Applying Recreation Survey Results to Recreation Planning for Water-Based Recreation Areas in California

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Introduction

This paper focuses on identifying applications of recreation survey results in the context of water-based recreation planning. Recreation researchers have sometimes been criticized for conducting research that is weak in applied value (Cordell 1999). The paper also focuses on the important, but sometimes forgotten role that private entities play (e.g., Pacific Gas and Electric Company or other utilities) in planning for and providing recreation opportunities. Organizations that manage water bodies in California are faced with providing increased public access and facilities to meet growing demand for outdoor recreation. Various regulatory requirements, such as the Federal Power Act, often compel these entities to collect data from recreational visitors, and use those data to develop long-term recreation management and planning strategies.

The purpose of the panel discussion summarized in this paper was to provide a forum to discuss how various water management entities use recreation survey data in recreation planning. Two environmental consultants from ENTRIX, Inc. who conduct recreation research, a California Department of Water Resources (DWR) Environmental Scientist, and a Pacific Gas and Electric Company (PG&E) Land Project Specialist conducted a panel presentation to discuss the applications of recreation survey results in the context of water-based recreation planning in California.

Methods

The discussion panel was formed to have multiple perspectives from private and public entities on how survey data can be used in recreation planning. Three panel members spoke while Dr. Baas moderated the discussion. Participants were required to have extensive experience working with recreation planning issues, and in the case of the participants from DWR and PG&E, to have experience with using outside entities to collect recreation survey data. Dr. Baas, the panel moderator, asked the DWR and PG&E panel participants to describe how they have used recreation survey results to respond to several issues (such as the need for facility development, developing management regulations), commonly associated with recreation planning efforts.

Results

Panel presenters began an overview of water-based recreation in California and then described the Federal Energy Regulatory Commission (FERC) requirements that drive much of the recreation-related survey research in California at the federal, State, and private (utilities) levels. In this part of the discussion, Garrett Duncan (ENTRIX, Inc.) set the context for why recreation research is conducted, how the FERC regulations drive recreation research, and how survey research factors into a license application. In the second part of the discussion, Douglas Rischbieter (California Department of Water Resources) recounted the history of three decades of monitoring the recreation and fishery benefits provided by the State Water Project's three Upper Feather Reservoirs (Antelope Lake, Lake Davis, and Frenchman Lake). These reservoirs were built primarily for their recreation and environmental benefits, such as fish and wildlife habitat, and State managers have used study findings to implement several operational changes to optimize Project recreation benefits both at the reservoirs and downstream. In the third and final part of the discussion, John Mintz (Pacific Gas and Electric Company) described how he works to develop solid recreation research that leads to balanced land management practices for recreation users stakeholders, and PG&E.

Regulatory Framework that Drives Recreation Research and Planning

A significant percentage of outdoor recreation occurring in California is water-based. Lakes, reservoirs, and rivers draw large numbers of recreation users participating in power and nonpower boating, floating, and fishing activities. Additionally, hiking, picnicking, and other activities such as wildlife watching often occur adjacent to lakes and reservoirs in California. Cities, counties, the State, and federal agencies in California offer water-based recreation. All of the managing agencies at one time or another face visitor management challenges or mandates to consult with stakeholders, measure recreation use, and identify recreation needs. Many of the reservoirs in California were developed for multiple purposes, including recreation. Many of these reservoirs supply hydroelectric power generation and are regulated by the

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FERC. It should be noted that federal reservoirs and certain large lakes, such as Lake Berryessa in California, are not regulated by the FERC.

The hydropower industry is regulated by the FERC under authority granted by the Federal Power Act of 1920. In 1935 the Federal Power Act was amended to included several recreation-related requirements that were new to licensees in addition to those prior to 1920 such as flood protection, water supply, energy production, etc. (FERC 1996). These included assuring appropriate development of recreation resources, developing public recreational facilities with adequate access, coordinating with other agencies in area and facility development, providing for planning, operation, and maintenance, and informing the public of opportunities for recreation at licensed projects. In 1986 the Electric Consumers Protection Act amended the Federal Power Act (as amended in 1935) and required the FERC to give "equal consideration" to nondevelopmental interests and included "protection of recreational opportunities" (FERC 1996).

Relationship between Hydropower Relicensing and Survey Research

If you are tasked with filing a license application, how does one, in general terms go about the exercise and utilize survey research? The FERC suggests that license applications contain certain information, but does not necessarily require or define standards related to numbers of visitors preference surveys, or sample rigor related to number of use observations, number of years for which use projections are made, etc. The FERC license application instructions are guidelines to assist in developing the information necessary to satisfy the FERC that recreation issues and needs are addressed. As a license applicant, at a minimum, one would need to capture certain basic use and facility information to write the environmental conditions document pertaining to recreation. In most cases, though, to address stakeholder issues and general recreation needs and resource impacts, more extensive, research-based studies are needed.

After a FERC license is issued, one of the FERC's major concerns is with changes in recreation demand, which they monitor by requiring project managers to submit a Form 80. The Form 80 requires identification of recreation facilities and use estimates to be submitted every six years. How does one do this? Surveys and existing use counts are needed to complete the Form 80. The Form 80 requires the number of project visits (measured in recreation days: a visit to a site for any portion of a day for recreation purposes), for day and night use, desegregated by annual totals and peak weekend averages. Further, for all project facilities (e.g., boat launch areas), Form 80 requires that the percentage of capacity be reported for off-peak weekend use. For example, if a boat launch area's use averages 120 percent of capacity, as measured by some indicator such as parking capacity, then the FERC wants to know about over capacity issues.

Water-based resource managers who are preparing a FERC license application or, are completing the Form 80 rely on survey research. Examples of recreation planning products that may be of interest to water-based resource managers preparing a FERC application include campground condition and inventories, visitor survey questionnaires, community resident surveys, facility and project area accessibility assessments, watercraft use density studies, recreation use impact studies (social, facility, physical), and interpretive planning.

Recreation and Fishery Monitoring at California's State Water Project: The Upper Feather River Reservoirs

California's State Water Project (SWP), primarily known for its vast water supply benefits, actually begins well upstream of its keystone-Lake Oroville, which is north of Sacramento. In the headwaters of the North and Middle Forks of the Feather River (Plumas County), there are three reservoirs developed for the primary purposes of recreation and fish and wildlife enhancement. Antelope Lake, Lake Davis, and Frenchman Lake are unique in this respect: built in the 1960s, they are probably the largest reservoirs in the State built primarily for these purposes. For three decades, the DWR has used regular survey data to optimize project benefits not only behind these dams but in tailwater and downstream areas as well. Recently overshadowed by the northern pike crises, the Upper Feather River SWP Reservoirs are in many other respects outstanding cases of optimal, balanced management strategies.

The Upper Feather River Recreation Monitoring effort began in 1976 and produced a large amount of information on the general recreation use, fishing use and catch, and fish populations in the three streams (Indian Creek, Big Grizzly Creek, Little Last Chance Creek) below the three Upper Feather Reservoirs. As time allowed, census clerks also gathered creel census information on the three reservoirs, which supplemented similar information irregularly gathered by the Department of Fish and Game. Major objectives of the program included: 1) plan for recreation and fish and wildlife preservation and enhancement at SWP facilities; 2) ensure that SWP recreation facilities comply with applicable laws, licenses, and regulatory requirements; 3) identify and evaluate changes in recreation trends and fish and wildlife resources that may influence future benefits, project operations, and facility development; 4) proactively coordinate DWR's mission with the activities of other agencies, to ensure public recreation and fish and wildlife resource needs are fulfilled; and 5) broaden public awareness of recreation and fish and wildlife benefits of the SWP (Hinton, pers. comm.).

Applications of Recreation Survey Data

The operating criteria of all three Upper Feather River Reservoirs have been modified to the extent reasonable and consistent with maintaining desirable lake levels during the recreation season. The flows in Indian and Big Grizzly creeks

have been increased to improve habitat for wild trout fisheries, quality fisheries that are otherwise uncommon in easily accessible California roadside streams. The DWR is currently evaluating a recommendation to double the minimum release from Frenchman Lake (currently 2 cfs), which a study product suggested could be possible with minimal water supply impacts; Little Last Chance Creek below this dam supports an exceptionally rich and productive trout fishery.

The angler surveys conducted as part of recreation surveys also served as the "recapture" element of several mark and recapture fishery studies. DWR operators also used the conclusions from an Antelope Lake study (DWR 1996) to modify winter releases to minimize the frequency and magnitude of Antelope Lake spills, conceivably benefiting both the lake fishery and property owners' downstream flood risks. At Frenchman Lake, these studies demonstrated the importance of reservoir spill to the restoration and maintenance of tailwater fisheries (DWR 1998).

Over time, fish and wildlife populations fluctuate, or may be affected by some natural or human event, and recreation use trends may change, requiring re-evaluation, modification, and possibly development of new operation plans or facilities to preserve the natural resources and meet public recreation needs. Once implemented, these plans or modifications require periodic reassessment to ensure that they are working as intended. Also, there have been changes in the watersheds due to various management activities, floods, fires, and other events that require periodic re-evaluation of the reservoir management. The introduction and subsequent eradication of northern pike from Frenchman Lake, and the more recent introduction of northern pike into Lake Davis and that unsuccessful attempt at eradication in 1997, are examples of events that required monitoring of recreation and fish and wildlife resources and continued modification of reservoir operating criteria to contain the pike until they can be eradicated. Recreation surveys will be one essential element upon which to base these inevitable management decisions.

Using Recreation Survey Data for Decision Making for PG&E's Recreation Facilities

The primary role of the panel presenter from PG&E is to oversee recreation, land use, and aesthetic studies and develop reports for relicensing of FERC hydroelectric projects. This work frequently involves hiring consultants to perform this work or performing the work in-house. A big part of the job is working with resource agencies, recreation interest groups, local residents, and other stakeholders in technical work groups or collaborative meetings. These working groups discuss the study designs and results as well as proposed mitigation and enhancement measures (PM&Es) to be included in the FERC license application for a hydroelectric project.

This work can involve a variety of recreation studies, including estimating existing and future recreation visitation, questionnaire studies, recreation development suitability studies, water surface and shoreline carrying capacity studies, ADA assessments, economic resource assessments, recreation impact assessments, and recreation river flow assessments (i.e., whitewater, fishability, and visual).

To get the most out of survey research, utilities need to use defensible research methods and qualified recreation professionals who work well with stakeholder groups and have good report presentation skills. In the relicensing environment there are many stakeholders, often with competing interests. It is imperative that stakeholders buy into the credibility of the researchers who may present findings not necessarily favored by certain stakeholders. Recently, on the relicensing for the Upper North Fork Feather River Project (UNFFR), a number of stakeholders who were not happy with the data started questioning the resulting sample size on which the data were based. Fortunately PG&E hired recreation planners with doctorates in recreation planning who were able to go in front of a fairly skeptical public crowd and over several meetings make them feel comfortable with the sample sizes and study results. Similarly, PG&E has used fairly well known and educated recreation planners to conduct recreation flow studies on the UNFFR and Pit River projects. These planners were able to gain the trust of stakeholders regarding study design and results from both whitewater and angler groups, who frequently have inherently competing flow preferences for the same river reach.

Achieving Stakeholder Support

To make recreation survey work count, it is important to identify all relevant stakeholders and their project related issues, so that appropriate recreation studies can be identified and designed to address these issues. The stakeholders in a hydro relicensing project, which generally include local residents, anglers, boaters, electric ratepayers, and resource agencies, usually have a vested interest in the project’s final FERC license conditions (also referred to as PM&E measures). These conditions frequently address the seasonality of reservoir and river water levels; the amount, location, and type of Project recreation facilities; and recreation monitoring requirements.

The process of identifying project-related issues involves providing stakeholders an opportunity to review the proposed study types, study plans and results, and meeting with them to discuss their concerns. In identifying studies and study designs, planners should ask themselves if the information being gathered will be useful in resolving a significant project-related resource or cost issue, or is it “nice to know.” Further, PG&E must be clear during the process of identifying project-related issues; can PG&E or the FERC do anything about the issue being discussed?

Recreation planners should also recognize that local residents and many visiting recreation users possess a wealth of information about the recreation resources at the project. These users generally recreate at the project on a very frequent basis during the spring, summer, fall, and winter seasons and have experienced resource conditions during many year types (i.e., years of drought, poor economic conditions, and high use). The recreation planners who are conducting the studies, on the other hand, likely only experience and study the recreation resource during a one- to two-year period and, sometimes, for relatively few days during this period. Tapping into the knowledge base of key recreation users is very useful to quickly know the recreation resource and identify the issues that will likely surface from study results. Key recreation users also are frequently influential in the political decision making process and may be stakeholders in a collaborative group. Obtaining their input at the start of the processes builds rapport and trust during this generally less politically charged part of the relicensing process.

Applying the Results

Recreation use survey data results have been used in developing strategies in management and monitoring plans for recreation, cultural resources, sensitive species such the bald eagle, and other resource management and monitoring plans that are incorporated into a project's FERC license. In recreation management plans, survey results are most frequently used to identify the appropriate type, amount, and location of project recreation facilities. Survey results, though, are also used to establish recreation opportunity spectrum (ROS) designations and carrying capacities for reservoirs and shoreline and water surface areas. Survey results are also used to recommend proposals to other agencies with land and water surface management authority. Survey results have been used to evaluate water surface zones (i.e., high speed, and low speed) on reservoirs and if boating should be allowed on small, shallow, fluctuating reservoirs. Recommendations have also been made for waterway markers and safety measures including education. Closure of certain shoreline areas to vehicle access to protect natural or cultural resources has also resulted from recreation survey work.

The FERC regulations require equal consideration for all project area resources when deciding on a project's PM&E package. This package frequently involves tradeoffs between resources. For example, the seasonal stream flows needs for sensitive resources, fishing, swimming, and white water boating needs are balanced with the seasonal reservoir level needs for flat water boating, reservoir fishing, shoreline use, and hydro-electric production. Survey data ideally provides information on the ideal, acceptable, and unacceptable river and lake levels for each of these resources. Collaborative groups, licensee, and the FERC use this information to identify and justify appropriate balances and timing of river and flow levels between these resources.

Also, as part of the many more recent license applications, additional recreation use parameters are being monitored. This includes adopting the limits of acceptable change (LAC) approach on some projects. Recreation indicators being monitored include facility occupancy rates, perceived crowding, boating use levels, and site creep, pioneering, and occupancy at dispersed sites. Defining monitoring standards was a difficult part in adopting this approach, as there are not currently professionally accepted standards for many of these indicators. Costs of monitoring are another concern with the LAC approach. Ideally, existing facility caretakers will be used to monitor several of these indicators.

Summary

The purpose of the panel discussion summarized in this paper was to provide a forum to discuss how various water management entities use recreation survey data in recreation planning. This paper focuses on identifying applications of recreation survey results in the context of water-based recreation planning. Survey research is often driven by federal regulations, but can also be needed for general planning. Two distinctly different entities, PG&E and DWR, discussed how those agencies used survey results in the context of water-based recreation. PG&E and DWR used survey results for meeting biological objectives, modifying water project operations, and providing more satisfying recreation experiences.

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