Water Currents

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Dear Reader:

Outdoor recreation plays a prominent role in the lives of millions of Texans. Throughout the past two decades, visitation at public recreation facilities has steadily increased. During the decade from 1970 to 1980, for instance, when the state's population increased 27 percent, visitation at the 21 Texas reservoirs operated by the U.S. Army Corps of Engineers increased by 47 percent.

This increased demand at a time of increasingly severe budgetary constraints has created a particularly acute need for recreation research. We must be sure that expenditures of scarce fiscal dollars occur in a manner which maximizes the recreation return to the public.

In a recent workshop hosted by the Texas Parks and Wildlife Department, recreation professionals from all over the state and representing all levels of government emphasized repeatedly the need for both a broader and more detailed information base generated by research. They need the information in order to make appropriate decisions in all aspects of their recreation programs - planning, design, construction, maintenance, and operations.

In particular, changing patterns of recreation participation have created a need for new methodologies to project demands and identify facility needs. Other emerging issues demanding attention are how to develop new methods of financing recreation projects and what types and amounts of user fees the public is willing to support.

Applied recreation research, then, can and should be utilized to develop innovative planning and management techniques which will conserve and protect limited resources and maximize visitors' utility. In this way, we can all strive to better meet the outdoor recreation needs of present and future generations of Texans.

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Rights & Responsibilities

Very few bodies of water in the state of Texas exist strictly for recreation. Yet standing water - no matter what its purpose - attracts Texans who like to fish, to swim, and to boat. And fishing, swimming, and boating just happen to be the three most popular forms of rural outdoor recreation in the state.

Construction of a dam to hold flood water or to store water often forces a public agency or private land owner into recreation management. Others owning land adjacent to an attractive body of water or along a popular recreation stream also find themselves involved in recreation management.

Most water-based recreation areas in the state, in fact, belong to agencies not primarily in the business of recreation.

The state agency responsible for recreation planning, the Texas Parks and Wildlife Department (TPWD), predicts that fishing, swimming, and boating will remain the most popular rural outdoor recreation activities in the state, at least through the year 2000. According to TPWD predictions, demand for these three water-based activities will increase by 218 million annual activity days. One activity day equals the participation of one person in an activity for all or part of a day.

In 1980, Texans and out-of-state visitors spent all or part of 47 million days boating, 79 million days fishing, and 145 million days swimming. By the year 2000, according to the TPWD, Texans and out-of-state visitors will spend all or part of 88 million days boating, 128 million days of fishing, and 273 million days swimming.

The TPWD predicts increased demand for recreation related to bodies of water as the state population mushrooms, as leisure time increases, and as recreation associated with reservoirs and streams grows in popularity.

Recreation management policies of reservoir managers such as river authorities, cities, water districts, and federal agencies will become increasingly important as the demand for water-based recreation grows.

In addition, reservoir managers will face more competition and more conflicts involving recreational water as other uses for the state's limited water also increase. For instance, when reservoirs built to supply cities or irrigated crops must be drawn down during dry years, reservoir managers will have to explain to recreationists why boat docks and fishing piers are left "high and dry" or why lake cabins face unsightly mudflats. Similarly, managers of reservoirs built for flood control purposes will occasionally have to inundate boat docks, fishing piers, park roads, and campsites.

Private landowners also find themselves involved in recreation development and recreational liability because their land lies next to a river or reservoir. In addition, owners of the more than a quarter of a million farm ponds used for recreation in the state also manage recreation land.

Scientists with the Texas Agricultural Experiment Station (TAES) conduct research to help public and private recreation managers with their responsibilities. Each of the researchers featured in this issue holds a faculty position in the Texas A&M University Department of Recreation and Parks and has conducted research on one of the following recreation management issues:

- liability of public agencies for the safety of recreationists;
- management practices to improve visitor safety and security;
- effects of recreational development on user satisfaction; and
- legal rights and responsibilities of river recreationists and riparian landowners.

LIABILITY RISK MANAGEMENT

A study currently under way by Ronald A. Kaiser, a lawyer and environmental scientist, concerns the legal responsibility of governmental agencies as well as private landowners in assuring the safety of the recreational user. Kaiser's present work focuses on beaches along the Gulf Coast, but many of his findings relate directly to recreation areas associated with fresh water.

On reviewing the legal responsibilities of public agencies throughout the United States, Kaiser has found that courts often hold public agencies liable for injuries suffered by users. Some of the conditions precipitating lawsuits include improper design of recreation facilities, inadequate maintenance of an area, or defective equipment.

Prior to 1970, according to Kaiser, local units of government in Texas enjoyed immunity from liability when performing governmental activities. Changes in the doctrine of government immunity came about with the passage of the Texas Tort Claims Act which now limits the immunity previously afforded the state, its agencies, and its political subdivisions.

Kaiser points out that public agencies need a clear and concise definition of their legal responsibilities to protect users from harm. He says that although managers of recreational areas have the responsibility to provide a safe environment for users, they cannot absolutely guarantee a user's safety.

Kaiser's review of previous liability cases as well as options for agencies in charge of recreational areas will help clarify this issue for current and future recreational managers. He recommends that agencies structure what he calls a risk management program to alleviate safety and security problems. Kaiser has identified a range of alternative management practices to minimize accidents and other types of incidents which threaten recreationists.

Managing agencies must make decisions on "how safe" a park should be when constructing and maintaining facilities. Types of decisions involved in risk management include providing life guards, enforcing regulations for traffic and behavior, installing guard rails, and posting warning signs.

Recreationists must feel relatively safe from harm, says Kaiser, to enjoy a recreation site. If they fear physical harm or suffer from the actions of others, they are not as likely to return to the area. He warns that recreationists may withdraw their support for an area or even take legal or political action against the managing agency.

SAFER RECREATION AREAS

TAES researcher Jim Fletcher also studies safety and security problems associated with water-based recreation. Fletcher points out that crime and other deviant behavior in parks has become an increasingly serious concern to park administrators.

Fletcher looked at management practices to reduce threatening incidents in seven recreational areas on Lake Somerville, a U.S. Army Corps of Engineers reservoir in Central Texas. He found that fee collection booths which control entrance to recreational areas effectively reduce actual crime and also contribute to the visitors' sense of safety and security.

Actual and perceived crimes and other deviant behavior were higher in areas without controlled entrances, according to Fletcher. He also found that more safety and security incidents went unreported in areas without fee collections because park employees and telephones were not as accessible as in parks with fee collection booths. His study results show that visitors in areas with fee collection reported violations or accidents 79 percent of the time while visitors in nonfee areas reported incidents only 40 percent of the time.

Fletcher measured the effectiveness in reducing actual crime problems as well as the change in how visitors perceived safety and security problems. He collected and compared data in parks converted from nonfee to fee areas between the 1981 and 1982 seasons.

The lower crime rate at the fee parks, says Fletcher, may be partially attributed to the fact that access is controlled through a manned entrance station and that all visitors are required to check in with the entrance station attendant. Persons likely to commit deviant or criminal acts may not like the visibility they receive at these fee park entrances.

Based on his findings, Fletcher recommends that park managers consider controlled visitor access through entrance stations as a viable management option for dealing with crime problems in their parks.

Fletcher also measured the effects of law enforcement officers routinely patrolling an area. He concluded that this practice is an even greater deterrent to crime and other safety and security incidents than entrance stations.

USER SATISFACTION

How development of a recreation area affects user satisfaction was the subject of another TAES research project designed to help recreation managers.

Allan Mills, a recreation researcher with TAES, measured visitor satisfaction at 30 areas around two U.S. Army Corps of Engineers reservoirs.

Mills found that increasing the size of a recreation area would not necessarily decrease user satisfaction. He concluded that Corps recreation planners could design areas to accommodate larger numbers of people without negatively affecting the majority of users. Only users in the most undeveloped areas responded that numbers of people detracted from their enjoyment.

Many respondents in swimming and picnicking areas, in fact, indicated that other people in the area added to their enjoyment. An important aspect of their research identified certain types of facilities which could be reduced or eliminated from future recreation developments. Some types of development such as paved trails or laundry facilities, contributed little to user satisfaction of an area according to Mills' research.

Mills surveyed 750 recreationists at four different activity sites: swimming beaches, boat launch ramps, picnic areas, and campgrounds. Another 193 visitors were handed questionnaires and asked to fill them out at home and return them by mail. He used the two survey instruments to determine if the different methods would produce the same results.

Mills found that the mail-back questionnaires were not a good alternative for the on-site surveys. The response rate was low for the mail-back instruments; and, according to Mills, returns were not representative of the users of the area.

RIVER RECREATION

Increased popularity of river recreation, warns TAES researcher Glenn Carls, may mean increasing numbers of conflicts between recreation users and riparian landowners. Clarification of legal questions to public access, he says, becomes more important each year as more and more Texans discover the fun of floating a river or fishing a stream.

In a recently completed study, Carls and graduate student Leslie Ann Michael identified legal issues involving river recreation. They concluded that recreationists and landowners need to know their legal rights concerning access, trespass, and use of a river.

Recreationists complain most about the lack of public access to state-owned water, the researchers report. Texas courts have clearly established the public right to fish in and to travel unimpeded on navigable streams, but these rights do not carry with them the right to cross privately-owned land to reach those waters. Since most land along Texas waterways is privately owned, it is often difficult, if not impossible, for recreationists to reach the waters they have the right to use. Access to public waters is limited to public parks, highway rights-of-way, and commercial enterprises offering public use.

Once on the water, say Carls and Michael, the recreationist has little legal direction in determining his rights to touch the bank. Shorelines are nearly all privately owned, and the laws concerning the public's right to use the banks are very ambiguous. Public policy has historically held that a recreationist may be guilty of trespass if he steps out of a navigable river onto the bank above the midpoint of the high and low water line (a point very difficult to identify).

River recreationists are often hopelessly confused about which rivers and streams are public watercourses, where they can legally access rivers, and what streamside lands they can use for camping, fishing, or even emergency landings.

Landowners also need clarification of laws protecting their legal rights, for whether they intend to or not, many must manage their land with recreationists in mind.

Some of the most common problems faced by landowners along popular recreational streams are loss of privacy, litter left by boaters, vandalism such as cut fences and disturbed livestock, and interruptions by recreationists asking for a telephone, a rest room, or first aid.

The research projects conducted by TAES researchers can help both recreationists and managers of recreational land to know their rights and to fulfill their responsibilities.

What is it worth to you?

"God-given things should not be charged for," responded a boat owner when asked what he would be willing to pay to launch his boat in a Texas reservoir.

God didn't give Texans many natural lakes, however. Government bodies built all 184 of the state's major reservoirs.

Nor does God build and maintain boat ramps. Tax-supported agencies do. Even the good fishing in Texas reservoirs is due to the careful planning and management of state and federal agencies.

Public agencies developing and managing recreation resources must justify their expenditures of public funds by estimating the economic value of the recreation resource.

Researchers with the Texas Agricultural Experiment Station (TAES) help public agencies measure the value of their recreational resources. They develop and test ways (1) to evaluate benefits and costs of recreational development and (2) to estimate demand for particular activities and areas. Recent studies completed by TAES resource scientists have:

- compared methods presently used by public agencies to estimate the value of recreational resources;
- estimated the amount of money Texans spend on recreational trips annually; and
- studied the effects of rising fuel costs on recreational travel.

VALUATION METHODS

John Stoll, a TAES resource economist in the TAMU Department of Agricultural Economics, explains that designing contingent markets to directly estimate what users would be willing to pay to use a resource is a research tool economists use to estimate the value of a resource. This approach to measuring the value of a natural resource is called the contingent valuation method.

Another method of measuring the value a user places on a recreational facility is to assess how much the user spends on travel costs to arrive at a particular location. This information is used to indirectly assess values and is called the travel cost method.

Stoll directed a study of boat owners in 23 southeast Texas counties surrounding Lakes Conroe, Livingston, Somerville, and Houston to determine the value users placed on the recreational aspects of the four lakes. Stoll and research associate Christine Sellar conducted the study in 1982 in cooperation with Jean-Paul Chavas, an agricultural economist at the University of Wisconsin.

The researchers drew a random sample of 2,000 names from a list of registered boat owners in the study region. They then questioned boat owners about trips to a specific lake, travel costs to the lake, and overall lake quality. Each boat owner was also asked how much he would be willing to pay for an annual boat launch permit at that particular lake.

Their research compared the contingent valuation method and the travel cost method of estimating the value of recreation resources.

They also compared two types of questions used in the contingent valuation method. An open-ended question asks the respondent to set a maximum amount he or she would be willing to pay for a resource. A close-ended question gives a specific value and asks if the respondent would be willing to pay that amount.

Results from the study show that those responding to an open-ended question on their willingness to pay gave a lower value than those asked if they would be willing to pay a specific amount in a close-ended question. Results also show that the contingent valuation and travel cost method do not necessarily produce the same results. For instance, the travel cost method of comparing the lakes valued Livingston higher than the other three lakes. Using the close-ended contingent valuation method, however, the value for Conroe was higher than that for Livingston. A statistical difference between the value estimates from the two approaches was not found, however.

One interesting finding in the study has to do with a boat owner's tendency to substitute one lake in the region for another if costs increase beyond what he is willing to pay.

Stoll, Sellers, and Chavas found that boaters on Lake Houston would most likely go to Lake Somerville if Houston costs increased above a certain amount. Boat owners now going to Somerville indicated they would go instead to Lake Conroe or Lake Houston if costs increased beyond what they felt Lake Somerville was worth to them. Those now using Lake Livingston would substitute Lake Conroe, and those now using Lake Conroe said they would go to either Lake Livingston or Lake Somerville.

TRAVEL EXPENSES ESTIMATED

Texans spent more than a billion dollars on travel for fishing trips within the state during the 12-month period between July 1982 and July 1983, according to TAES researcher Allan Mills. Fishing trips were second only to sightseeing in the amount of money spent on recreational travel.

Mills directed a statewide telephone survey to estimate the amount Texans spend on travel associated with outdoor recreation. He found that Texans spent a total of $9.3 billion during the one-year period on travel in the state to participate in the following 20 activities:

Playground activities
Walking or hiking
Jogging or running
Baseball or softball
Basketball
Football or soccer
Tennis
Golf
Bicycling
Horseback riding

Driving for pleasure, sightseeing
Swimming
Fishing
Water skiing
Boating
Picnicking
Camping
Hunting
Snow skiing
Motorcycling for pleasure

The four activities requiring water account for more than two and one-quarter billion dollars in travel expenditures. In addition to the $1.1 billion for travel to their favorite fishing holes, Texans spend annually $583 million on swimming trips; $300 million on travel for boating; and $181 million to go waterskiing.

By breaking the expenditures into categories of (1) food and drink, (2) lodging, (3) equipment rental, (4) licenses and permits, (5) leases, and (6) instruction and guide fees, Mills found that over one-third of the nine billion dollars Texans spend on recreational travel within the state goes for food, either in restaurants or grocery stores.

He also looked at average household expenditures, basing the averages only on those families reporting participation in a specific activity during the study period. The average family taking trips for fishing during the year, according to Mills, spends $583 annually on travel associated with fishing. The average household travel expenditures for swimming, waterskiing, and boating are $339, $227, and $387 respectively.

These figures are relatively low compared to the highest average annual per family travel expense of $2,026 for horseback riding. The lowest average per household expense of only $99 goes for travel expenditures associated with bicycling.

INCREASING FUEL COSTS

Mills directed another study for TAES to determine what effect increased gasoline prices would have on camping in East Texas.

The study, funded by the Center for Energy and Mineral Resources, involved TAES researchers from four academic departments: project leader Mills and Joanne Westphal from the Department of Recreation and Parks, agricultural economist John Stoll, rural sociologist Don Albrecht, and forest scientist Joe Massey.

The team of researchers designed the project to determine if gasoline price affects amount of campground use in East Texas and if an increase in gasoline price would cause a redistribution of East Texas campground users.

Forty-one percent of the campers surveyed at campgrounds during 1982 on East Texas reservoirs said they would not return to that particular site if gasoline costs rose above $2.00 per gallon. Campers interviewed at the campgrounds in 1982 had paid an average of $1.13 per gallon for their current trip and had spent an average of $45 on gasoline for the whole trip.

When asked if they would camp more often if gasoline prices decreased, 69 percent said they would not camp more often.

Mills and the four other team members now have a follow-up study underway to determine if the respondents have modified their camping habits or their attitudes about gas prices since they responded to the survey two years ago.

These and other studies by TAES resource economists and recreation scientists will help future decision makers plan development of recreational resources associated with the state's water resources.

Ripples & Waves

Changes in population and social and economic conditions in Texas warrant increased research efforts in the field of water-based recreation. Scientists with the Texas Agricultural Experiment Station (TAES) continue to test and develop new approaches and strategies to make the most of the state's recreational opportunities.

The following are projects undertaken by TAES scientists to improve planning and management practices of water-based recreation resources.

Clare Gunn and Jay Ben McMillen, two researchers in the Texas A&M University Department of Recreation and Parks, have looked at tourism across the United States to identify what characteristics a region must have for successful tourism development.

They concluded that water is first on the list of physical factors important for tourism development. Other physical characteristics their research considered for tourism potential were topography, vegetative cover, climate, aesthetics, and existing development.

Impacts of recreational use and livestock grazing along the Rio Grande in Big Bend National Park was the study topic of David Schmidly, TAMU Department of Wildlife and Fisheries Sciences, and Robert Ditton, TAMU Department of Recreation and Parks. The two TAES scientists studied management alternatives to modify and control the impact of current uses of the Rio Grande in order to preserve the natural resource.

Lakes built in conjunction with electric generating plants can help meet future recreational demand in Texas, say TAES researchers in the Department of Recreation and Parks, Glenn Carls and Randy Bell. The two analyzed the current use of cooling lakes in

the state and also evaluated the potential for recreational development adjacent to cooling lakes.

Carls and Bell identified 31 cooling lakes, built solely for heat dissipation, which provide some form of public recreation. The lakes are especially attractive recreation resources, say the researchers, because of their proximity to population centers and because of their production of superior fish populations.

They found a wide range of recreation policies and development at these lakes and also report a diversity in agencies managing recreational areas. Power companies, river authorities, local water districts, cities, counties, and private concessionaires all manage recreation facilities associated with cooling lakes in the state.