

# **IMPACT OF RECREATION USE AT TWO NEW LAKES IN OKLAHOMA: KAW AND HUGO\***

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**Outdoor recreation in Oklahoma is closely related to water. Even people who don't like swimming or boating like lakeside scenery for camping or picnicking. After Kaw and Hugo lakes were constructed in Oklahoma, the recreational visits to these lakes increased very rapidly in the first full year of operation. Yet those visitations, i.e., the recreational use at these two new lakes, does not appear to have adversely affected recreational use at nearby lakes, such as Keystone and Pine Creek.**

**Participation in such recreation activities has created a new "water-oriented" image of Oklahoma, in sharp contrast to that of the early-1900's frontier days or the image of the dust bowl era of the 1930's. Another impact of participation in recreation is economic—the incomes and jobs generated by the expenditures of people who engage in these activities. Recreation and tourism are associated with the expenditures on everything from fishing bait to hotel rooms, which result in increased tax revenues, employment, and income.**

## **INTRODUCTION**

Kaw Lake and Hugo Lake were constructed by the U.S. Army Corps of Engineers as part of the flood control programs on major rivers in Oklahoma. Kaw Lake, completed in 1976, is located on the Arkansas River, in Osage and Kay counties, east of Ponca City in North Central Oklahoma. Being an integral part of the McClellan-Kerr Arkansas River Navigation System, it has multiple purposes of navigation, flood control, municipal and industrial water supply, and recreation. Hugo Lake, completed in 1974, is on the Kiamichi River, a tributary of the Red River in Choctaw and Pushmataha Counties, just east of Hugo in Southeastern Oklahoma. Its multiple purposes include flood control, municipal and industrial water supply, and recreation.

The Corps of Engineers has constructed recreational facilities at these two new lakes, including boat launching ramps, picnic shelters, restrooms, bath change houses, swimming beaches, and paved camping sites complete with water and electric hook-ups. No state or local government recreational facilities or parks exist at these two new lakes, such as are available at Keystone, Tenkiller, and other Corps of Engineers lakes in Oklahoma.

Policy makers and recreational planners may wonder if the newly developed facilities compete with nearby "older" lakes and facilities for recreationists. Thus, a key issue is just who are the recreationists that use these new facilities. Are they "new" recreationists or "old" recreationists? In other words, had they been using recreational facilities at other lakes, or are they "first-time" boaters, campers, etc.? One purpose of this report is to provide a visualization of recreationists who visited the new facilities at Kaw and Hugo Lakes in 1977.

## **METHODS**

Data for this study were collected at Kaw Lake and Hugo Lake by on-site personal interviews, taken from May 27 to September 5, 1977. Since each party represented almost 5 people, about 285 individual preferences were determined in the study. A statistical design was used to weight the responses on the basis of total visits to that location. Analysis of the data was facilitated by use of the Statistical Analysis System (SAS) computer program developed at North Carolina State University (1).

Six full-time interviewers obtained the basic data. They were thoroughly briefed and trained on how to ask questions, how to record responses, and how to probe for answers in a respectful manner. Introductory remarks concerning the nature of the study and the confidentiality of the data were memorized by the interviewers. Less than 3 percent of the leisure-time travelers refused to complete an interview.

\*Professional Paper P-610 of the Oklahoma Agricultural Experiment Station.

This interview lasted from 15 minutes to 45 minutes depending on the activities of the respondent. Since two-thirds to three-fourths of the visits occur on weekends (Friday noon through Sunday afternoon), the interviewers attempted to obtain about 75 percent of the interviews at the two lakes during weekends. Since it was nearly impossible to find a reasonable productive sample of recreationists on Mondays and Tuesdays, interviews mostly were taken from Wednesday through Sunday. To obtain a random sample of recreationists, interviewers approached every fourth group they found engaging in an outdoor recreational activity.

Interviews were conducted at three different time periods at both lakes to minimize biases in data due to weather (rain, temperature) or special events (festivals, major holidays, etc.). This procedure also helped detect shifts in intensity of use (number of days per trip, number of individuals per party) during the summer.

## RESULTS

Recreationists' socio-economic characteristics have an influence on their recreational participation habits. Many such characteristics are interdependent; *e.g.*, individuals with higher levels of education are more likely to be professionals or administrators, to earn high incomes, and to have incomes increasing with age. It is a combination of such characteristics that determines the recreationists' decisions about outdoor recreation.

We found regional differences among recreationists using the two lakes. The annual average income of the recreationists at Kaw was \$16,485 and \$13,938 at Hugo, a difference based on job opportunities in each area. Fifty-six percent of the respondents (usually head of household) interviewed were under the age of 30. The highest-participation age group was the group of persons in their 20's. This reflects the post-World War II baby boom era. A large number of persons in the 6-10-year-old range reflects the need we also will have for additional recreational facilities in a few years for the children of these persons. This indicates an upward trend in recreation demand, which will put a strain on current facilities.

Oklahomans made up 68 percent of all visitors at Kaw Lake; 22 percent were from Kansas. At Hugo Lake, 79 percent were from Oklahoma and 21 percent were from Texas. Residents of Kay County made up 74 percent of the Oklahomans interviewed at Kaw Lake. At Hugo Lake, 53 percent came from Choctaw County. At Kaw Lake 92 percent of all Oklahomans came from counties adjacent to Kay County. At Hugo Lake 85% came from counties adjacent to Choctaw County. Corps of Engineers planners had projected that Kaw Lake would serve a 5-state area and a 10-Oklahoma-county area (2). This is not yet holding true.

At Kaw Lake, the typical recreation group of 5.3 persons spent \$113.95 for a 3.6-day trip. At Hugo Lake, the typical group of 4.4 persons spent \$82.90 for a three-day trip. This represents an average expenditure per person of \$5.97 per day at Kaw and \$6.28 per day at Hugo. Trip expenditures refer to expenses incurred during one particular outing for lodging, food and drink, transportation, and recreation-related activities. Food and drink accounted for 64 percent of the trip expenditures. Boat gasoline and oil are an important part of on-site recreation expenditures. Gasoline is the main cause of transportation expenditures to and from the recreational area. Live bait produces important area expenditure around the lake.

On the basis of previous recreation studies in Oklahoma, annual expenditures (for insurance, taxes, licenses, etc.) were about \$4 per visitor day (3). Thus, total expenditures per day for recreation participation at Kaw Lake was \$9.97 per day in 1977, and \$10.28 at Hugo Lake.

Camping expenditures make up the largest share of annual expenditures. Fishing expenditures are the second largest component of annual expenditures. Recreationists usually have large investments in equipment.

About 70 percent of all visits to a recreation area occur on weekends, from Friday through Sunday afternoon. Some 94 percent of all groups had a vehicle shelter or tent with them at Kaw Lake while 85 percent had a camp "shelter" at Hugo. As people have more time and money for recreation, these equipment investments will increase. The majority will occur at either

the home area or the destination area of the recreationist.

When asked what their major activity at the recreation area was, 81 percent responded "camping". Other activities mentioned by recreationists are "getting away from it all" and "relaxing". Picnicking, fishing, motor boating, and swimming also were popular activities.

There are several important reasons for selecting a particular lake or area for a recreation trip. Nearness to home is most important to recreationists, followed by having visited the area before and attractiveness of the area. The availability of facilities at a site is least significant. Many first learned of the facilities because they were local residents. Word-of-mouth tends to be the chief advertising agent for Kaw Lake. At Kaw 92 percent learned of the park in this manner, and 88 percent at Hugo. Mass media was the only other method used to learn of the facility.

Data on recreational visitations for Kaw and Hugo Lakes and other near-by lakes were obtained from the Tulsa District of the U.S. Army Corps of Engineers (Table 1). There are other large lakes (500 surface acres or more) within a 100-mile radius of the dam site of Kaw or Hugo. In the case of Kaw Lake, Keystone, Oologah, Hulah, Elk City, and Great Salt Plains fit this category; for Hugo Lake, Texoma, Broken Bow, and Pine Creek.

Since Kaw Lake was opened to recreational use in 1976, recreational visits at both Kaw and Keystone Lakes have increased. Visits at Oologah, the second closest lake, also increased. A combination of circumstances, such as very hot weather, low lake levels, and older facilities, may partially explain why visits declined at Hulah, Elk City, and Great Salt Plains in at least one of the years 1976, 1977, or 1978.

Hugo Lake was opened for recreational use in 1975. Its closest large lake competitor is Pine Creek, which is located in a more rural, sparsely populated area than is Hugo Lake. The facilities at Pine Creek are older and more rustic than at Hugo or Broken Bow. Road access to Pine Creek's recreational facilities is more limited. As indicated in Table 1, visitations at Pine Creek began to decline even before Hugo Lake was opened to recreational use.

From analysis of the reported attendance data, we conclude that the provision of recreational facilities at the two "new" Corps of Engineers lakes has not had a long-term negative effect on recreational use of older near-by lakes.

Although Kaw Lake did not appear to affect use at Keystone or Oologah Lakes, it may have had some effect on nearby Kansas and Oklahoma lakes which were smaller and had a low level of recreational use initially. Elk City and Hulah appear to be hurting from the competition of Kaw Lake; however the decline at these lakes in 1977 may be attributed to the heavy spring rains, which greatly increased the water level. These impacts are not evident from the data. The Great Salt Plains Lake was experiencing visitor declines before Kaw Lake was completed.

Hugo Lake appears to have little effect on Texoma Lake, 65 miles away. Pine Creek, 20 miles from Hugo, and Broken Bow, 50 miles away, experienced sporadic usage after Hugo was opened for recreation. Broken Bow Lake has shown net increase since the early 1970's.

TABLE 1. *Annual visitor days (thousands) at selected Corps of Engineer Lakes in Oklahoma and Kansas, 1972-1978.*

Lake	1972	1973	1974	1975	1976	1977	1978
Kaw	—	—	—	—	158.6	1,337.8	1,796.0
Keystone	2,893.2	3,138.4	3,674.2	3,021.7	4,050.7	4,235.7	4,179.5
Oologah	1,103.2	1,325.7	1,218.9	1,421.9	1,781.2	1,841.5	1,800.0
Hulah	557.8	504.6	572.2	684.3	1,124.6	911.2	677.9
Elk City	567.2	426.3	504.3	552.2	685.7	489.7	508.0
Great Salt Plains	944.4	961.6	792.8	1,136.2	914.6	799.1	930.4
Hugo	—	—	—	91.8	638.1	832.1	1,020.0
Texoma	10,293.1	10,432.9	10,693.3	10,906.6	11,046.1	11,322.4	11,615.8
Broken Bow	992.2	1,166.9	1,037.3	1,245.1	1,107.0	936.6	1,169.0
Pine Creek	518.0	536.8	492.9	456.1	431.4	527.7	472.0

Source: Tulsa District, U.S. Army Corps of Engineers, Tulsa, Oklahoma 73106.

At Kaw Lake, 83 percent of the visitors were from Kay and Osage counties. Therefore it is difficult to assume that all the decrease in use of the other lakes is attributable to Kaw's development. Kaw Lake's service radius makes this even more apparent.

At Hugo Lake, 53 percent of the persons interviewed were from Choctaw County. If this lake had little or no effect on Pine Creek, then it is unlikely that the opening of Hugo Lake adversely affected patronage of Broken Bow Lake, which is farther away.

As already noted, the estimated expenditure per day for participation in outdoor recreation in 1977 at Kaw lake was \$9.97 and \$10.28 at Hugo. Multiplication of the estimated 1,338,000 visitor days of use at Kaw Lake by \$9.97 per day produces a total direct expenditure impact of \$13,340,000 in 1977. Similar multiplication of 832,000 visitor days at Hugo Lake by \$10.28 provides a direct expenditure input of \$10,991,000. Thence the impact of these two lakes for 1977 was \$24,331,000.

### DISCUSSION

Recreational use of Kaw Lake doesn't appear to have decreased Keystone Lake and Oologah Lake attendance. The average distance traveled to Kaw Lake from Kansas and Oklahoma was 46 miles. Keystone is 70 miles from Kaw; Oologah is 90 miles from Kaw. Attendance at these older lakes has continued to increase since 1975. Similarly the opening of recreational facilities at Hugo Lake does not appear to have adversely affected attendance at Lake Texoma. The average distance traveled to Hugo Lake was 51 miles. Visits to Hugo Lake may be decreasing attendance at Broken Bow Lake 50 miles away. Although attendance at Broken Bow Lake has not decreased as fast as that at Hugo Lake has risen, the latter may be having some adverse effect. Other factors such as lake level, poor fishing, or poor management may be factors contributing to the declines in attendance at Broken Bow Lake. The fact that Hugo Lake's attendance is rising faster may also reflect more frequent visits from persons who no longer travel as far, as well as use by individuals and family groups from Choctaw County who did not participate in lake-oriented recreation activities until Hugo Lake was developed. Hugo Lake also has a reputation for good fishing.

From our findings, it is evident that a majority of the people using Kaw and Hugo Lakes are from nearby areas around these lakes. These recreationists gave "nearness to home" as their major reason for visiting Kaw and Hugo Lakes. This may be attributable to the "service-radius" of a lake. We view this trend as not having any adverse impact on use at other recreational sites to any major extent. Instead, the use at new lakes represents a net increase in total outdoor recreational use at all lakes in the state.

It is apparent from the expenditure data that these new lakes are helping increase the expenditure impacts within the entire regional area. At least one half of these expenditures (bait, wholesale and retail mark-up on food and drink, personal services) are kept in the region, helping the area's own economy.

### REFERENCES

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3. D. D. BADGER, D. F. SCHREINER, and R. W. PRESLEY, *Analysis of Expenditures for Outdoor Recreation at the McClellan-Kerr Arkansas River Navigation System*, IWR Contract Report 77-4, December, 1977, p. 68.