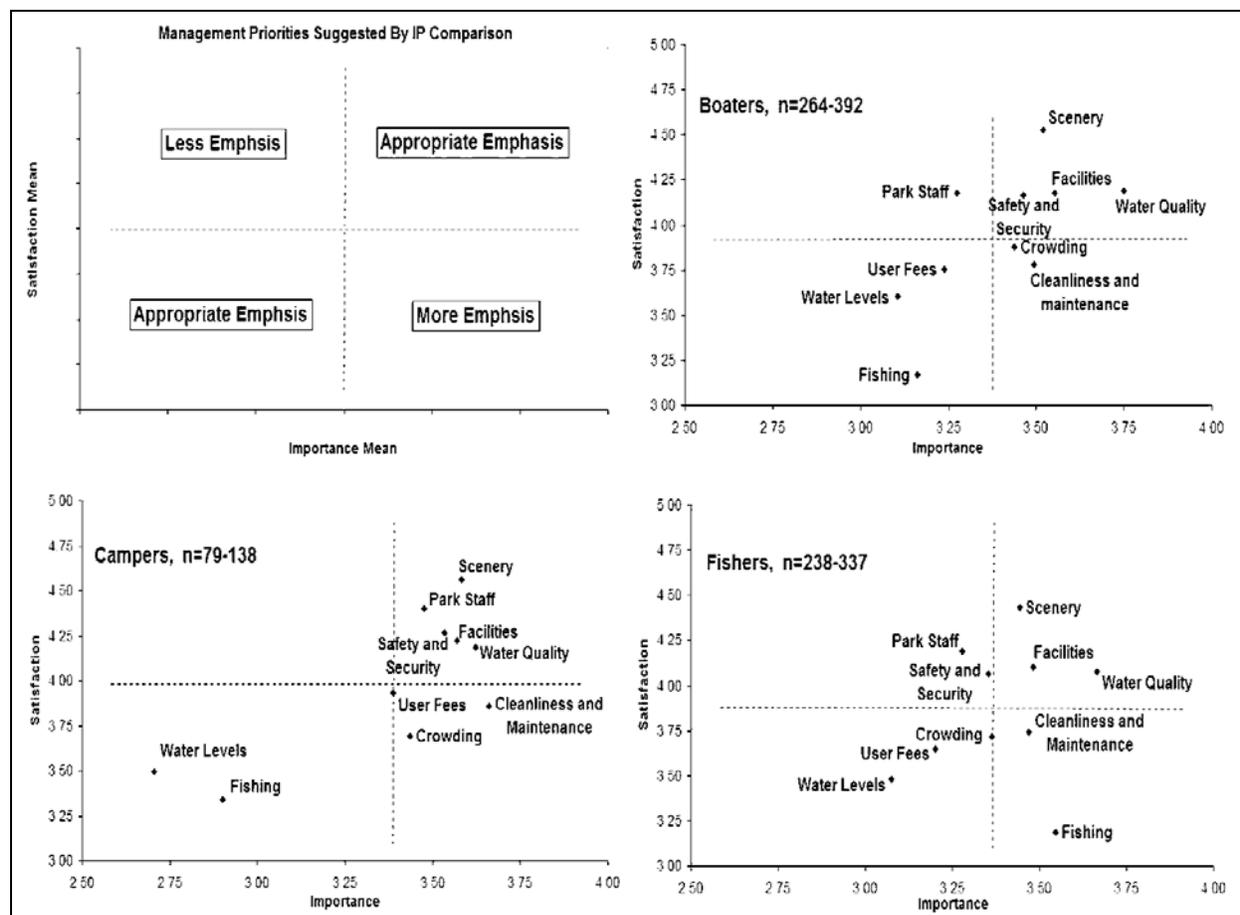


Figure 5. Importance and satisfaction with park and lake attributes by boaters, fishers, and campers.

Table 24. Summary of trends identified by lake visitors.

Trend Issues	Bull Shoals				Norfolk				Table Rock			
	No. Comments	Impact on Recreation Experience			No. Comments	Impact on Recreation Experience			No. Comments	Impact on Recreation Experience		
		Positive	Negative	Neutral		Positive	Negative	Neutral		Positive	Negative	Neutral
Park grounds / lakeshore	61	37	19	3	42	27	13	1	29	14	12	0
Lake condition / water quality	48	9	37	1	18	7	11	0	74	21	52	1
Lake level	48	13	27	6	28	6	19	2	19	4	9	5
Launch ramps / courtesy docks	48	37	8	2	43	30	13	0	22	16	4	1
Fishing	47	18	26	1	20	10	7	2	18	4	12	0
Park facilities / maintenance	26	15	9	1	16	11	4	1	29	20	7	0
Restrooms	26	22	4	0	25	21	3	1	18	15	2	0
Visitation levels/ crowding	25	2	20	3	25	1	22	1	55	5	46	2
Campground facilities	24	13	7	3	34	20	12	2	34	29	3	0
Marinas	23	16	3	3	6	4	2	0	10	7	2	1
Boating equipment	20	1	15	3	6	0	6	0	11	1	10	0
Roads / parking	20	7	9	3	13	13	0	0	22	19	1	1
Fees	15	1	12	2	10	2	8	0	6	0	5	1
Onsite/offsite amenities	14	8	5	1	4	3	1	0	6	4	1	1
Safety and security	12	6	6	0	3	0	3	0	11	8	3	0
Swimming beach	12	4	8	0	7	4	3	0	13	11	1	1
Park closures	11	1	9	1	13	2	11	0	9	0	8	0
Playground	8	8	0	0	1	1	0	0	2	1	1	0
Rangers / staff	7	6	0	0	3	3	0	0	5	3	2	0
Regulations / policies	7	0	7	0	4	1	3	0	3	2	0	1

Trend Issues	Bull Shoals				Norfolk				Table Rock			
	No. Comments	Impact on Recreation Experience			No. Comments	Impact on Recreation Experience			No. Comments	Impact on Recreation Experience		
		Positive	Negative	Neutral		Positive	Negative	Neutral		Positive	Negative	Neutral
Development	6	1	4	1	4	1	3	0	26	4	16	5
Access to lake or sites	4	2	2	0	16	11	4	1	12	9	2	1
Jet skiing	3	0	3	0	4	0	3	1	5	0	5	0
Private docks	3	0	3	0	5	1	4	0	3	1	0	2
Reservations	3	0	2	1	3	0	2	1	4	2	1	1
Signage	2	1	1	0	0	0	0	0	1	1	0	0
Trails	2	1	1	0	2	0	2	0	25	23	0	2
Dam / power generation	0	0	0	0	0	0	0	0	11	5	3	3
Miscellaneous	13	7	3	0	13	9	4	0	18	12	5	1
Total comments	538				368				501			

Trends related to fishing or condition of the fishery resource were also noted at all of the lakes (Table 24). Changes in fishing were generally perceived as more positive than negative at Norfolk Lake, and more negative than positive at Bull Shoals and Table Rock Lakes. Respondents identifying fishing trends were generally positive about the effect of the fish stocking program, but at Table Rock and Bull Shoals Lakes in particular, were more negative than positive about fishing trends overall.

Visitors who noted lake or park trends were also asked to provide up to three suggestions for improving recreation opportunity on the lakes. Respondents provided nearly 1,000 suggestions that were categorized by lake and subject using key-word-based content analysis (Table 25). The top six to eight categories of suggestions accounted for about 50% of all suggestions, but differed somewhat by lake. Of more than 400 suggestions offered by respondents from Bull Shoals Lake, more favorable lake levels (14%), additional fishery or fish habitat management (9%), improvements to boat launch areas (7%), increased fish stocking (7%), campground improvements (6%), and park or lakeshore cleanup (5%) were suggested most often. At Norfolk Lake, 275 suggestions included improvements at campgrounds (12%), boat launch areas (10%), and restrooms and showers (9%); more favorable lake levels (8%); and additional fishery or fish habitat management (5%). At Table Rock Lake, about 50% of approximately 300 suggestions were for additional regulation of boats (8%), improvements in boat launch areas (8%), better park cleanup or maintenance (8%), improvements in campgrounds (6%), more environmental or park regulation or enforcement, (listed as miscellaneous regulation or enforcement, 5%), additional or extended trails (5%), and improved water quality (5%).

Trip spending

Total trip spending for individual recreation parties varied widely and was affected by party size, length of stay at the lake, and other factors. Mean trip spending within 30 miles of a lake by day-use visitors was \$30 for local visitor parties and \$40 for non-local visitor parties (Table 26). Trip spending by overnight parties within 30 miles of a lake varied from \$279 per trip for campers to \$670 per trip for parties using motel lodging during the trip. Lake visitors on pass-through visits spent an average of \$117 per trip within 30 miles of the lake. Trip spending by non-local visitors was similar at Norfolk and Table Rock Lakes, but was lower at Bull Shoals Lake for each of the non-local visitor segments (Table 26).

Table 25. Suggestions for improvements offered by lake visitors.

Suggestion Category	Bull Shoals		Norfolk		Table Rock	
	No.	Pct.	No.	Pct.	No.	Pct.
Access	7	1.7	3	1.1	1	0.3
Boat ramps / courtesy docks	31	7.4	27	9.8	24	7.9
Boating regulations / enforcement	6	1.4	9	3.3	25	8.3
Campground	27	6.5	32	11.6	18	5.9
Crowding	0	0.0	0	0.0	1	0.3
Dam and power generation	2	0.5	4	1.5	3	1.0
Development	3	0.7	0	0.0	7	2.3
Fees	14	3.3	9	3.3	9	3.0
Fish cleaning station	3	0.7	1	0.4	0	0.0
Fish habitat / management	37	8.9	15	5.5	11	3.6
Fish stocking	30	7.2	11	4.0	0	0.0
Jet skis	0	0.0	4	1.5	7	2.3
Lake levels	58	13.9	21	7.6	7	2.3
Lake shore / park grounds	20	4.8	8	2.9	0	0.0
Marinas	9	2.2	2	0.7	5	1.7
Miscellaneous	29	6.9	15	5.5	30	9.9
Miscellaneous regulations / enforcement	13	3.1	12	4.4	16	5.3
Onsite/offsite amenities	2	0.5	6	2.2	2	0.7
Park cleanup / maintenance	12	2.9	6	2.2	23	7.6
Park closures	3	0.7	12	4.4	4	1.3
Park facilities	11	2.6	6	2.2	14	4.6
Playground	4	1.0	1	0.4	5	1.7
Private docks	2	0.5	1	0.4	3	1.0
Rangers / staff	6	1.4	3	1.1	5	1.7
Reservation	2	0.5	6	2.2	2	0.7
Restrooms & shower	17	4.1	25	9.1	12	4.0
Road / parking	14	3.3	8	2.9	9	3.0
Security / safety	9	2.2	10	3.6	6	2.0
Septic systems	0	0.0	0	0.0	3	1.0
Shoreline fishing access	7	1.7	4	1.5	1	0.3
Signage / information	12	2.9	1	0.4	11	3.6
Swimming area	19	4.5	11	4.0	7	2.3
Trails	3	0.7	2	0.7	16	5.3
Water quality	6	1.4	0	0.0	16	5.3
Total comments	418	100	275	100	303	100

Table 26. Mean trip spending by visitor segment

Trip Characteristics	Non-Local Visitor Segments					Local Visitor Segments		Total
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day Trip	Over-night	
Nights within 30 miles								
Bull Shoals	-	-	3.29	2.44	3.14	-	2.7	1.35
Norfolk	-	-	2.72	2.84	2.76	-	2.31	1.39
Table Rock	-	-	3.27	2.53	4.2	-	2.37	2.13
Total	-	-	3.21	2.63	3.58	-	2.44	1.74
Spending party size								
Bull Shoals	2.19	2.06	2.16	2.85	2.94	2.05	3.17	2.41
Norfolk	2.34	2.87	3.97	3.24	3.34	2.07	3.18	2.76
Table Rock	2.38	2.57	2.86	3.51	3.22	2.41	3.13	2.87
Total	2.34	2.47	2.90	3.31	3.19	2.17	3.16	2.73
Spending within 30 miles (\$ per party per trip)								
Bull Shoals	17	36	468	159	178	32	282	109
Norfolk	44	184	754	291	311	23	299	144
Table Rock	47	146	691	309	412	40	284	297
Total	40	117	670	279	335	30	289	202

Approximately 90% of day-trip spending within 30 miles of a lake was for gas and oil, groceries, restaurants and bars, boat expenses, and sporting goods, with the largest portion (30-35%) spent on gas and oil. Parties on overnight trips spent considerably more in all of these categories than parties on day trips, and in addition, many had lodging expenses for hotels or camping (Table 27).

Trip spending differed between lakes in some spending categories. Some of these differences are no doubt affected by the highly variable nature of spending combined with the small sample sizes associated with some visitor segments. One consistent difference between the lakes was spending on attractions by non-local visitors. At Table Rock Lake, with its proximity to the entertainment destination of Branson, Missouri, attractions was a major spending category, with spending on attractions averaging \$108 for motel users, \$53 for campers, and \$92 for other overnight visitors (Table 28). These amounts are 3 -10 times higher than mean trip spending on local attractions by the same visitor segments at Norfolk Lake (Table 29) and 10-50 times greater than spending on attractions by the same visitor segments at Bull Shoals Lake (Table 30).

Total trip spending by overnight visitors typically increased with increasing length of trip. Normalizing the expenditures of overnight trips produces mean trip spending of \$16 per night for campers, \$74 per night for motel users, \$16 per night for campers, and \$0 per night for other categories of overnight visitors (Table 31). Per- night spending for gas and oil, groceries, boat expenses, sporting goods, and smaller spending items was similar for most overnight visitor segments. However, mean lodging expenses varied greatly, from none for other overnight visitors staying with friends or family in the area, to approximately \$75 per night for parties using motel lodging.

Table 27. Mean trip spending by visitor segment combining data from all lakes.

Spending Category	Non-local Visitors					Local Visitors		Total
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Over night	
Spending within 30 miles								
Hotel	0.00	0.00	238.70	11.02	0.00	0.00	41.99	38.43
Camping	0.00	0.00	1.83	43.16	0.00	0.00	13.87	6.51
Restaurants and bars	6.78	28.43	122.82	43.87	85.35	4.87	47.10	37.71
Groceries	4.03	30.00	50.43	53.98	62.74	5.61	71.89	28.39
Gas and oil	12.22	25.23	62.96	53.65	69.13	10.59	56.02	32.61
Other auto	0.25	0.13	3.65	5.47	2.18	0.16	2.62	1.68
Other boat	7.05	11.47	24.20	9.21	18.94	1.95	11.48	9.18
Attractions	0.40	4.19	87.11	30.30	50.38	0.92	8.97	21.88
Sporting goods	6.13	6.05	16.75	9.44	10.81	4.27	21.51	8.89
Other	3.58	11.04	61.50	18.56	34.99	1.81	13.44	16.68
Total within 30 miles	40.44	116.53	669.95	278.65	334.53	30.18	288.88	201.96
Spending beyond 30 miles								
Hotel	0.00	81.98	18.47	0.80	37.41	0.00	11.09	8.50
Camping	0.00	6.63	0.05	6.10	0.00	0.00	0.97	0.93
Restaurants and bars	1.84	36.36	23.51	9.86	30.67	0.10	8.56	8.98
Groceries	2.77	11.98	6.77	17.68	16.53	0.26	13.28	6.35
Gas and oil	0.02	0.08	2.17	1.08	0.21	0.01	0.50	0.51
Other auto	10.61	39.74	34.62	39.45	26.92	0.30	16.98	15.79
Other boat	0.44	3.75	0.54	2.49	0.64	0.07	1.76	0.73
Attractions	0.28	14.85	6.30	4.80	4.83	0.07	1.71	2.38
Sporting goods	2.95	4.82	4.90	5.82	18.39	0.68	1.74	4.02
Other	0.56	22.58	34.09	3.91	2.87	0.02	1.71	6.20
Total beyond 30 miles	19.48	222.76	131.43	92.00	138.48	1.51	58.30	54.38
N	226	39	282	178	150	728	122	1,725

Table 28. Mean trip spending of visitors to Table Rock Lake (\$ per party per trip).

Spending Category	Non-local Visitors					Local Visitors		All Visitors
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Overnight	
Spending within 30 miles								
Hotel	0.00	0.00	245.51	12.99	0.00	0.00	40.08	65.08
Camping	0.00	0.00	2.09	51.07	0.00	0.00	18.14	8.48
Restaurants and bars	6.15	38.88	134.70	53.89	100.27	8.42	44.36	58.37
Groceries	5.48	35.12	40.37	51.28	73.66	6.49	77.19	32.99
Gas and oil	12.48	27.56	55.04	44.56	76.38	15.22	45.52	37.41
Other auto	0.43	0.00	2.74	10.14	1.97	0.19	1.39	2.47
Other boat	8.71	15.80	19.25	2.17	6.91	0.51	5.78	8.10
Attractions	0.64	9.64	108.21	52.67	91.63	1.60	9.63	45.37
Sporting goods	10.76	3.79	8.08	5.71	2.75	4.45	30.44	8.00
Other	2.13	14.87	75.22	24.40	58.30	3.11	11.32	30.52
Total within	46.79	145.67	691.21	308.88	411.87	39.99	283.85	296.78
Spending beyond 30 miles								
Hotel	0.00	66.86	23.13	0.61	16.24	0.00	0.00	8.76
Camping	0.00	0.00	0.00	7.89	0.00	0.00	0.29	1.08
Restaurants and bars	2.38	24.23	28.09	8.84	50.66	0.00	2.58	14.77
Groceries	3.33	10.56	5.64	14.71	19.93	0.00	19.13	7.51
Gas and oil	0.03	0.00	2.87	1.01	0.16	0.00	0.00	0.87
Other auto	8.51	21.99	38.18	44.04	25.69	0.31	8.84	20.71
Other boat	0.00	0.00	0.67	3.29	0.00	0.02	0.91	0.67
Attractions	0.52	2.99	6.96	6.03	9.02	0.00	0.00	3.68
Sporting goods	2.77	8.56	5.05	6.10	4.74	2.03	0.00	3.74
Other	0.85	3.64	42.79	4.26	4.64	0.09	0.00	11.93
Total beyond	18.39	138.82	153.38	96.78	131.07	2.45	31.76	73.72
N	108	17	211	83	78	148	29	674
Percent of Sample	16%	3%	31%	12%	12%	22%	4%	100%

Table 29. Mean trip spending of visitors to Norfolk Lake (\$ per party per trip).

Spending Category	Non-local Visitors					Local Visitors		All Visitors
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Overnight	
Spending Within 30 miles								
Hotel	0.00	0.00	242.61	13.25	0.00	0.00	50.30	18.15
Camp	0.00	0.00	0.00	37.96	0.00	0.00	9.25	5.72
Restaurants and Bars	8.76	40.63	99.32	37.12	87.89	2.60	44.11	23.10
Groceries	2.77	54.88	121.76	69.98	60.81	3.66	74.63	29.13
Gas and oil	15.27	36.92	101.05	70.58	68.90	9.16	60.16	31.68
Other auto	0.07	0.52	1.64	1.07	3.90	0.14	2.95	0.86
Other boat	8.29	13.12	59.53	16.31	41.29	1.32	13.84	11.22
Attractions	0.00	0.87	39.63	10.75	8.94	0.72	12.38	5.50
Sporting goods	0.79	16.25	63.88	17.40	28.79	4.79	19.17	12.08
<u>Other</u>	<u>7.81</u>	<u>20.59</u>	<u>24.39</u>	<u>16.33</u>	<u>10.39</u>	<u>0.25</u>	<u>12.01</u>	<u>6.48</u>
Total within	43.78	183.79	753.81	290.76	310.91	22.65	298.80	143.91
Spending beyond 30 miles								
Hotel	0.00	2.62	3.40	0.00	104.86	0.00	20.38	9.82
Camp	0.00	0.87	0.00	2.09	0.00	0.00	1.60	0.42
Restaurants and Bars	0.72	0.00	9.00	9.76	3.39	0.05	5.56	2.56
Groceries	2.71	0.00	10.67	18.54	9.87	0.00	10.11	4.87
Gas and oil	0.00	0.00	0.00	0.00	0.07	0.03	1.19	0.12
Other auto	11.01	13.30	20.66	31.97	13.57	0.06	19.33	9.39
Other boat	1.37	0.00	0.00	0.00	0.56	0.12	3.84	0.60
Attractions	0.00	0.00	3.37	4.67	0.00	0.00	2.24	0.97
Sporting goods	4.71	0.00	0.00	4.32	1.68	0.00	3.52	1.55
<u>Other</u>	<u>0.00</u>	<u>0.00</u>	<u>0.29</u>	<u>0.58</u>	<u>0.93</u>	<u>0.00</u>	<u>0.96</u>	<u>0.24</u>
Total beyond	20.52	16.80	47.38	71.93	134.93	0.26	68.72	30.56
N	50	7	19	49	23	209	35	392
Percent of Sample	13%	2%	5%	13%	6%	53%	9%	100%

Table 30. Mean trip spending by visitors to Bull Shoals Lake (\$ per party per trip).

Spending Category	Non-local Visitors					Local Visitors		All Visitors
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Overnight	
Spending within 30 miles								
Hotel	0.00	0.00	194.80	0.00	0.00	0.00	33.18	17.97
Camping	0.00	0.00	1.97	30.71	0.00	0.00	14.85	3.99
Restaurants and bars	5.64	7.74	73.72	28.45	46.36	4.89	54.44	20.27
Groceries	1.79	6.96	45.39	26.35	38.90	7.57	61.74	18.92
Gas and oil	6.91	14.49	75.38	43.33	52.02	8.48	63.34	25.11
Other auto	0.00	0.00	10.88	1.13	0.58	0.15	3.67	1.39
Other boat	0.47	5.22	21.59	14.72	20.26	4.08	15.32	8.31
Attractions	0.32	0.00	5.02	6.00	2.45	0.62	3.59	1.77
Sporting goods	0.93	1.74	25.45	2.97	7.98	3.39	13.70	6.06
Other	1.38	0.00	13.79	5.77	9.36	2.84	17.94	5.61
Total within 30 miles	17.44	36.14	468.00	159.44	177.91	32.03	281.76	109.39
Spending beyond 30 miles								
Hotel	0.00	154.08	4.47	3.21	4.99	0.00	12.22	6.19
Camping	0.00	18.39	0.40	9.68	0.00	0.00	0.95	1.38
Restaurants and bars	1.98	75.55	9.53	13.22	16.34	0.25	19.91	7.35
Groceries	1.28	21.84	9.97	24.78	16.57	0.85	10.37	6.28
Gas and oil	0.04	0.21	0.00	3.70	0.52	0.00	0.21	0.37
Other auto	16.01	78.77	26.20	42.23	46.36	0.63	23.78	15.73
Other boat	0.32	10.75	0.20	5.66	2.26	0.04	0.00	1.00
Attractions	0.00	39.00	5.07	1.36	0.75	0.22	3.07	1.98
Sporting goods	0.84	3.68	8.44	8.30	71.84	0.43	1.51	7.97
Other	0.55	60.39	13.18	10.32	1.03	0.00	4.79	4.02
Total beyond 30 miles	21.01	462.67	77.45	122.46	160.66	2.42	76.81	52.29
N	68	15	52	46	49	371	58	659
Percent of Sample	10%	2%	8%	7%	7%	56%	9%	100%

Table 31. Per-night spending for overnight trips (\$ per party per trip).

Spending within 30 miles	Non-Local Visitors			Local
	Motel	Camp	Other	Overnight
Hotel	74.36	4.19	0.00	17.21
Camping	0.57	16.41	0.00	5.69
Restaurants and bars	38.26	16.68	23.84	19.30
Groceries	15.71	20.53	17.53	29.46
Gas and oil	19.61	20.40	19.31	22.96
Other auto	1.14	2.08	0.61	1.07
Other boat	7.54	3.50	5.29	4.71
Attractions	27.14	11.52	14.07	3.67
Sporting goods	5.22	3.59	3.02	8.81
Other	19.16	7.06	9.77	5.51
Total within 30 miles	208.71	105.95	93.44	118.40

Total annual spending

Annual spending by park visitors at the three lakes totaled \$391 million between October 2004 and September 2005 (Table 32). Of this amount, approximately 68% was spent by Table Rock Lake visitors, 17% by Norfolk Lake visitors, and 15% by Bull Shoals visitors. Of greatest interest to the lake economies is local visitor spending, which includes trip-related expenditures occurring within 30 miles of the lake. Local spending accounted for 80% of \$267 million in trip-related expenditures at Table Rock Lake, 82% of \$66 million in spending at Norfolk Lake, and 68% of \$58 million in spending at Bull Shoals Lake.

Table 32. Total visitor spending by lake.

Spending Category	Bull Shoals	Norfolk	Table Rock	Total
Visitors	905,389	1,206,243	1,611,770	3,723,402
Total trip spending (\$000's)	\$ 58,480	\$ 65,890	\$ 266,995	\$ 391,365
Total spending within 30 miles (\$000's)	\$ 39,778	\$ 54,349	\$ 214,216	\$ 308,343
Non-local visitor spending (\$000's)	\$ 24,997	\$ 37,496	\$ 193,351	\$ 255,844
Percent of spending by non-local visitors	63%	69%	90%	83%

The \$267 million in total spending by visitors at Table Rock Lake included \$214 million that was spent within 30 miles of the lake, 90% of this by non-local visitors who brought \$193 million in new spending to the local economy (Table 32). Total visitor spending within 30 miles of Table Rock Lake by both local and non-local visitors consisted of spending on hotels

(23%), restaurants and bars (20%), attractions (15%), gas and oil (13%), groceries (11%), and several other spending categories (19%) (Table 33).

The \$66 million in total spending by Norfolk Lake visitors included \$54 million that was spent locally (≤30 miles of the lake). Sixty-nine percent (\$37 million) of this was new money brought in to the local economy by non-local visitors. The total spending occurring within 30 miles of Norfolk Lake consisted of spending on gas and oil (23%), groceries (20%), restaurants and bars (16%), hotels (11%), sporting goods (9%), boating expenses (8%), and several other spending categories (13%) (Table 34).

Table 33. Total spending by visitors to Table Rock Lake (\$000's).

Spending Category	Non-local Visitors					Local Visitors		Total
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Overnight	
Spending within 30 miles								
Hotel	0	0	45,563	1,064	0	0	1,668	48,294
Camp	0	0	388	4,182	0	0	755	5,325
Restaurants and bars	962	550	24,999	4,413	7,400	1,907	1,846	42,076
Groceries	858	496	7,493	4,199	5,436	1,469	3,211	23,163
Gas and oil	1,953	390	10,215	3,650	5,637	3,447	1,894	27,185
Other auto	68	0	508	830	146	43	58	1,652
Other boat	1,362	223	3,572	178	510	117	240	6,202
Attractions	101	136	20,083	4,313	6,762	362	400	32,158
Sporting goods	1,684	54	1,500	468	203	1,007	1,267	6,182
Other	334	210	13,959	1,998	4,302	704	471	21,978
Total within	7,322	2,059	128,279	25,295	30,395	9,055	11,809	214,216
Spending beyond 30 miles								
Hotel	0	945	4,293	50	1,198	0	0	6,487
Camp	0	0	0	646	0	0	12	658
Restaurants and bars	372	342	5,214	724	3,739	0	107	10,498
Groceries	522	149	1,047	1,205	1,471	1	796	5,190
Gas and oil	4	0	532	83	12	0	0	631
Other auto	1,332	311	7,085	3,607	1,896	69	368	14,667
Other boat	0	0	125	269	0	5	38	437
Attractions	81	42	1,292	494	665	0	0	2,574
Sporting goods	434	121	937	499	350	459	0	2,800
Other	134	52	7,940	349	342	20	0	8,837
Total beyond	2,878	1,963	28,465	7,926	9,673	554	1,321	52,779
Grand total	10,200	4,022	156,744	33,221	40,068	9,609	13,131	266,995

Table 34. Total spending by visitors Norfolk Lake (\$000's).

Spending Category	Non-local Visitors					Local Visitors		Total
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Overnight	
Spending within 30 miles								
Hotel	0	0	3,662	639	0	0	1,666	5,967
Camping	0	0	0	1,831	0	0	306	2,138
Restaurants and bars	539	220	1,499	1,791	2,376	799	1,461	8,685
Groceries	171	297	1,838	3,377	1,643	1,124	2,472	10,921
Gas and oil	940	200	1,525	3,405	1,862	2,813	1,993	12,738
Other auto	4	3	25	52	105	44	98	331
Other boat	510	71	898	787	1,116	407	458	4,247
Attractions	0	5	598	519	241	220	410	1,993
Sporting goods	49	88	964	840	778	1,471	635	4,824
Other	481	111	368	788	281	77	398	2,504
Total within	2,694	995	11,377	14,028	8,403	6,956	9,896	54,349
Spending beyond 30 miles								
Hotel	0	14	51	0	2,834	0	675	3,575
Camping	0	5	0	101	0	0	53	158
Restaurants and bars	44	0	136	471	92	16	184	943
Groceries	167	0	161	894	267	0	335	1,823
Gas and oil	0	0	0	0	2	8	39	49
Other auto	678	72	312	1,543	367	19	640	3,630
Other boat	84	0	0	0	15	36	127	263
Attractions	0	0	51	225	0	0	74	350
Sporting goods	289	0	0	209	45	0	116	660
Other	0	0	4	28	25	0	32	89
Total beyond	1,263	91	715	3,470	3,647	79	2,276	11,541
Grand total	3,956	1,086	12,092	17,498	12,050	7,035	12,173	65,890

The \$58 million in total visitor spending by Bull Shoals Lake visitors included \$40 million spent within 30 miles of the lake, 63% of this by non-local visitors bringing \$25 million in new money into the local economy. Total visitor spending within 30 miles of Bull Shoals Lake included expenditures for gas and oil (23%), restaurants and bars (18%), hotels (18%), groceries (17 percent), boating expenses (8%), sporting goods (6%), and several other spending categories (10%) (Table 35).

Table 35. Total spending by visitors to Bull Shoals Lake (\$000's).

Spending Category	Non-local Visitors					Local Visitors		Total
	Day Trips	Pass Thru	Motel	Camp	Other OVN	Day trips	Over-night	
Spending within 30 miles								
Hotel	0	0	6,259	0	0	0	862	7,122
Camping	0	0	63	788	0	0	386	1,238
Restaurants and bars	262	89	2,369	730	1,209	1,139	1,415	7,213
Groceries	83	80	1,459	676	1,015	1,763	1,605	6,680
Gas and oil	321	167	2,422	1,112	1,357	1,975	1,646	9,000
Other auto	0	0	350	29	15	35	95	524
Other boat	22	60	694	378	528	951	398	3,031
Attractions	15	0	161	154	64	144	93	631
Sporting goods	43	20	818	76	208	789	356	2,311
Other	64	0	443	148	244	661	466	2,027
Total within 30 miles	809	417	15,038	4,092	4,640	7,457	7,324	39,778
Spending beyond 30 miles								
Hotel	0	1,780	144	82	130	0	318	2,453
Camping	0	212	13	249	0	0	25	499
Restaurants and bars	92	873	306	339	426	59	518	2,613
Groceries	59	252	320	636	432	197	269	2,166
Gas and oil	2	2	0	95	14	1	5	119
Other auto	743	910	842	1,084	1,209	147	618	5,552
Other boat	15	124	6	145	59	9	0	359
Attractions	0	450	163	35	20	50	80	798
Sporting goods	39	43	271	213	1,874	101	39	2,580
Other	25	697	423	265	27	0	125	1,563
Total beyond 30 miles	975	5,344	2,489	3,143	4,190	564	1,997	18,702
Grand total	1,784	5,761	17,527	7,236	8,830	8,022	9,321	58,480

Local economic significance and impacts of visitor spending

Local spending by all lake visitors creates local economic significance in the form of jobs, labor income, and value added with the local economy. The total local spending of \$308 million by 3.7 million visitors to the three lakes had a local economic significance consisting of approximately 5,000 jobs, \$116 million in labor income, and \$186 million in value added to the economies of the three lakes (Table 36). Of these amounts, the \$256 million was spent locally by non-local visitors, creating approximately 4,300 jobs, \$101 million in labor income, and \$162 million in value added. The latter amounts describe the local economic impacts resulting from the money

brought into the local economy by non-local visitors. The local economic impacts are 86-87% of the local economic significance.

Table Rock Lake had the largest economic significance of the three lakes, accounting for 3,645 jobs, \$88 million in labor income, and \$142 million in value added. Local spending by non-local visitors accounted for 90% of the total economic significance. This spending produced an economic impact of 3,346 jobs, \$81 million in labor

Table 36. Local economic significance and effects, by lake.

Effect	Bull Shoals	Norfolk	Table Rock	Total
Local Economic Significance¹				
Direct Effects				
Sales (\$000's)	25302	31063	163053	219419
Jobs	460	602	2788	3850
Labor Income (\$000's)	9183	10886	59531	79600
Value Added (\$000's)	13389	15988	88058	117435
Total Effects				
Sales (\$000's)	34931	41111	233286	309328
Jobs	573	733	3645	4950
Labor Income (\$000's)	13126	14528	87916	115571
Value Added (\$000's)	20525	22503	142493	185521
Local Economic Impact²				
Direct Effects				
Sales (\$000's)	17229	22328	149749	189306
Jobs	319	424	2564	3308
Labor Income (\$000's)	6343	7720	55066	69129
Value Added (\$000's)	9478	11500	82697	103675
Total Effects				
Sales (\$000's)	23727	29455	213282	266464
Jobs	396	518	3346	4260
Labor Income (\$000's)	9076	10333	81095	100503
Value Added (\$000's)	14261	16096	131705	162062
Visitor Spending Sales Multiplier	1.38	1.32	1.42	1.41
¹ Includes spending of local visitors.				
² Excludes spending of local visitors.				

income, and \$132 million in value added in the area extending 30 miles from the lake (Table 36). The region benefiting from this economic impact approximately corresponds to Benton, Boon, Carroll, and Marion Counties in Arkansas and Barry, Christian, Stone, and Taney Counties in Missouri.

The direct effects of the \$214 million in local spending at Table Rock Lake was approximately \$163 million in retail sales, 2,788 jobs, \$60 million in labor income, and \$90 million in value added (Table 36). These are the impacts accruing to businesses that sell goods and services directly to visitors. The direct effects primarily benefited eating and drinking establishments (1,060 jobs), lodging (971 jobs), recreation and entertainment (336 jobs), and retail sales (a total of 290 jobs) (Table 37). Every \$1 in direct sales generated another \$0.42 in secondary sales due to indirect and induced effects. This produced an additional \$70 million in retail sales, 857 jobs, \$28 million in labor income, and \$54 million in value added. The retail sales multiplier for Table Rock Lake (1.42) was the largest of the three lakes (Table 36).

With fewer visitors, lower spending per visitor, and a smaller sales multiplier, the economic significance of spending by Norfolk Lake visitors was 16-22% that of Table Rock Lake visitors (Table 36). The \$54 million in local spending by Norfolk Lake visitors produced 733 jobs, \$15 million in labor income, and \$23 million in value added to the 30-mile area surrounding the lake. This area is approximately composed of Baxter, Fulton, Isard, and Marion counties in Arkansas and Stone and Ozark Counties in Missouri. The total economic significance of spending in this region included the impacts of non-local visitors, whose \$37-million contribution to local visitor spending (69% of total local spending) produced 518 jobs, \$10 million in labor income, and \$16 million in value added.

The direct effects of local spending at Norfolk Lake were approximately 602 jobs, \$11 million in income, and \$16 million in value added (Table 36). The direct effects were primarily in eating and drinking establishments (214 jobs), lodging (155 jobs), and retail sales (162 jobs) (Table 38). The retail sales multiplier of 1.32 indicates that another \$0.32 in secondary sales were generated for every \$1 spent locally by visitors, producing an additional 131 jobs, \$3.6 million in labor income, and \$6.5 million in value added (Table 36).

Table 37. Local economic significance and impacts of Table Rock visitor spending.

Sector Spending Category	Sales \$000's	Jobs	Labor Income \$000's	Value Added \$000's
Local Economic Significance¹				
Lodging	53,619	971	21,741	35,797
Restaurants and bars	42,076	1060	16,633	18,763
Entertainment & recreation	32158	336	12076	20239
Boat/auto services	7,854	62	1445	3,324
Gas stations	6,062	110	2270	2951
Grocery stores	5,860	131	2300	3072
Other retail	2120	49	744	1023
Wholesale	3635	26	1525	1679
Manufacturing	9668	45	798	1210
Total direct effects	163,053	2788	59,531	88,058
Secondary effects	70,233	856	28,385	54,435
Total effects	233,286	3645	87,916	142,493
Local Economic Impacts²				
Lodging	51,197	933	20,919	34,390
Restaurants and bars	38,323	965	15,149	17,089
Entertainment & recreation	31396	328	11789	19759
Boat/auto services	7,397	58	1361	3131
Gas stations	4,871	88	1824	2371
Grocery stores	4676	104	1835	2451
Other retail	1340	31	470	647
Wholesale	2835	20	1082	1894
Manufacturing	7713	36	636	965
Total direct effects	149,749	2564	55,066	82,697
Secondary effects	63,534	782	26,029	49,008
Total effects	213,282	3346	81,095	131,705
¹ Includes spending of local visitors.				
² Excludes spending of local visitors.				

Table 38. Local economic significance and impacts of Norfolk Lake visitor spending.

Sector Spending category	Sales \$000's	Jobs	Labor Income \$000's	Value Added \$000's
Local Economic Significance¹				
Lodging	8,105	155	2,938	5,010
Restaurants and bars	8,685	214	3,491	3,940
Entertainment & recreation	1993	31	745	1248
Boat/auto services	4,578	31	918	2,116
Gas stations	2,841	50	1085	1411
Grocery stores	2,763	67	1036	1385
Other retail	1655	45	513	704
Wholesale	410	8	160	173
Manufacturing	34	0	1	1
Total direct effects	31,063	602	10,886	15,988
Secondary effects	10,048	131	3,642	6,515
Total effects	41,111	733	14,528	22,503
Local Economic Impacts²				
Lodging	6,132	114	2,162	3,718
Restaurants and bars	6,424	159	2,582	2,914
Entertainment & recreation	1363	21	510	854
Boat/auto services	3,571	24	716	1651
Gas stations	1,769	31	676	879
Grocery stores	1853	45	695	929
Other retail	932	25	289	397
Wholesale	260	5	90	158
Manufacturing	22	0	0	1
Total direct effects	22,328	424	7,720	11,500
Secondary effects	7,127	94	2,613	4,596
Total effects	29,455	518	10,333	16,096
¹ Includes spending of local visitors.				
² Excludes spending of local visitors.				

The \$40 million in local spending by Bull Shoals Lake visitors produced a total of 573 jobs, \$13 million in income, and \$21 million in value added in the 30-mile area surrounding the lake (Table 36). This area corresponds approximately to Baxter, Boone and Marion Counties in Arkansas and Ozark and Taney Counties in Missouri. Of these totals, the impacts of the \$25 million in local spending brought in by non-local visitors was 396 jobs, \$9 million in labor income, and \$14 million in value added.

The direct effects of local spending at Bull Shoals Lake included about 460 jobs, \$9 million in labor income and \$13 million in value added. These were primarily in eating and drinking establishments (178 jobs), lodging (155 jobs), and retail sales (92 jobs) (Table 39). The retail sales multiplier of 1.38 indicated that another \$0.38 in retail sales is generated for every \$1 in local visitor sales. This produced an additional 113 jobs, \$4 million in labor income, and \$7 million in value added.

Table 39. Local economic significance and impacts of Bull Shoals visitor spending.

Sector Spending category	Sales \$000's	Jobs	Labor Income \$000's	Value Added \$000's
Local Economic Significance¹				
Lodging	8,359	155	3,246	5,375
Restaurants and bars	7,213	178	2,904	3,275
Entertainment & recreation	631	5	239	401
Boat/auto services	3,556	23	729	1,679
Gas stations	2,007	36	759	987
Grocery stores	1,690	37	674	901
Other retail	793	19	277	380
Wholesale	696	8	355	391
Manufacturing	357	0	0	0
Total direct effects	25,302	460	9,183	13,389
Secondary effects	9,628	113	3,943	7,136
Total effects	34,931	573	13,126	20,525
Local Economic Impacts²				
Lodging	7,111	134	2,826	4,661
Restaurants and bars	4,659	115	1,876	2,116
Entertainment & recreation	394	3	149	250
Boat/auto services	2,076	13	426	980
Gas stations	1,200	21	454	590
Grocery stores	838	18	334	447
Other retail	400	9	139	192
Wholesale	375	5	139	242
Manufacturing	177	0	0	0
Total direct effects	17,229	319	6,343	9,478
Secondary effects	6,498	76	2,733	4,783
Total effects	23,727	396	9,076	14,261
¹ Includes spending of local visitors.				
² Excludes spending of local visitors.				

Combining spending data for the three lakes produced \$391 million in total visitor spending, of which 79 percent occurred within 30 miles of one of the lakes. The direct economic significance of local spending on the combined economies of Arkansas and Missouri was estimated to be 3,850 jobs, \$80 million in labor income, and \$117 million in value added (Table 36). These occurred primarily in eating and drinking establishments (1,770), lodging (1,379 jobs), retail sales (587 jobs), and entertainment and recreation (488 jobs) (Table 40). A retail sales multiplier of 1.59 for the two-state region indicated that \$0.59 in additional sales was generated within the two states for every \$1 spent by visitors. Total effects, including secondary effects, were 6,641 jobs, \$158 million in labor income, and \$292 million in value added.

Table 40. Economic impacts of visitor spending on two-state region.

Sector Spending category	Sales \$000's	Jobs	Labor Income \$000's	Value Added \$000's
Lodging	83,913	1,379	33,591	55,547
Restaurants and Bars	72,028	1,770	29,096	32,815
Entertainment & recreation	38,505	488	14,341	24,037
Boat/auto services	40,896	288	8,040	18,466
Gas stations	11,088	189	4,312	5,603
Grocery stores	12,636	250	5,264	7,029
Other retail	6,639	148	2,410	3,315
Wholesale	10,324	73	3,940	6,896
Manufacturing	26,721	90	3,040	4,583
Total direct effects	302,751	4,675	104,034	158,291
Secondary effects	178,582	1,966	79,413	133,367
Total effects	481,334	6,641	183,447	291,658

5 Discussion

Comparison of lakes

A total of 4.2 million park visits occurred during the 1-year period of study, including 2.1 million at Table Rock (1.6 million excluding the Port of Lights holiday tour), 1.2 million at Norfolk Lake, and 0.9 million at Bull Shoals Lake. Spending associated with 3.7 million of these visits produced a local economic significance totaling 4,950 jobs, \$116 million in labor income, and \$186 million in value added. About 83 percent of these amounts represent economic impacts arising from local spending by visitors who do not live in the area. Measured in terms of jobs, the local economic impacts were 92 percent of the local economic significance associated with visitor spending at Table Rock Lake, 71 percent at Norfolk Lake, and 69 percent at Bull Shoals Lake. These impacts indicate that the recreation economies of all the lakes are heavily dependent on non-local visitors.

While all three of the lakes occurred in a primarily rural setting and offered many of the same types of recreation facilities and amenities, differences in their proximity to major highways, towns and small cities, and tourist attractions likely influenced the numbers and types of visitors each lake received. Of the three lakes, Norfolk Lake was the most rural. Bull Shoals Lake, though less than 10 miles from Norfolk Lake at their closest point, had a greater number of towns and recreation amenities located near the lake. Table Rock had a still greater level of development near its shores, plus the tourist destination city of Branson, MO and a multi-lane U.S. highway capable of bringing large numbers of potential lake visitors within 2-5 miles of the lakeshore.

Park visitors were most similar at Norfolk and Bull Shoals Lakes. At these lakes, recreation trips comprised about two-thirds of local visits (≤ 30 miles) and one-third of non-local (> 30 miles) visits. For most visits, the lake was the primary trip destination and recreation at the lake the primary purpose of the trip. Sightseeing and wildlife viewing (42-43 percent), boating (23-25 percent), swimming (21-25 percent), and fishing (18-22 percent) were the most popular activities of visitors to these lakes, with wildlife viewing and sightseeing (39-42 percent), fishing (16 percent), or boating

(12 percent) considered the primary activity by more than two-thirds of visitors. Visitors comprised a mix of youngsters, adults, and seniors, with seniors being more prevalent during the non-peak (Oct-March) recreation season at these lakes.

The greater availability of small towns and visitor amenities near Bull Shoals Lake was reflected in the higher per-visitor spending at Bull Shoals Lake than at Norfolk Lake. Much of this was due to greater spending by Bull Shoals visitors for hotel lodging and attractions. The greater hotel spending is explained by two statistics. One is the greater percentage of overnight trips taken to Bull Shoals Lake (27%) than Norfolk Lake (19%). The other is the greater percentage of overnight trips involving a stay somewhere other than at a recreation area on the lake, about two-thirds of overnight trips to Bull Shoals Lake and about half of overnight trips to Norfolk Lake.

Visitor composition was quite different at Table Rock Lake, where 38 percent of recreation trips to the lake were made by local (≤ 30 miles) visitors and 62 percent were made by non-local (> 30 miles) visitors, the reverse of what was observed at Bull Shoals and Norfolk Lakes. The non-local visitors to Table Rock Lake also consisted of many more visits by people passing through the area or on trips for which the lake was not their primary destination.

The proximity of Table Rock Lake to the interstate highway system and the entertainment and resort destination of Branson, Missouri no doubt contributed to the higher percentage of non-local visitors as well as the larger number of visitors engaged in trips for which the primary destination was not the lake. This is apparent in visitor spending, which was highest in the categories of hotel lodging (22%), eating and drinking establishments (20%), and attractions (15%). It appears that many Table Rock Lake visitors purchased services and entertainment available near Branson, and conversely, some visitors to Branson included side visits to Table Rock Lake during their trip.

Fewer than 17% of visitors were very familiar with Corps of Engineer lakes in the region, apart from the one where they were surveyed. Most visitors, including those who were frequent lake visitors, appeared to use only one lake. For one third to one half of visitors, their choice was determined by proximity of the lake to their home. Another 18% of visitors at Bull Shoals

Lake and 6% at Table Rock and Norfolk Lakes indicated they came to the lake because it was less crowded than others available to them. While the survey did not specifically address crowding at the lakes, narrative responses from Table Rock Lake visitors to other survey questions indicated a trend toward increased crowding on that lake and noted its negative impact on recreation there. These responses suggest that those Table Rock visitors who were most affected by crowding may have been attracted to what they perceived to be the less crowded conditions at nearby Bull Shoals Lake.

Visitor feedback for managers

Determining where to place scarce management resources is a challenge facing all of the agencies managing recreation and associated parks and natural resources in the upper White River Basin. The survey examined which park and lake attributes were most important to park visitors and their level of satisfaction. Responses indicated that the natural environment, particularly water quality and the natural beauty of the area, were most important to visitors, and on average, visitors were satisfied with them. The results were similar for all of the lakes.

While visitors gave high satisfaction ratings to water quality and natural beauty of the area, in response to another question they also noted trends in these resources that suggest emerging concerns. Deteriorating water quality was the most often described concern noted by Table Rock and Bull Shoals visitors. Also, Table Rock visitors noted the increasing development visible around that lake and its negative effect on their recreation experience. While the development is taking place on private property, often well beyond the lakeshore, it appears to be adversely affecting the recreation experience of visitors able to observe this development from the lake or lakeshore parks.

Importance and satisfaction were congruent for most lake and park attributes, suggesting that the relative amount of effort being directly or indirectly placed on managing the measured lake and park features is generally appropriate. But, if there were any single feature that might benefit from additional management effort, the importance-satisfaction results suggest it would probably be facility cleanliness and maintenance. Nowhere was this more evident than in the unsolicited comments to open-ended questions in which visitors noted and expressed appreciation for the new facilities that have been constructed at some of the parks in recent

years to replace older, existing infrastructure. Overall, the ranking of attributes by importance and satisfaction was surprisingly similar and congruent for different user groups, with one major exception. Fishers not surprisingly rated quality of fishing as one of their two most important lake attributes (behind water quality), but were less satisfied with the quality of fishing than most other lake and park attributes. This seems to be a common result of importance-satisfaction surveys of fishers, many of whom appear to base their satisfaction with fishing on the number of consumable fish they catch (Finn and Loomis 2001, Arlinghaus 2006). So these results probably say more about the high expectations of fishers, than about the condition of fishery of these lakes.

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Appendix A. Recreation Survey

Mail survey used in the study. The example shown is formatted for use at Table Rock Lake.

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Onsite Matching#: _____

Survey of Recreation Visitors to *Table Rock Lake*

This survey is being conducted for the Arkansas Game and Fish Commission, Missouri Department of Conservation, and U.S. Army Corps of Engineers. The time you spend on this survey will help us more effectively manage our valuable lake resources.

The questions in this survey ask about the trip to Table Rock Lake that you just completed. Your participation is voluntary. Please complete this survey at the end of your recreation trip. Then return it in the attached postage-paid envelope.

Part I: TELL US WHY YOU CAME HERE AND WHAT YOU DID

1. Which of the following best describes the purpose of your trip away from home? (*Check one*)

- Primarily for recreation at one or more sites at Table Rock Lake
- Primarily for recreation, but Table Rock Lake wasn't the primary destination
- Staying at a seasonal home in the area
- Passing through the area on a longer trip and stopped for a visit at Table Rock Lake.
- In the area visiting relatives, on a business trip, or for other reasons
- Other _____

2. Why did you choose to come to Table Rock Lake rather than another lake? (*Check one*).

- Closer than other lakes to my home
- More scenic than other lakes
- Less congested than other lakes
- Better quality natural resources
- Better quality recreation facilities
- Am more familiar with this lake
- Came here with someone else
- Other _____

3. Including this trip, how many recreation trips have you personally made to Table Rock Lake within the past 12 months? _____ (*Enter number*)

4. How long have you been coming to Table Rock Lake? (*Check one*)

- This is my first trip
- Less than 1 year
- The past 1 to 5 years
- The past 6 to 10 years
- More than 10 years

5. Have you used any other recreation areas on Table Rock Lake in the last 12 months in addition to the one at which you were interviewed? (*Check one*)

- Yes
- No
- Not sure

6. How familiar are you with each of the following lakes (*Check one box for each lake*) and how many visits have you personally made to each one in the past twelve months (*Enter number*)?

Lake	Very Familiar	Somewhat Familiar	Not Familiar	Number of visits last 12 months
Beaver Lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Bull Shoals Lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Harry S. Truman Lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Lake of the Ozarks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Norfolk Lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
Pomme de Terre Lake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

7. What recreation activities did you and the other people in your vehicle participate in during this trip to Table Rock Lake? (*Check all that apply*)

- | | | |
|---|--|---|
| <input type="checkbox"/> Boating from a marina slip | <input type="checkbox"/> Scuba diving | <input type="checkbox"/> Camping in RV or trailer |
| <input type="checkbox"/> Boating from a launch ramp | <input type="checkbox"/> Swimming | <input type="checkbox"/> Camping in tent |
| <input type="checkbox"/> Commercial water cruise ride | <input type="checkbox"/> Sunbathing | <input type="checkbox"/> Pleasure driving through recreation area |
| <input type="checkbox"/> Kayaking or canoeing | <input type="checkbox"/> Picnicking | <input type="checkbox"/> Playing on playground equipment |
| <input type="checkbox"/> Sail boarding or windsurfing | <input type="checkbox"/> Running or jogging | <input type="checkbox"/> Wildlife or nature observation |
| <input type="checkbox"/> Jet skiing (personal watercraft) | <input type="checkbox"/> Walking for fitness or pleasure | <input type="checkbox"/> Photography |
| <input type="checkbox"/> Fishing from a boat | <input type="checkbox"/> Trail hiking | <input type="checkbox"/> Sightseeing |
| <input type="checkbox"/> Fishing from shore / dock / pier | <input type="checkbox"/> Horseback riding | |
| <input type="checkbox"/> Hunting or trapping | <input type="checkbox"/> Bicycling | |
| <input type="checkbox"/> Other (please specify): _____ | | |
| <input type="checkbox"/> Other (please specify): _____ | | |

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Part II: FOR ANGLERS ONLY

If you or anyone in your vehicle fished during this trip to Table Rock Lake, then please answer the following questions. **SKIP TO PART III IF NO ONE IN YOUR VEHICLE FISHED DURING THIS TRIP.**

1. How many people in your vehicle fished during this visit to Table Rock Lake? ____ (Enter number)

2. How many of these people were 15 years old or younger? ____ (Enter number)

3. How many hours did you personally spend fishing during this trip to Table Rock Lake? ____ (Enter number of hours)

4. If you fished, how many fish did you catch during this trip? ____ (Enter total number of kept fish plus total number caught and released)

4a. How many fish did you keep? ____ (Enter number)

5. For what species did you and the other people in your vehicle fish? (Check all that apply)

- Any or all species
- Catfish
- Largemouth bass
- Spotted bass
- Trout
- Walleye
- Other _____ (write in)
- Bream / sunfish
- Crappie
- Smallmouth bass
- Striped / hybrid striped bass
- White bass

6. What methods did the people in your vehicle use to fish? (Check all that apply)

- Bow fishing
- Jug line
- Spear fishing
- Giggling
- Rod and reel
- Trout line / set line

Part III: TELL US WHAT IS IMPORTANT TO YOU ABOUT Table Rock LAKE

1. How important were each of the following lake and/or site attributes for this recreation trip? (Check one box for each attribute)

Attribute	Very Important	Important	Somewhat Important	Not Important	Does Not Apply
Close to home	<input type="checkbox"/>				
Lakeside setting	<input type="checkbox"/>				
Suitable facilities for my activities	<input type="checkbox"/>				
Safety and security	<input type="checkbox"/>				
Natural beauty of the area	<input type="checkbox"/>				
Water quality	<input type="checkbox"/>				
Fishing quality	<input type="checkbox"/>				
Cleanliness & maintenance of facilities	<input type="checkbox"/>				
Friendliness & courtesy of park staff	<input type="checkbox"/>				
Water level of lake	<input type="checkbox"/>				
Lack of crowding	<input type="checkbox"/>				
Reasonable user fees	<input type="checkbox"/>				
Restaurants, shopping, or other attractions nearby or on the way	<input type="checkbox"/>				

2. How important were each of the following reasons for this visit to Table Rock Lake? (Check one box for each reason)

Reason for this Trip	Very Important	Important	Somewhat Important	Not Important	Does Not Apply
Time with friends or family	<input type="checkbox"/>				
Getting exercise	<input type="checkbox"/>				
Rest and relaxation	<input type="checkbox"/>				
Opportunity to get outdoors	<input type="checkbox"/>				
Practice or learn outdoor skills	<input type="checkbox"/>				
Use recreation equipment	<input type="checkbox"/>				
Engage in a favorite outdoor activity	<input type="checkbox"/>				
Excitement/adventure	<input type="checkbox"/>				

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Part IV: TELL US HOW MUCH YOUR TRAVEL PARTY SPENT DURING THIS TRIP

- This information will help us determine the value of recreation to the local/regional economy and predict changes in recreation patterns as the price of gas, food, and other travel costs change.
- Please enter the amounts you and the other people in your vehicle spent during this trip to Table Rock Lake. The amounts in COLUMN A and B should add up to the total amount of money your party spent for that item.

Example

Let's say the people in your party (in the same vehicle) spent \$52 at hotels within 30 miles of the lake and spent zero on lodging anywhere else. You would enter \$52 in COLUMN A and "0" in COLUMN B for this item. In addition, if your group spent \$60 at restaurants during the trip, of which \$22 was spent within 30 miles of the lake, you would enter \$22 in COLUMN A and \$38 in COLUMN B for this item.

	<u>within 30 miles</u> (Column A)	<u>beyond 30 miles</u> (Column B)
1. Hotels, motels, cabins, B&B, rental homes	\$ <u>52</u>	\$ <u>0</u>
2. Restaurants, bars, and other eating and drinking places	\$ <u>22</u>	\$ <u>38</u>

Please enter 0 if you spent nothing: DON'T LEAVE BLANKS!

START HERE (record spending for all people in your vehicle on this recent trip)

	<u>Spending within</u> <u>30 miles of the lake</u> (Column A)	<u>Spending beyond</u> <u>30 miles</u> (Column B)
LODGING		
1. Hotels, motels, cabins, B&B, rental homes	\$ _____	\$ _____
2. Campground fees (including hookups)	\$ _____	\$ _____
FOOD AND BEVERAGES		
1. Restaurants, bars, and other eating and drinking places	\$ _____	\$ _____
2. Groceries and take-out food, including alcohol and tobacco	\$ _____	\$ _____
TRANSPORTATION		
1. Gas and oil for auto, boat, RV, etc.	\$ _____	\$ _____
2. Other auto expenses (rentals, repairs, parking, tolls, etc.)	\$ _____	\$ _____
3. Other boat expenses (rentals, repairs, launching fees, etc. <i>(excluding equipment.)</i>)	\$ _____	\$ _____
RECREATION		
1. Attractions, entertainment, and recreation fees <i>(do not report user fees if you are an annual pass holder)</i>	\$ _____	\$ _____
2. Sporting goods <i>(excluding major purchases such as boats and RV's and sporting goods bought at home/prior to the trip)</i>	\$ _____	\$ _____
OTHER EXPENSES (clothing, souvenirs, maps, books, etc.)	\$ _____	\$ _____

After recording your expenses, please answer these questions.

1. Including yourself, how many people do these expenses cover? _____ (Enter number of people)
2. In total, how many *nights* did you spend away from home on this trip? _____ (Enter total number of nights)
3. How many *nights* did you spend within 30 miles of the lake? _____ (Enter applicable number of nights)
4. Did you use an annual pass during this trip? (Check one) Yes No Not Sure
 - 4a. If so, how much did you pay for this pass? _____ (Enter dollar amount)

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Part V: TELL US ABOUT YOUR EXPERIENCE ON THIS VISIT TO *Table Rock LAKE*

1. Please rate your experience during this visit to Table Rock Lake in regard to each the following attributes. If an attribute does not apply or you had no experience with it on this trip, check the 'Does Not Apply" box.

Attribute	Excellent	Very Good	Good	Fair	Poor	Does Not Apply
Suitable facilities for my activities	<input type="checkbox"/>					
Safety and security	<input type="checkbox"/>					
Natural beauty of the lake	<input type="checkbox"/>					
Water quality	<input type="checkbox"/>					
Fishing quality	<input type="checkbox"/>					
Cleanliness & maintenance of facilities	<input type="checkbox"/>					
Friendliness & courtesy of park staff	<input type="checkbox"/>					
Weather conditions	<input type="checkbox"/>					
Water level of lake	<input type="checkbox"/>					
Encounters with other lake visitors	<input type="checkbox"/>					
Lack of crowding	<input type="checkbox"/>					
Reasonable user fees	<input type="checkbox"/>					
Overall satisfaction with your visit	<input type="checkbox"/>					

2. Please tell us about anything you particularly liked or disliked about your visit. _____

Part VI: TELL US ABOUT YOURSELF

Answers to the following questions will help us to better understand the visitors we serve. Your responses are completely anonymous. But if you prefer not to answer any question, just leave it blank.

1. Are you (*Check one*):
 - Male Female
 - Hispanic
 - Non-Hispanic

2. How old are you? (*Check one*):
 - under 18
 - 18- 24
 - 25- 44
 - 45 -54
 - 55 - 64
 - 65+

3. Which best describes your race? (*Check one*)
 - American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian and Other Pacific Islander
 - White
 - Some other race
 - Two or more races

4. Do you consider yourself to be (*Check one*):

5. What was your household income in 2003? (*Check one*)
 - Less than \$25,000
 - \$25,000 – \$49,999
 - \$50,000 – \$74,999
 - \$75,000 - \$99,999
 - \$100,000 or more

6. Including yourself, how many people in your household are: (*Enter number of people in each age group*)
 - ___ Under 18 years old
 - ___ Between 18 and 34 years old
 - ___ Between 35 and 54 years old
 - ___ Between 55 and 64 years old
 - ___ 65 years or older

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Part VII: FOR THOSE WHO HAVE VISITED *Table Rock LAKE* BEFORE

1. Since your first visit to Table Rock Lake, have you noticed any changes in conditions on the lake or at the recreation areas you visit? (*Check one*)

- Yes No Not Sure

2. If so, describe up to three of the most important changes and indicate how each has affected the quality of your recent recreation experiences at Table Rock Lake (*Describe each change and then check one box at right*)

a. _____ Positive Effect Negative Effect Not Sure or No Effect

b. _____ Positive Effect Negative Effect Not Sure or No Effect

c. _____ Positive Effect Negative Effect Not Sure or No Effect

3. Can you suggest ways that the Corps of Engineers could help to improve the quality of future recreation trips to Table Rock Lake? (*Describe briefly*)

a. _____

b. _____

c. _____

Please enclose the completed survey into the pre-addressed/postage paid envelope and drop it into a mailbox. Thank you!

If you would like more information about this survey or about outdoor recreation opportunities in Arkansas and Missouri, visit our website at www.OzarkLakes.info.

REPORT DOCUMENTATION PAGE

Form Approved
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				5b. GRANT NUMBER	
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6. AUTHOR(S) Richard Kasul, Daniel Stynes, Lichu Lee, Wen-Huei Chang, R. Scott Jackson, Christine Wibowo, Sam Franco, and Kathleen Perales				5d. PROJECT NUMBER	
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14. ABSTRACT Planning for future needs of recreation visitors presents many challenges at federal lakes that have a mix of public (federal, state, and local) and private recreation providers, and where ongoing regional growth and other trends are influencing visitor number and activities. Under these circumstances, a periodic assessment of lake recreation is often used to document current recreational patterns and identify ongoing and emerging trends that could or should influence recreation planning and investment decisions. This study provides a broadly scoped examination of park-based recreation at Bull Shoals, Norfolk, and Table Rock Lakes, so that present and emerging recreation needs can be included in the broader planning efforts for the upper White River watershed of Arkansas and Missouri. This study was based on survey data collected from recreation visitors and other current data collected by lake managers as part of their visitor monitoring programs. This report provides estimates of annual visitor use levels, profiles of visitor spending, and the economic impact of visitor spending on the region surrounding the lakes. The report also examines visitor recreation patterns, visitor perceptions of lake and park attributes that affect the recreational experience, and visitor-perceived trends on the lakes and in the parks, and the impact of these trends on the park visitors who recreate on these lakes.					
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