

A SOCIAL SCIENCE RESEARCH PLAN FOR
DELAWARE WATER GAP NATIONAL
RECREATION AREA

by

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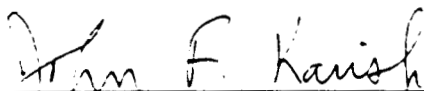


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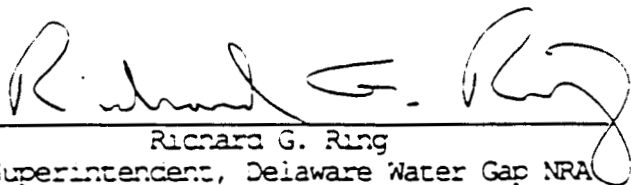
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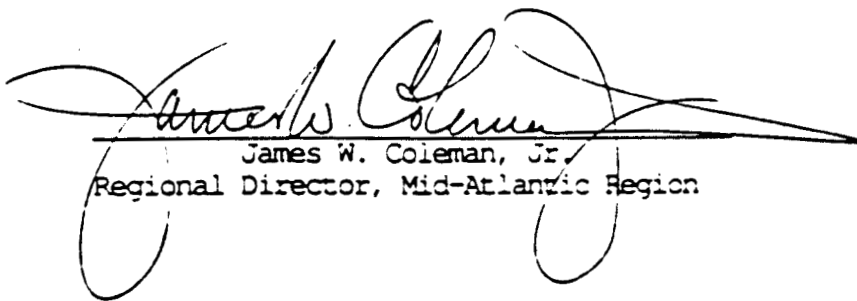


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**A Social Science Research Plan for
Delaware Water Gap National Recreation Area**

1. Introduction

a. Scope of the Report

The purpose of this document is to provide a Social Science Research Plan (SSRP) for Delaware Water Gap National Recreation Area (DEWA). This is a new kind of plan for the National Park Service. Machlis and Krumpe state:

A SSRP is simply an organized, written strategy for acquiring social science information useful to park management. The plan should demonstrate the social science needs of the park, derived from management policies, legal requirements, and park goals and objectives. It should provide a set of criteria for prioritizing information needs and evaluating research proposals. In addition, it should provide a systematic program for implementing necessary research. The SSRP serves as an advisory document to park managers (1984:27).

The objectives of this SSRP are to: 1) review existing social science research relevant to DEWA, 2) recommend social science objectives and research priorities, 3) recommend management procedures, and 4) suggest a specific four-stage action plan for implementing social science at DEWA. This plan treats social science as those academic disciplines that apply the scientific method to social issues. Such disciplines include anthropology, economics, geography, psychology, political science, and sociology. The plan does not deal with historical or anthropological research related to cultural resources.

b. The Need for a Plan

The plan is needed for several reasons. First, NPS managers are increasingly called

upon to make decisions that involve and influence a variety of people, organizations and institutions. At DEWA, these include visitors, local residents, park staff, local communities, city, county and state government agencies and other organizations. A planned program of social science can provide the right information at the right time.

Second, NPS managers have an increasing "need to know," as parks become more and more integrated into surrounding biological and social systems. At DEWA, these changes include increased local population and automobile traffic, changing recreation patterns, growing agency concern regarding changes or impacts to environmental quality, and local public involvement in planning for the National Recreation Area. A planned program of social science can make sure that high-priority research is given attention.

Third, the resources available at DEWA for social science research are too scarce and precious to be used in an unplanned way. At DEWA, staff time, social science expertise, cooperation with other agencies, funds and facilities must be carefully managed. A planned program of social science can minimize costs, increase effectiveness, and assure that results are useful in serving park needs.

Fourth, the need for Social Science Research Planning is widespread throughout the National Park System, as more and more parks grapple with social impacts of decisions, increasing "need-to-know" and scarce resources. The planning process at DEWA is a possible model for similar efforts in other parks in the System. Other park staffs may want to use, borrow from or modify the approach taken here.

c. The Role of a SSRP in the NPS Planning Process

Social science research planning, being new, is not a formal part of NPS planning.

It does fit into the planning process at DEWA, and the result is this "action plan."

Figure 1.1 shows one example of how it might be integrated into the NPS process; social science research needs can be derived from NPS Management Policies, General Management Plans, Resource Management Plans, the Annual Statement for Interpretation, and other site-specific Master Plans. The results of a sustained program of social science are then integrated into management decisions and actions that accomplish the General Management Plan, Resource Management Plan, and so forth. Hence, the SSRP is an "organizing tool" for accomplishing research necessary to formal NPS planning needs.

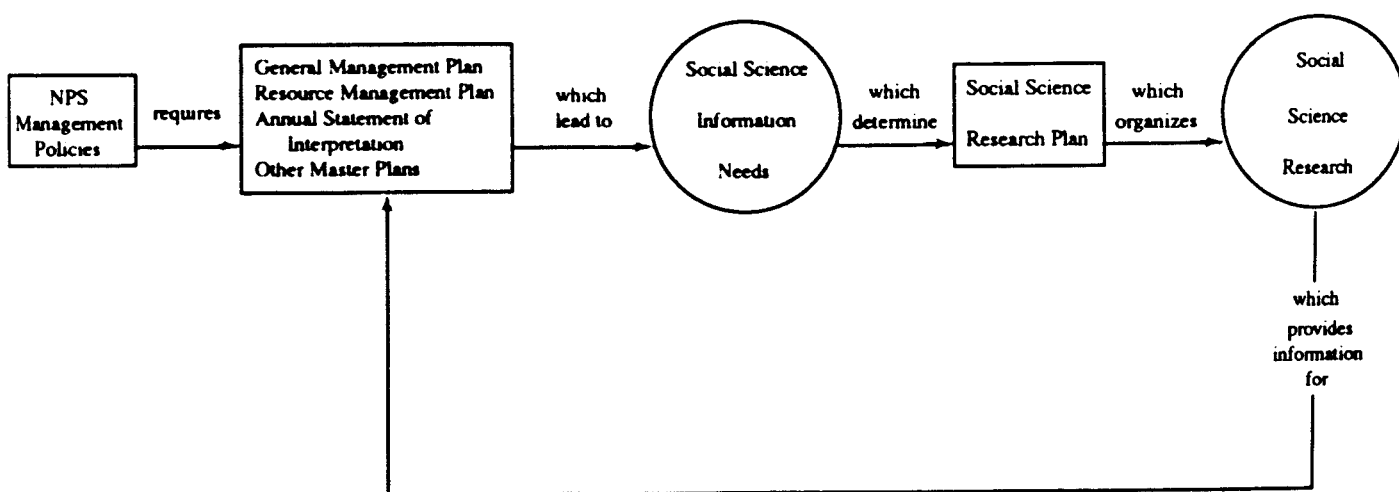
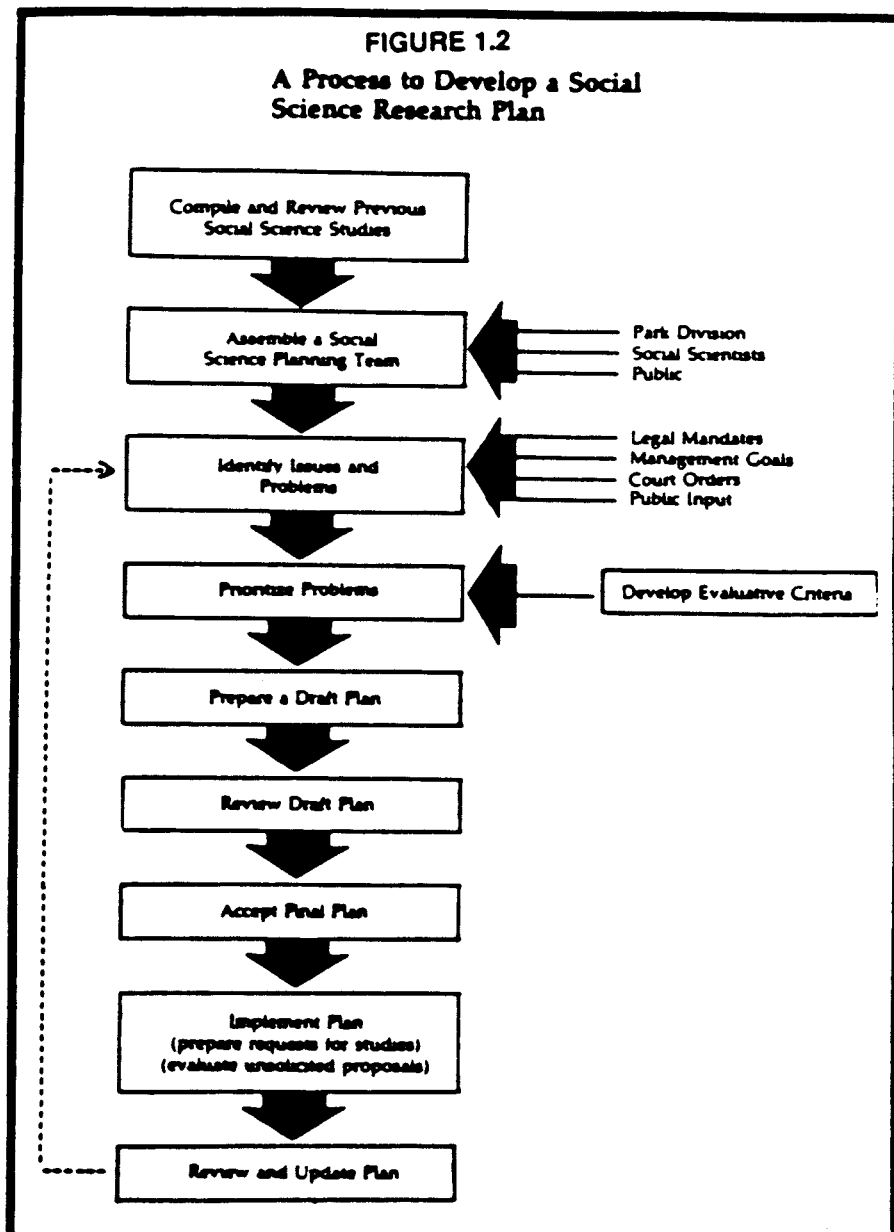


Figure 1.1. An Example of How SSRP Might Fit in the NPS Planning Process

The development of this SSRP was begun in 1989 at the initiative of DEWA. Dr. Gary Machlis, Sociology Project Leader of the Cooperative Park Studies Unit of the National Park Service, University of Idaho, was contracted to develop the plan. Several

site visits, interviews with park staff and others, a formal workshop involving public officials, and library research was involved. Figure 1.2 shows the generalized process for social science planning; these steps were followed at DEWA.



d. Overview of the Plan

The Plan is organized into several sections. After this Introduction, the Management Requirements for social science at DEWA are described. These are derived from legal requirements, NPS policy, and staff goals. Next, a Review of Existing Research is provided, including a discussion of the literature's strengths and weaknesses. Third, the social science Needs and Priorities for DEWA are presented, taken from management requirements and the needs of DEWA managers and local government officials.

Fourth, a proposed set of Management Procedures is discussed, including contracting, fieldwork arrangements, archiving of results, and evaluation. Next, a 4-stage Action Plan is presented, including proposed research activities and estimates of needed resources. A set of appendices provides supplementary information, including summaries of existing research.

2. Rationale for a Social Science Research Plan at DEWA

a. National Mandates

The mission of the NPS is to provide recreation opportunities and preserve natural and cultural resources. To do so, the NPS *Management Policies* manual sets out the following relative to use of the National Park System (1988: vii-1):

The National Park Service is charged with providing for the enjoyment, appreciation and understanding of park resources and values by the people: by controlling uses that could impair park resources or their enjoyment by visitors, and with visitor protection and safety.

The Service's mandate requires that it carefully plan and regulate the use of parks so that park resources are perpetuated and maintained unimpaired for the enjoyment of future generations... This requires that the Service analyze

and plan for acceptable forms of park use, and help the visitors structure their time to the appropriate activities.

Hence, general management planning is required, and science information is a necessary component of such planning. The *Management Policies* manual (NPS, 1988:11-12) states:

The Service will develop, gather, compile, store, analyze, update and employ adequate natural, historic, social, economic, and demographic data relevant to planning and management of each park. Such data will serve as an information base for formulating proposals and administrative decisions in planning for the achievement of park objectives. This information is required for the preparation of general management plans, environmental impact statements and specific plans; for review of projects under Section 106 of the National Historic Preservation Act and Executive Order 11593; and for development and various management actions. In the absence of adequate information for planning and management decisions, its acquisition becomes a prerequisite to action.

To gather such information, a systematic program of research is authorized in the *Management Policies* manual (NPS, 1988:iv-2):

A program of natural and social science research will be conducted to support NPS staff in carrying out the mission of the National Park Service by providing an accurate scientific basis for planning, development, and management decisions.

b. Park Mandates

At DEWA, the enabling legislation provides for public recreation, resource preservation, and certain other forms of resource use. The act to establish DEWA (Public Law 89-158, Sec. 5) states in part:

In the administration of the area . . . the Secretary of the Interior . . . may from time to time revise a land and water use management plan, which shall include specific provision for, in order of priority:

- (1) public outdoor recreation benefits,

- (2) preservation of scenic, scientific, and historic features contributing to public enjoyment,
- (3) such utilization of natural resources...does not significantly impair, public recreation and protection of scenic, scientific, and historic features contributing to public enjoyment.

Social science research provides necessary information in achieving these legal provisions at DEWA.

The importance of social science has been recognized by DEWA planners. An analysis of the DEWA Master Plan (Bellante et al., 1972) states that the Master Plan calls for:

6. Research - To encourage and provide facilities for, soundly conceived research on conservation, natural history and sociological aspects of the recreation area.

This idea was further expanded on in the analysis which was appended to the Master Plan (Bellante et al., 1972:19):

Examination of group control and sociological values of outdoor recreation will become increasingly important in planning and managing visitation to maximize public benefits as population and socio-economic factors intensify the need for recreation.

In the present General Management Plan social science research is not directly addressed. However, in many sections it is not only implied but its value is identified, such as under management of visitor use:

Under the plan, visitor use will be managed . . . , while standards for the visitor experience will be set on the basis of expressed needs and wants of visitors. A systematic monitoring program will be established to determine when use is leading to unacceptable change.
(NPS, 1987:46)

The Resource Management Plan focuses mainly on research of the natural or cultural resources and concern with their protection. Visitor use information is also identified as being critical to management planning. Knowledge of visitors is required to

enable the park staff to manage visitor behavior so that the visitors impact minimally on the natural and cultural environment within the recreation area.

The DEWA Resource Management Plan identifies the need for an organized information system within the park. It calls for a centralized location of all park research and baseline inventory of all previous research. It states that a collection of baseline inventories and visitor use information is critical to management planning:

Planning decisions can be objectively defended and costly, project by project collection of data can be avoided...with available research facility, our ability to solicit research would increase and in turn, the research results would increase our knowledge base tremendously.
(NPS, 1985:5)

Visitor use information is required for operations and planning of the Interpretive division. Knowledge of visitor interests is necessary for the development of effective interpretive programs and knowledge of visitor habits are important when developing educational programs and establishing safety regulations. The Annual Statement for Interpretation states as an objective:

To provide adequate information and orientation to the park, its resources, regulations, program, and recreational opportunities to allow visitors to have a safe and enjoyable experience with minimal damage to park resources.
(DEWA, 1989:3).

Social Science research is necessary to help interpreters meet this objective.

c. Other Rationales for Social Science at DEWA

In addition to national and park policy requirements, there are other rationales for conducting a systematic program of social science at DEWA. The MARO supports such a program; its "Proposal Requirements" states:

In order to improve the protection and management of park resources, the

MARO of the Regional Chief Scientist supports programs of research on the natural and social values of park areas. The Offices of the Regional Chief Scientist and Regional Biologist provide the necessary programmatic and field support to park areas.

The Washington Office of the NPS also supports the development of a sustained social science program.

In addition, there are "non-management" rationales for social science at DEWA. The National Park System is a valuable resource for basic research in the natural and social sciences, and such research (within regulations) is an appropriate use of public lands. Social science conducted at DEWA may contribute to the growth in scientific knowledge. Social science research at DEWA has the potential to contribute to education, by providing research and training opportunities to undergraduate and graduate students from local, state, and regional universities. Finally, social science research at DEWA can have benefits to other government agencies, local communities, non-NPS recreation areas, state legislatures and so forth.

3. Review of Existing Research

This section reviews the existing social science research relevant to DEWA. The scope of the review is limited to available social science reports and articles that deal directly with DEWA.

a. Methods Used to Conduct Review

A search was made to locate existing documents, both within the park and outside the park. A systematic review of reports held at the park was done; park staff were contacted to locate as many documents as possible. Existing park files were scanned for

pertinent reports. All bibliographies found were searched for relevant materials, as well as the Investigator's Annual Reports for 1983-1989, and the Denver Service Center microfiche listings for 1988-89.

Contact was made with staff at the Upper Delaware Scenic and Recreational River, the U.S. Forest Service at Grey Towers, the Army Corps of Engineers, the Delaware River Basin Commission, and local county planners, to find out if they had knowledge of any previous literature. Although some beneficial demographic information may be available from the county or state agencies, it was not within the scope of this project to pursue that information. Finally, a computer search of all major university dissertations since 1865 was conducted at Penn State University using a CD-ROM program.

For each report or article that was found, a summary was prepared. These summaries list the authors, title, date of publication, methods used to collect data, populations studied, and a description of the key findings relevant to DEWA. The summaries are in Appendix 1.

b. The Existing Literature

A total of 20 social science research reports were located. Figure 3.1 shows the publication rate over time. The earliest report was published in 1958. Of the 20 reports, 13 have been published since 1987. Most use data collected from the previous year; 3 studies use data collected over a three- year period.

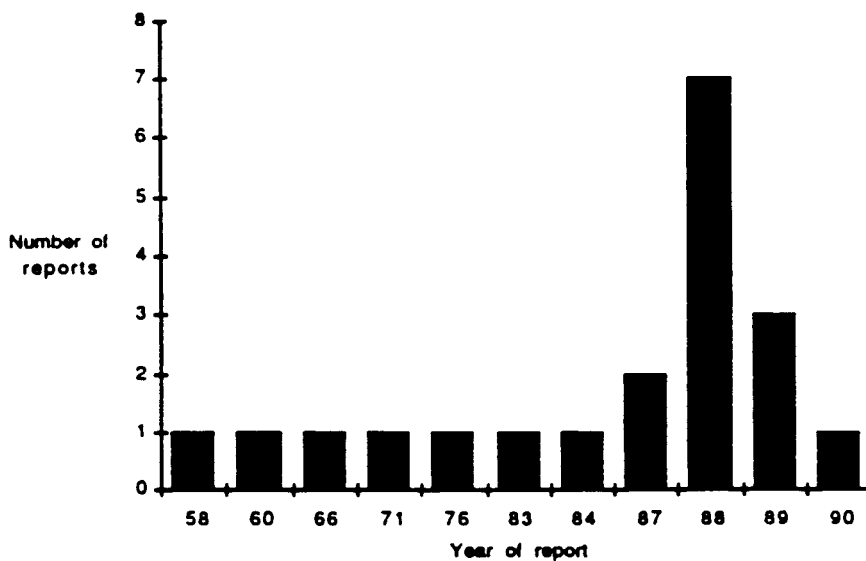


Figure 3.1: DEWA Social Science literature by date of publication

Several research methods have been employed at DEWA. Thirteen of the 20 reports used interviews, ranging from a few questions to longer interviews, and from structured, formal approaches to open-ended, less formal approaches. In several cases, a follow-up questionnaire was used to supplement interviews.

Questionnaires were the principal research tool in 5 of the studies reviewed, and the questions used varied from study to study. Response rates varied from 37% to 71%. In some cases, the questionnaires were supplemented with brief interviews. Other techniques employed included vehicle counts and personal observations.

c. Summary of Key Findings by Population Studied

Although all park users could be considered park visitors, this section is organized around different kinds of user groups. Most of the reports contain information pertaining to park users, park staff, or local communities. Table 3.1 summarizes the previous social science literature by user group.

Two studies were done on boating in the Delaware Water Gap NRA (Strauss, et al. 1983, 1984). These studies show the distribution of boating usage throughout the park. It was found that Smithfield Beach and Dingman's Ferry were the most heavily used sites within the park. Canoeing was found to be the most prevalent type of boating, and commercial liveries serviced the vast majority of canoe users. The largest canoe livery users were Kittatinny Canoes and Shawnee Canoe Trips. Most traffic departed between 9 a.m. and 11 a.m., and arrivals were usually concentrated in the 3 p.m. to 5 p.m. time span. Dingman's Ferry was the most popular launch site for multiple day canoe trips. Bushkill and Smithfield Beach were used more for day trips.

Conflict among canoeists was analyzed in two studies (Todd, 1987; Todd and Graefe, 1988). First, respondents' goals were identified and rated. Also measured was their perception of interference in achieving these goals. The majority of canoeists rated being with family and friends as the most important goal of their trip. Most canoeists did not experience much interference in achieving their goals. Canoeists reported the most interference for getting away from other people. Non-human factors which contributed to goal interference were the Delaware River, signs of civilization and man-made structures. Many canoeists believed there was nothing to see or that maps were poor. They also felt there was a lack of information and/or access.

Table 3.1. Summary of Previous Social Science Literature

Author	Date	Title	Methods	Key Findings	Location of Data
BOATERS/CANOEISTS					
Strauss, Lord, Miller	1983	1983 Boating Usage in the DEWA	attendance surveys	Dingman's Ferry was the most popular launch site for multiple day canoe trips.	Peirce House/Park Headquarters
Strauss, Miller Lord	1984	1984 Boating Usage, DEWA	attendance surveys	The more heavily used sites were Smithfield Beach and Dingman's Ferry.	Peirce House/ Headquarters
Todd, Graefe	1988	Conflict Among Delaware River Canoeists	on-site interviews	Canoeists most enjoyed being with friends and family and did not experience much interference in achieving their goals.	Peirce House/Park Headquarters
13 Todd	1987	Level of Experience and Perception of Conflict Among Canoeists on the Delaware River (master's thesis)	on-site interviews	The most important goal of canoeists was to be with family and friends. The presence of other canoeists interfered most with their trip.	Peirce House/Park Headquarters
COMMUNITIES					
Audience Research, Inc.	1958	A Study of Outdoor Recreation Activities and Preferences of the Population Living in the Region of the Delaware River Basin	personal interviews	Day outings are the most significant form of non-urban recreation in the area.	Chief of Interpretation Office
McIntosh	1971	Lifestyles and Attitudes Just Beyond the Urban Fringe: A Selected View	personal interviews	The lifestyle of the Monroe County resident is determined more by his/her income than by his/her personal beliefs.	Chief of Interpretation Office

Table 3 (continued)

Author	Date	Title	Methods	Key Findings	Location of Data
Donato	1960	Citizen Group Activity in the Delaware River Basin	questionnaire	13 organizations are identified as those that might play an important role in the acceptance or non-acceptance of the comprehensive plan presented to Congress by the Corps of Engineers.	Syracuse University
FISHERMEN					
Gift, Bayless	1966	Report on Survey of New Jersey Fishermen	questionnaire	The majority of fresh-water anglers fish frequently and are accompanied by their families.	Peirce House/Park Headquarters
Miller, Lupine	1987	Angler Utilization and Economic Survey of the American Shad Fishery in the Delaware River	interviews; observations	Large numbers of anglers fish this area during shad season which contributes to local economies.	Peirce House/Park Headquarters
HUNTERS					
Strauss, Storm, Yahner, Moran	1989	Expenditure, Demographic and Attitudinal Characteristics of Sport Hunters Using the Delaware Water Gap NRA	direct interviews; vehicle counts	There was a great deal of hunting usage for the combined 1987-88 hunting season. The vast majority of use was on the New Jersey side of the park.	Peirce House/Park Headquarters
MOTORISTS					
New Jersey Division of Transportation	1988	Route 206 Origin and Destination Study, Sussex County, NJ	license plate survey, vehicle count, postcard questionnaire	Only a small percentage of weekday or weekend trips are associated with DEWA.	Peirce House/Park Headquarters

Table 3 (continued)

Author	Date	Title	Methods	Key Findings	Location of Data
PARK MANAGERS					
Lime, Roggenbuck, Norman, Berger	1988	Exploring the Potential Partnership Role of River Outfitters in Managing Public Rivers	questionnaire	Outfitters tended to be favorable to suggested solutions to river problems.	Peirce House/Park Headquarters
Wellman, Belcher	1989	Managerial Perspectives on Determining Appropriate River Use	personal interviews	Managers see conflict and issues falling into three categories: river use, land management, and the NPS and its operation.	Peirce House/Park Headquarters
RIVER OUTFITTERS					
Lime, Roggenbuck Norman, Berger	1988	Exploring the Potential Partnership Role of River Outfitters in Managing Public Rivers	questionnaire	Managers are most concerned with the drinking of alcoholic beverages on the river and the distribution of use along the river.	Peirce House/Park Headquarters
VISITORS/GENERAL					
Robison	1976	DEWA: A Visitor Use Survey	questionnaire	Almost all of the visitors to the area come by car. Their preferred activity is sightseeing.	Peirce House/Park Headquarters
Madison, Machlis	1990	Visitor Services Project: Delaware Water Gap NRA	questionnaire	The majority of visitors to DEWA came in family groups. Most enjoyed sightseeing and picnicking.	Chief of Interpretation Office
VISITORS/RIVER USERS					
Gräefe, Knopf, Schreyer	1988	Measuring the River Recreation Experience: A Pilot Test of Some Experiential Scales	open-ended interviews	Visitors tended to use the river to be close to nature and to get away from the usual demands of life.	Peirce House/Park Headquarters

Table 3 (continued)

Author	Date	Title	Methods	Key Findings	Location of Data
Knopf, Graefe, Schreyer	1988	Management of River Resources at DEWA NRA and Upper Delaware Scenic & Recreational River: A Survey of Visitor Opinion	open-ended interviews	Visitors to both Park Service areas were generally happy with their experiences and the services they received.	Peirce House/Park Headquarters
Cordell, Klinko, English	1989	Economic Effects of Rivers on Local and State Economies: NPS River System	open-ended interviews; follow-up questionnaires	Recreation visitation at these river sites stimulates a large amount of economic activity.	Peirce House/Park Headquarters
Graefe, Knopf Pawelko	1988	Measuring the River Recreation Experience: A Comparison of Qualitative and Quantitative Methods	unstructured interviews and field notes	The desire to get away from work or home was the primary driving force in bringing people to the area. Many people come just to enjoy the natural setting.	Peirce House/Park Headquarters

The earliest community study found (Audience Research, Inc., 1958) was on the outdoor recreation activities preferred by people living in the Delaware River Basin area. This study showed that day outings were the most significant form of non-urban recreation in the area. People preferred non-urban surroundings, yet also liked to have other people around. The New Jersey seashore was the favorite location for day trips, followed by the Pocono Mountains.

In 1960 a study was done (Donato, 1960) to identify those organizations in the Delaware River Basin which might play an important role in the acceptance of the comprehensive plan presented to Congress by the Corps of Engineers. Thirteen organizations were identified as being the important organizations in the area.

A study conducted by McIntosh (1971) provided information on the lifestyle of low-income Monroe County residents. They are seen as participating in outdoor activities because of the location convenience and the relatively low expense. Many respondents had lived in the area for a long time and passed down an interest in outdoor activities to their children. Most respondents were unwilling to leave the area, even for a job which offered more money.

Of the two fishing studies found, the earliest one (Gift and Bayless, 1966) provided information on fishing throughout the state of New Jersey. It was found that fishing was a recurring experience for most fresh water anglers during the year. Also, most of the fishermen were accompanied by their families. Most fishermen fished for the sport of fishing alone; however, many combined fishing with a vacation such as camping. Most of the respondents were between 21-50 years of age. Almost half of all the fishermen had children under the age of 14 who fish.

Shad fishermen in the Delaware River were also studied. This study (Miller and Lupine, 1986) showed that 66,000 anglers fished this area during the 1986 shad season. Anglers caught 56,320 shad and harvested 27,471. The average angler spent 5 hours/day fishing and more than one-third of the interviewed anglers caught shad. The survey results indicate most shad anglers spend up to 2 hours' travel time to go shad fishing in the Delaware River for a day. The average angler spent 12 days shad fishing during the 1986 season and spent \$25/day.

The 1989 Hunters Survey (Strauss et al.) contains information on people who hunt in the NRA. Most hunters could be classified as white males, middle-age, middle-income and employed in blue-collar trades. Most hunting was done in family or peer group hunting parties. Over 47,000 days of hunting usage was estimated for combined 1987-88 seasons in the Delaware Water Gap NRA. Seventy- two percent of the use was on the New Jersey side of the park. Most hunters were familiar with the area, averaging 10 years of hunting experience in the park. Overall, this group held a very positive attitude toward park resources, the related management systems, and their own hunting experience.

In 1988 an origin and destination study was done on motorists on roads surrounding DEWA. It was found that a combination of diverse recreation, affordable accommodations, and direct routes made the region surrounding DEWA extremely attractive to visitors. However, only a small percentage of the total week-end trips were associated with the recreation area itself. On weekdays, traffic volume is still high, due mostly to commuters and local residents making short trips. Traffic associated specifically with the DEWA is very slight.

Two surveys studying park managers at the Delaware Water Gap have been done. One (Wellman and Belcher, 1989) deals specifically with the National Park Service staff and their perspectives of management style within the park. This report suggests that park managers are concerned with issues that fall into three areas: river use, land management, and the NPS and its operation. They are concerned with communication within the park itself and with the local communities. Managers at the park are seen to view scientific research and data collection favorably when it is presented in a manner that helps them make decisions. Receptivity to management technologies at the park was mixed. Although there is general agreement among the staff on the mission of the park, there is not general agreement with the ways the park is carrying out this mission.

A second study (Lime et al., 1988) deals with the potential partnership role of river outfitters in managing public rivers. Interviews were done with both park staff and local river outfitters. It was found that in general, park managers rated problems on the river as more serious than did the river outfitters. There was agreement on the seriousness of people drinking alcoholic beverages on the river. Both groups also agreed that communications between the two groups and enforcement of rules and regulations have improved over the past five years. Distribution of use along various segments of the river is a problem identified by both groups as getting worse over the last five years. River outfitters are favorable to suggested solutions to the problems. They were more likely to support NPS initiatives than favor cooperative ventures.

There have been six studies done where the general park visitor has been surveyed. However, in four of these studies, only visitors who were river users participated. Each of these four studies provide different information. In the report by Cordell et al.

(1989), information was gathered to identify economic impacts of river users on local communities. It was found that the average length of stay at the Delaware Water Gap was slightly over 32 hours for water- related sites. The total in-state expenditure per person per trip averaged \$67.34. Of the three NPS areas surveyed, the Delaware Water Gap had the greatest overall economic interdependence between the river sites and the local and state economies. This report forecasts that river activities will continue to be popular and that spending by recreation visitors will have an even larger impact on local economies.

The recreation experience of river users was the subject of two studies. One (Graefe et al., 1988) shows that escape was a primary driving force in bringing people to the area. The majority of people sampled desired to get away from things at home or at work. Many come to enjoy the natural setting or just to socialize. Many of these people enjoy the river environment, not only for swimming, fishing and canoeing, but also as a setting for picnicking and camping. Cleanliness and environmental quality is important to the river users.

Another study (Graefe et al., 1988b) reports on the types of activities sought by river users. There was an almost even number of visitors seeking an active vs. passive experience. Most respondents were seeking a social experience as opposed to a solitary experience. The top ranked motive for coming to the recreation area was the goal of being close to nature. Visitors assigned relatively little importance to the goals of skill development or gaining social recognition.

In the fourth study of rivers users (Knopf et al., 1988) a visitor opinion survey was done. It was found that visitors to the Park Service area were generally happy with their

recreation environment and the services they received. There was strong support for maintaining the existing level of use regulations. Visitors tended to feel that the purpose of regulation is for safety, rather than for conflict management or for environmental protection. The majority of the visitors felt they were provided with adequate information for their river experience. The most frequent criticism was aimed at the lack of locational markers along the river.

There have been two studies done which have surveyed visitors throughout the recreation area. In each of these, demographic information about the park visitor was obtained. Information was also gathered about their visits to the park, what they did and where they went in the park. The Robison survey (1976) showed that few visitors to the Delaware Water Gap came alone. Most visitors came with family or friends and are day users. The majority of the respondents had visited the area before, and many had been there more than once during the past year. Most visitors had heard of the park through family and friends or through the printed media. Almost all of the visitors to the park came by car. The most preferred activity while in the park was sightseeing.

Through the Visitor Services Project (Madison and Machlis, 1990), recent information is available on the DEWA visitor. This report shows that the majority of visitors who come are in family groups. Almost 90% of them come from New Jersey, New York, and Pennsylvania. Most visitors stay in the park for four hours or less, and the most common activities participated in are sightseeing and picnicking. High usefulness ratings were given to park staff and road signs. Visitors noted both what they liked about the park (scenic beauty, clean park facilities, peace and tranquility), and what they didn't like (traffic, lack of signs and unclean restrooms).

d. Work in Progress

The park is nearing completion of a land-use study program which was begun in 1987. This study included a comprehensive inventory of land use in eleven townships adjacent to DEWA. This information is being gathered in order to assess immediate and long-term impacts on water quality in the region.

Using USGS 7.5 minute topo maps as base maps for overlays, information is being recorded to describe watersheds, property lines, existing and proposed development, zoning, public lands, open areas, wetlands and soil suitability for on-site waste water disposal.

This information is then supported with a computerized data base with detailed information on parcel size, use, number of sub-divided lots, and number of structures.

The park is currently acquiring other types of map-based information which it also is entering into its GIS system. This information includes boundaries, topographic lines, water resource features, vegetation types and roads and trails.

e. Strengths and Weaknesses of the Literature

The available social science literature relevant to DEWA reflects the lack of prior research planning. Many different user groups have been studied, others ignored, and the data have not always been useful to serving the management needs of the park. One strength is its diversity—a range of baseline information exists which could be used to begin the monitoring of change in park use. A major limitation is the fact that data

were collected using different methods, at different times, and using different questions and measures.

The concentration of studies related to river use is both a strength and weakness. The research summaries for these studies suggest some general trends, and the data have value for resource management and the targeting of interpretation and safety messages. River users being only one component of DEWA use, the remaining studies do not provide a similar level of detail for other user groups.

A significant weakness in the literature is the lack of economic and geographic research. There is no comprehensive economic impact study. Documentation of existing land-use change in the region is currently underway, but does not include an assessment of trends. Yet, DEWA is a park embedded in a complex regional system (see Machlis, 1989). DEWA's interdependencies with that region are crucial to its functioning, but most studies to date have treated these relationships as relatively less important. A research emphasis on these interdependencies may result in important and useful social science research.

Finally, most work focuses upon individual visitors and user groups, rather than on local populations, communities and organizations. Yet DEWA management involves significant interaction with local governments, special interest groups, local communities, and so forth. These have not been carefully studied in a systematic way. More diversity in the units of analysis that are examined is suggested; the results will be of practical benefit to the park.

4. DEWA Social Science Needs and Priorities

a. Methods

This section of the plan outlines DEWA social science needs and priorities.

Research activities are prioritized by several categories, described below.

Required activities are those research projects that are specifically required by NPS policy regulations.

Critical activities are those projects that are necessary to meet management and planning requirements at DEWA.

Important activities are those that will improve management and planning at DEWA, though are not required.

Useful activities are those research projects that can benefit the staff at DEWA, even though they may not be directly related to planning or management.

Appropriate activities are those that may not benefit DEWA planning, management or staff, but are acceptable uses of the public resource. These criteria should form the basis of evaluating the importance of various social science research activities at DEWA.

Research activities were prioritized based on a reading of the legislation and policy documents, interviews with park staff and other NPS officials, and a nominal group workshop conducted at the park February 1990. Participants included park staff and representatives from Monroe, Pike and Warren Counties. A list of participants and workshop materials is provided in Appendix 2. The workshop identified 50 social science questions relevant to DEWA management (see Appendix 3). These were ranked and weighted by the nominal group participants. The 7 most important questions are shown

in Table 4.1, along with their scores. The prioritized questions dealt with a wide range of issues, from economic impacts to governmental cooperation to visitor needs.

Table 4.1. Prioritized Research Questions from Nominal Group Workshop

	<u>Score</u>
1. What is the economic impact of DEWA on the local economy?	315
2. Are the various governments cooperating on mutual problems and planning? How can this be improved?	275
3. How are regional growth and park visitation related?	227
4. How effectively does the NPS manage its visitors?	198
5. How will NPS water quality policies impact the surrounding regions?	185
6. Where do visitors go and what happens?	155
7. What are the visitors' recreational priorities?	145

b. Required and Critical Research Activities

A factual knowledge of how resource use can be achieved without impairing park values is required under the enabling legislation and planning documents at DEWA. The research objectives would be to define a) how regional growth and park management actions are related, and b) the limits of acceptable change due to park use.

There are several alternative methods to studying regional growth. One is to focus on economic measures and describe the economic changes that are taking place or will occur in the region. Another is to focus on land use patterns and historical trends, and predict their implications for DEWA. A third is to examine population growth in the region, and its impact upon local communities and park visitation. All are important;

research activities should treat economic change, land use patterns and population growth as key variables.

There are alternative methods to studying the limits to acceptable change. The most common is to monitor campgrounds, trails, riverbanks and so forth for ecological changes due to human use. Another approach is to conduct experiments- -altering use in a controlled way and examining the ecological results. Both are valid; the monitoring approach is more likely to provide management with useful information in a timely fashion.

c. Important and Useful Research Activities

Some of the most important (but not required) research activities have to do with increasing the park's ability to cooperate with regional and local entities –governments, communities, and special interest organizations. The objective is to provide managers with information important to managing such relations.

Measuring the impact of DEWA on the local and regional economies is important, for such information has value for decision-makers. Numerous economic techniques exist for doing these analyses, such as the Forest Service's IMPLAN model. Research on inter-governmental cooperation is important because it can reveal new and improved ways to organize such interaction among governmental agencies. Both political science and sociology have techniques for such "case study" situations.

Other important research activities have to do with serving visitors to DEWA. The objective is to use an increased understanding of visitors to improve management and visitor services. Sociological surveys are the predominant but not only method to

accomplish this. Alternatives include observational studies, informal interviews, and special studies of particular visitor groups, such as river users or local residents.

d. Appropriate Research Activities

In addition to required, critical, important and useful research activities, DEWA can encourage a wide range of social science research appropriate to its status as a public resource. University graduate students and faculty, in particular those in the region, should be made aware of research opportunities that exist in DEWA. The list of questions developed in the nominal group workshop should be distributed to regional universities (through their research offices). Students should be encouraged to develop study proposals that deal with the questions on that list. A useful approach would be to incorporate such a social science research agenda into the MARO annual publication Partners in Research.

e. The Four Major Research Questions

Based upon the required, critical and important research objectives, four major research questions should be the near-term focus of DEWA's social science program. These are listed below, in order of priority:

1. How are regional growth and park management related?
2. At DEWA, what are the limits of acceptable resource change and how do visitors contribute to such changes?
3. How can inter-governmental cooperation be improved?

4. Who are DEWA visitors, what do they do and want, and what are the implications for DEWA management?

These priorities are similar, but not the same as, the nominal group workshop results, primarily due to the enabling legislation's emphasis on allowing resource use in DEWA and the importance of regional growth as a management issue.

The existing literature and baseline data do not provide information on the question of regional growth and park management. There is limited information on visitation impacts and acceptable change. The literature does not provide information on improving inter-governmental cooperation. There is general information on visitors' behaviors and opinions, but not specific information on their wants and needs.

Hence, additional social science research is required to meet the planning and management needs at DEWA.

5. Management Procedures

To accomplish an effective program of social science, specific procedures for managing social science at DEWA are required. Procedures should not complicate or make difficult the activity. Good science is often creative and innovative, and requires flexible management. Recommended procedures are described by subject area below.

a. Implementing the SSRP

Implementing the SSRP should be the responsibility of the Superintendent and a Social Science Coordinator. This responsibility should be included in their performance standards, and included in their annual performance evaluations. The plan should be

followed whenever possible. Exceptions and revisions to the plan should be included in a written record, briefly describing the rationale for change. This should be the responsibility of the Social Science Coordinator.

The Social Science Coordinator is a critical element in enacting this SSRP. The position should be funded at .25 FTE. The Coordinator should report to the Superintendent and maintain close ties with the MARO Chief Scientist. Training in NPS science management (particularly the Contracting Officer's Technical Representative course) is recommended.

b. Contracting Social Science

Contracting of social science projects should, of course, follow all U.S. Government, National Park Service, Mid-Atlantic Regional Office and DEWA legal requirements. The main options for such contracting include long-term cooperative agreements with other institutions, competitive bidding for contracts using Requests for Proposals, the use of Schedule "A" NPS employees, and the hiring of park staff to conduct research. Table 5.1 shows the strengths and weaknesses of each approach.

DEWA should take advantage of the strengths of each, fitting the contracting strategy to the research objective. However, a general cooperative agreement with one or several institutions to provide social science is recommended for its flexibility, continuity, and cost effectiveness.

Table 5.1. Advantages and Disadvantages of Contracting Alternatives.

	Advantages	Disadvantages
Cooperative Agreements	Continuity Access to institutional support	Dependence on few investigators Increasing overhead costs
Competitive Contracting	Incentive for innovative access to wide "net" of investigators Flexible	Burdensome paper-work Discontinuity between projects
Schedule A	Access to specialized skills Flexible	Dependence on few investigators Discontinuity between projects
In-house Staff	Continuity high transfer of information	Dependence on few investigators high cost

c. Project Design and Approval

All social science research projects at DEWA (funded or unfunded, big or small) should be based on a written research proposal. A file should be kept of all proposals by the Coordinator. A copy of each approved proposal should be sent to the MAR Chief Scientist.

The MARO should have a consultive role in deciding what projects to undertake. All conducted projects should be recommended by the Social Science Coordinator, concurred by the MARO Regional Chief Scientist, and approved by the Superintendent.

The "Proposal Requirements: Natural and Social Science Research Contracts" of

the MAR provides a useful guide for all social science research proposals at DEWA. Guidelines include procedures for submitting proposals, gaining necessary permits, and the content of research proposals. All proposals submitted to DEWA should follow the MAR requirements, and be formally evaluated by the Social Science Coordinator. The evaluation should follow the MAR "Reviewer's Guide for Research Proposals".

In addition to the MAR general requirements, research proposals that involve survey interviews or questionnaires should include a description of estimated burden hours and a draft of necessary OMB materials. All proposals should include procedures for archiving raw data and protecting confidentiality of data within OMB rules. The MAR requirement for a Park Science article should be relaxed, however, as not all research will be appropriate to the magazine, and such articles may be more appropriately prepared by the Social Science Coordinator than by the researcher.

d. Reports

Reporting of results is critical to effective social science, yet "over reporting" yields undue paperwork, unnecessary staff burdens, and dubious quality control. Park staff have a responsibility for timely review and approval of reports. Several kinds of reports are necessary. The format should follow the MAR "Report Requirements".

An Investigator's Annual Report (Form 10-226) should be required as a progress report of all funded and unfunded research, and submitted to the Social Science Coordinator. The coordinator should maintain an annual file of all such reports. Copies should be circulated to park staff and sent to the MAR chief scientist.

Draft Reports for all funded research should be submitted to the Social Science

Coordinator. The Coordinator should be responsible for a careful and timely review of the draft report, distributing it for wider review when necessary. The Regional Chief Scientist should be invited to provide review comments, along with appropriate park division chiefs and other interested staff. Review comments should be made in writing, and provided to the Superintendent for approval. The MAR "Reviewer's Guide for Draft Reports" provides a useful guideline for evaluating draft reports; it should be followed. Submission of draft reports on unfunded research should be encouraged but not required.

Final reports should be required of all DEWA social science research, funded or unfunded. Format should generally follow the MAR "Report Requirements," and at least 10 copies of the Final Report for funded research should be submitted to the Social Science Coordinator for distribution within DEWA. Ten copies should be sent to the MAR Chief Scientist for distribution within the NPS. Unfunded research should be exempt from submitting 25 copies to the NPS; 2 copies should be submitted to the Coordinator for reproduction or archiving. The Coordinator should archive one "master copy" of each Final Report in the park social science archive (see below).

c. Archiving Social Science

It is critically important that all relevant social science results be archived for use at DEWA. The archive should be kept at Park Headquarters. It should be accessible, easy to use, and inexpensive to maintain. Developing, organizing and maintaining this archive should be the responsibility of the Social Science Coordinator. The archive should include:

1. A "master copy" of each final report of funded and unfunded research. This copy should be stored and not used.
2. A "park copy" of each final report, for use by DEWA staff and others.
3. A bibliographic file and simple numbering system for locating reports. A recommended software package is Pro-Cite by Personal Bibliographic Software, Inc.
4. A notebook that includes research summaries of each report, prepared by the Social Science Coordinator. These summaries should conform to the format included in this report.
5. A copy of the database for all funded surveys. These databases should conform to the MAR "Longterm Database Storage Requirements. "Researchers' field notes, observational records, photographs, and so forth should not be required. Unfunded research should not be required to provide databases, but strongly encouraged to do so.

f. Knowledge Transfer

The application of research results is the fundamental reason for social science at DEWA. Hence, the transfer of knowledge from the researcher to park staff and others is vitally important. Funded research projects should be required to include a close-out workshop, where the researcher(s) summarize results, limitations to their study, and potential applications. The Social Science Coordinator should be responsible for organizing these workshops. The cost of these workshops should be included in each project's budget. Unfunded researchers should be encouraged to present close-out workshops.

Division chiefs should be encouraged to use social science results in staff training, and the Social Science Coordinator should assist in such efforts. When appropriate, research reports should be summarized in popular form for public distribution. Other forms of knowledge transfer should be encouraged.

6. A 4-Stage Action Plan

This section outlines a 4-stage action plan for social science at DEWA. Each stage might take several years to accomplish. For each stage, a series of priority actions is described. A summary table is provided at the end of the section, which includes the priority actions as well as the recommended contracting alternative, estimated budget and potential funding sources. Appendix 4 provides a sample draft justification statement for funding requests (Form 10-238).

a. Stage 1 (\$20,000)

1. A position of Social Science Coordinator should be established. This should be at least a .25 FTE position, at the GS-9 or 11 level, and the employee should have at least one degree in social science. A draft 10-237 for this position is in Appendix 5.

2. The social science archive should be organized, and staff introduced to its use. A comprehensive database should be established.

3. The Social Science Coordinator should prepare a series of study proposals (including Form 10-238, internal proposals, special initiative requests and external research proposals) to fund research projects that would begin in year 2 of the plan. Cooperative agreements with nearby universities should be investigated and prepared,

again for research projects that would begin the next year.

4. A social science workshop should be convened at DEWA. This workshop (1- 2 days in length;) should bring together park and regional office staff, other agency scientists, university faculty and government officials to assess the needs and opportunities for research at DEWA. The workshop is an important method of disseminating this plan and developing support for its proposals. Interim and informal meetings in the following years should be conducted.

b. Stage 2 (\$106,000)

1. A basic economic impact study should be conducted and completed. This study would focus on estimating the economic impact of DEWA upon local communities and the region. It should include NPS as well as visitor expenditures, and estimate costs as well as benefits. Wealth and job creation should be estimated, along with specific impacts upon individual economic sectors (it should be updated every 3-5 years). The results should be integrated into General Management Plan.

2. A study of regional population should be conducted and completed. This study would employ secondary data available in the 1990 U.S. Census to measure the demographic shifts that have occurred in the local communities and region surrounding DEWA. The analysis should be detailed, and provide park staff with descriptive profiles of the communities and counties adjacent to the park. The results should be integrated into the Resource Management Plan and Annual Statement for Interpretation.

3. A study of visitor impacts should be initiated. Specific monitoring sites should be selected that include a variety of activity areas (campgrounds, trails, etc.), use levels,

and ecological conditions. Existing conditions in activity sites should be described, and management objectives defined, following the limits of Acceptable Change approach. A monitoring protocol (procedure) should be developed that includes measures of visitor use.

4. A study of trends in land-use, socioeconomics and demographics should be initiated, closely coordinated with an ongoing land-use study currently underway at DEWA. This would enable DEWA staff to forecast trends in park use, ecological impacts upon park resources, and changes in nearby community requirements.

The data and map series generated by this ongoing study should be extended to include socioeconomic and demographic factors (such as migration, land prices, population density, transportation, and so forth). Trend data from U.S. Census (1970-90) should be mapped, and a TIGER file created from U.S. Census data. Specific forecasting models shall be developed and implemented.

c. Stage 3 (\$93,000)

1. An institutional analysis of regional government cooperation should be conducted. This study would describe the full range of organizations influential and influenced by DEWA management actions, and evaluate the relationships between these organizations. The study should be designed to provide practical recommendations for improved cooperative efforts, as well as conflict resolution and mediation of disputes. The results should be integrated into the Resource Management Plan.

2. The visitor impact study should be continued. Monitoring should be continued at the indicator sites selected in the previous year, and additional monitoring sites added

if needed. An interim analysis of the data should be conducted, to aid in improving the monitoring effort and aid in estimating changes in visitor use patterns.

3. A general visitor survey should be conducted. This visitor survey should be in-depth, cover questions raised in the nominal group workshop, and include a sample from all seasons of the year. Where appropriate, the survey should employ questions directly from the 1990 VSP survey, to aid in estimating changes in visitor use patterns. The results should be integrated into the Resource Management Plan and the Annual Statement for Interpretation.

4. Work should be continued on the land use study, with additional data included in the GIS database. A set of interim maps should be constructed for use by DEWA staff in concert with the land use study currently underway.

d. Stage 4 (\$56,000)

1. The visitor impacts study should be completed. The results should be used to establish limits of acceptable change, and to create estimates of how certain levels of use may or may not exceed these limits. The resulting recommendations should be integrated into the Resource Management Plan.

2. The land use study should be completed. The results should be used to establish estimates of resource use and impacts upon park values, and integrated into the General Management Plan and Resource Management Plan.

3. The economic impact study should be updated, and results integrated into the GMP.

4. The park should convene a regional workshop devoted to social science.

Representatives from other agencies, governments, local communities and organizations should be invited, and the purpose would be to share results of the various studies conducted by DEWA.

5. The SSRP should be revised, and the social science program at DEWA evaluated by the park and regional office staff. The literature review section should be brought up to date, a new nominal group workshop conducted to prioritize research questions, and a new action plan proposed. The results should be integrated into the Social Science Research Plan.

Table 6.1 4-Stage Action Plan for DEWA Social Science

Stage	Priority Actions	Contracting Method	Estimated Budget (thousands)	Potential Sources
1	1. Establish social science coordinator position	in-house staff	15	DEWA
	2. Organize social science archive	in-house staff	2	DEWA
	3. Prepare 10-238 requests and cooperative agreements for future research	in-house staff	1	DEWA
	4. Convene social science workshop at DEWA	in-house staff	<u>2</u>	MARO
	Total		20	
2	1. Maintain coordinator position	staff	16	DEWA
	2. Conduct economic impact study	cooperative agreement	35	DEWA, MARO, WASO, local governments
	3. Conduct regional population change study	cooperative agreement	20	DEWA, U.S. Commerce, local governments
	4. Begin visitor impacts study	in-house staff	15	DEWA
	5. Begin land-use trends study	competitive bid using RFP	<u>20</u>	DSC
	Total		106	
3	1. Maintain coordinator position	staff	18	DEWA
	2. Conduct interorganizational cooperative study	cooperative agreement	20	MAR, local governments
	3. Continue visitor impacts study		10	DEWA

Table 6.1 (continued)

Stage	Priority Actions	Contracting Method	Estimated Budget (thousands)	Potential Sources
	4. Conduct general visitor survey	cooperative agreement	30	DEWA, MARO, WASO
	5. Continue land-use trends study		15	DSC
	Total		93	
4	1. Maintain coordinator position	staff	20	DEWA
	2. Complete visitor impacts study		5	DEWA
	3. Complete land-use study		5	DSC
	4. Update economic impact study	cooperative agreement	20	DEWA, local governments
	5. Convene inter-government conference	in-house staff	3	DEWA, local governments
	6. Revise social science research plan	in-house staff	3	DEWA, MAR
	Total		56	

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- National Park Service. 1985. Resource management plan: Delaware Water Gap National Recreation Area.

APPENDIX 1: RESEARCH SUMMARIES

1. Author and Title:

Audience Research, Inc. (The Gallop Organization). A Study of Outdoor Recreation Activities and Preferences of the Population Living in the Region of the Delaware River Basin.

2. Date of Study:

October 31, 1957-November 24, 1957.

3. Key Population Studied:

The adult civilian population living in private households in the Delaware River Basin, consisting of (1) the state of New Jersey, (2) 13 Pennsylvania counties, (3) 2 New Jersey counties, (4) 2 Delaware counties.

4. Methods

The study was carried out by means of personal interviews using a structured questionnaire. The interviews were done door-to-door.

5. Limitations:

There was some limitation to sample size (510), kept low for budget reasons. Both New York counties were dropped.

6. Key Findings:

Day outings are the most significant form of non-urban recreation in the study area. More than half of the respondents prefer non-urban surroundings for their outings. However, the people also prefer to have other people around.

The New Jersey seashore was the favorite location for day outings followed by the Pocono Mountains. The majority of vacationers normally return to the same general area for vacation purposes.

Boat owners made up a small sample of the respondents, but a larger group said they would buy a boat if a suitable body of water were available for boating use.

Most respondents expressed a willingness to pay an entrance fee for a day trip if necessary.

7. Location of Data:

Chief of Interpretation Office, DEWA

1. **Author and Title:**

Donato, J. P. 1960. Citizen Group Activity in the Delaware River Basin.

2. **Date of Study:**

unknown.

3. **Key Population Studied:**

Citizen groups in the Delaware River Basin.

4. **Methods:**

Questionnaire

5. **Limitations:**

6. **Key Findings:**

This study is basically concerned with the problem of designating those organizations in the Delaware River Basin which might play an important role in the acceptance or non-acceptance of the comprehensive plan presented to Congress by the Corps of Engineers.

Citizen group activity in the Delaware River Basin is described through an analysis of eighteen past issues relating to water and water resources. A description of the characteristics of citizen groups in the basin is presented on the basis of the information provided by 206 organizations responding to the questionnaire.

Thirteen organizations are considered to be *the* important organizations in the Delaware Water Basin.

7. **Location of Data:**

Not applicable.

1. Author and Title:

Gift, R.F., and J.M. Bayless. 1966. Report on Survey of New Jersey Fishermen. Department of Conservation and Economic Development and Division of Parks, Forestry and Recreation.

2. Date of Study:

January, February, and March 1966.

3. Key Population Studied:

Fishermen of New Jersey randomly selected from the stubs of resident fishing licenses purchased during the calendar year of 1963.

4. Methods:

A questionnaire, consisting of 9 basic questions, was designed so that it folded into a self-addressed, stamped envelope.

5. Limitations:

0.7% of New Jersey fishermen sampled by valid questionnaire.

6. Key Findings:

Fishing was a recurring experience for most of the fresh-water anglers during the year. Most of the fishermen were accompanied by family members.

More than half of the fresh-water fishermen fished from shore. Of those fishermen who used a boat, one quarter owned their own boat.

Slightly more than half of the respondents fished for the sport of fishing alone. Many other fishermen combined fishing with a vacation such as camping.

The majority of the respondents were between the ages of 21 and 50. Almost half of the fishermen have children under the age of 14 who fish.

Fishing is not seen as an expensive sport. Most fishermen spent under \$100 on food, lodging, transportation and fishing equipment for the year.

The survey shows that those counties that are rural in nature and have areas easily accessible to residents have the largest percentage of fishermen in relation to their population.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Graefe, A.R., R.C. Knopf, and K.A. Pawelko. 1988a. Measuring the River Recreation Experience: A Comparison of Qualitative and Quantitative Methods.

2. Date of Study:

Summer of 1985.

3. Key Population Studied:

River users of the Upper Delaware SRR and the Delaware Water Gap NRA.

4. Methods:

Unstructured interviews, field notes.

5. Limitations:

Sampling areas are not identified.

6. Key Findings:

The study showed that escape was a primary driving force in bringing people to the river areas. The vast majority of those sampled commented on a desire to get away from things at home or at work. Many people came to enjoy the natural setting or just to socialize.

Most people specifically sought out the river for swimming, canoeing or fishing. Many, however, also preferred the river environment for picnicking and camping.

Cleanliness and environmental quality are important to the river users.

Another factor bringing people to the area seems to be a desire to savor the good weather.

Over half of the people interviewed were here because someone else wanted them to be.

Although many expressed a desire to view the scenery, a portion of the visitors were just looking for a way to pass the time.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Graefe, A.R., R.C. Knopf and R. Schreyer. 1988b. Appropriate River Recreation Use Study: Measuring the River Recreation Experience: A Pilot Test of Some New Experiential Scales.

2. Date of Study:

Summer, 1986.

3. Key Population Studied:

Visitors to the Upper Delaware Scenic and Recreational River, the Delaware Water Gap NRA and the New River Gorge National River.

4. Methods:

Open-ended, tape recorded interviews that began by asking respondents to talk about their trip and progressed through a series of prompts designed to elicit data on a variety of hypothesized dimensions of the experience.

5. Limitations:

The study is exploratory in the sense that this approach to data collection has not been used before and the methods for analyzing the data have not been developed.

6. Key Findings:

There were roughly even numbers of visitors seeking active vs. passive experiences, and nearly even numbers seeking to escape routine environments vs. seeking the river environment. There seemed to be a greater tendency for people to seek a "mellowing out" mode of relaxation over a "blowing off steam" type of experience. Responses also showed a tendency toward a social vs. a solitary experience. Visitors appeared slightly more oriented toward arousal reduction than arousal seeking.

The goal of being close to nature was the top ranked motive, followed closely by the desire for escape from the usual demands and the desire for social interaction with family and friends.

Study subjects generally reported little interference with the achievement of their goals. The highest levels of interference were reported for the goals of having thrills/excitement and getting away from other people.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Knopf, R.C., A.R. Graefe and R. Schreyer. 1988. Appropriate River Recreation Use Study Mar—33: Management of River Resources as DWGNRA and Upper Delaware Scenic and Recreational River — A Survey of Visitor Opinion.

2. Date of Study:

Summer, 1986.

3. Key Population Studied:

Visitors to the Upper Delaware Scenic and Recreational River and the Delaware Water Gap National Recreation Area.

4. Methods:

Open-ended, tape-recorded interviews that began by asking respondents to talk in general about their trip, and progressed through a series of 22 prompts designed to elicit data on the character of desired experience — also a brief questionnaire.

5. Limitations:

6. Key Findings:

Visitors to both Park Service areas generally were happy with their recreation environment and the services they received. There were some requests for more restrooms, places to eat and drink, water spigots and garbage collection.

There was strong support for maintaining the existing level of use regulations. Visitors tended to feel that the purpose of regulation is for safety rather than for conflict management or for environmental protection.

The majority of the visitors felt that they received adequate information for their river experience. A significant number received no information. The most frequent criticism was the lack of locational markers along the river.

In general, visitors to both areas expressed favorable opinion in support of the existing situation at these park areas. They also spoke favorably of their recreation experience and of the managerial context within which it was created.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Lime, D.W., J.W. Roggenbuck, W.C. Norman and J.L. Berger. 1988. Exploring the Potential Partnership Role of River Outfitters in Managing Public Rivers.

2. Date of Study: Summer 1986.

3. Key Population Studied:

All commercial river outfitters under license to operate on the river as of May 1, 1986 on the New River Gorge and Delaware Water Gap, and as of May 1, 1987 on the Upper Delaware River. Park managers were also interviewed.

4. Methods:

In-person interviews. Questionnaire: open-ended questions and items to which the respondent checked prepared response categories. Questionnaire adapted to each of the three sites.

5. Limitations:

On the Delaware Water Gap, a consolidated response by the management team was prepared on one questionnaire and only for selected questions dealing with problems existing in the river corridor. As a result, comparisons of responses among managers is not possible there, and between manager and outfitter comparisons are very limited.

6. Key Findings:

In general, managers rated problems on the river as more serious than did the outfitters. Managers rated five problems as very serious, outfitters only one. "People drinking alcoholic beverages on the river" was the shared concern.

Managers and outfitters agreed that "communication between the NPS and commercial river users" and "enforcement of rules and regulations" are two issues that have improved over the past five years.

Distribution of use along various segments of the river is a problem identified by both groups as getting worse over the last five years.

Outfitters as a group are favorable to suggested solutions to problems. They were more likely to support NPS initiatives than favor cooperative ventures.

In order for cooperative ventures to succeed, both managers and outfitters must agree on the problem and support the proposed solution.

7. Location of Data: Peirce House, Headquarter files, DEWA.

1. Author and Title:

Madison, D.L., and G.E. Machlis, 1990. Visitor Services Project: Delaware Water Gap National Recreation Area. Moscow: University of Idaho, Cooperative Park Studies Unit.

2. Date of Study:

July 22-30, 1989.

3. Key Population Studied:

Visitors to DEWA NRA.

4. Methods:

Mail-back questionnaire (71% response) based on park-wide stratified sample.

5. Limitations:

Caution is advocated when interpreting any data where the sample size is less than 30.

6. Key Findings:

The majority of visitors to the Delaware Water Gap NRA came in family groups. Most came from New Jersey, New York and Pennsylvania.

Most visitors stayed four hours or less and enjoyed sightseeing and picnicking.

Over half of the visitors had obtained park information from previous visits to the park. Many received information from family or friends.

Road signs and the park staff were used by the majority of the visitors for interpretive and information purposes. Both received high usefulness ratings from the visitors.

Visitors noted that they like the scenic beauty, well-maintained park facilities and the peace and tranquility of the park. Those things they did not like were the traffic, lack of signs and unclean restrooms.

Dingman's Falls Visitor Center was visited by the largest percentage of people.

7. Location of Data:

Cooperative Park Studies Unit, University of Idaho, Moscow, Idaho.

1. Author and Title:

McIntosh, J.R. 1971. Life Styles and Attitudes Just Beyond the Urban Fringe: A Selective View. Lehigh University.

2. Date of Study:

Spring of 1970.

3. Key Population Studied:

Residents of Jackson Township and Ward One of Stroudsburg, PA.

4. Methods:

Interviews were done with either the male head of household or the female head of household (117 interviews completed).

5. Limitations:

Generalizations from this study are quite restricted. The data represent the 117 interviews and not the population of Monroe County. The sample was deliberately biased in the direction of obtaining information on non-farm, rural poor (selectively judged by observing the exterior of homes and conditions of yards to be lower income areas).

6. Key Findings:

The low income Monroe County residents lifestyle results more from his socio-economic status than from a cult of "the last of the pioneer breed." His moderate education and moderate income produce a lifestyle that tends to be limited.

The attraction to outdoor activity is enhanced because it is relatively inexpensive and because it is there. Many residents have lived in the area for a long time and have passed down an interest in outdoor activities.

The local people's attitudes towards new occupations support the existence of a competing value system. Most were unwilling to leave the area even for a job which offered more money.

Although they recognize that their own area and lifestyle have problems, what they view on television convinces them that the problems of the cities are much worse.

7. Location of Data:

Chief of Interpretation Office, DEWA.

1. Author and Title:

Miller, J.P., and A.J. Lupine. 1987. Angler Utilization and Economic Survey of the American Shad Fishery in the Delaware River.

2. Date of Study:

Nine-week period from April 5 to June 2, 1986.

3. Key Population Studied:

Shad anglers of the Delaware River from Yardley, Pennsylvania (river mile 139) to Hancock, New York (river mile 330.7).

4. Methods:

Interviews were done at randomly selected access points. Aircraft overflights were also carried out to determine the total number of shad anglers. An economic survey was also distributed to anglers as well as left on cars with a mail-back envelope.

5. Limitations:

6. Key Findings:

Approximately 66,000 anglers fished this section of the Delaware River during the 1986 shad season. One-third fished from the shore and two-thirds were boat anglers.

Most of the shore angling effort was expended from the Pennsylvania shore between Yardley, PA and Hancock, NY. Most of the boat angling effort occurred from Easton, PA to Milford, PA.

Boat and shore anglers caught a total of 56,320 shad during the nine-week survey period and harvested 27,471 shad.

The overall average angler day was approximately five hours. More than one-third of the interviewed anglers caught shad.

Of those who returned the economic questionnaires, 12.2% reported they purchased a fishing license only to fish for shad.

The survey results indicate most shad anglers spend up to two hours' travel time to go shad fishing for a day in the Delaware River.

The average angler spent 11.8 days shad fishing during the 1986 season and spent an average of \$25.40 per day.

7. Location of Files: Peirce House, Headquarter files, DEWA.

1. Author and Title:

New Jersey Department of Transportation, Division of Transportation Systems Planning, Bureau of Transportation and Corridor Analysis, Travel Projections Unit. Route 206 Origin and Destination Study, Sussex County, New Jersey.

2. Date of Study:

Sunday, July 10, 1988
Wednesday, July 13, 1988

3. Key Population Studied:

Motorists travelling roadways surrounding the entire DEWA NRA. Such roads included, in New Jersey, Route U.S. 206, Route NJ 15, Route NJ 94, and, in Pennsylvania, Route U.S. 209, Route PA 739, and Bridges at Milford Montague (Route 206) and Dingman's Ferry.

4. Methods:

License plat survey, vehicle counting program, vehicle classification program, postcard questionnaire survey.

5. Limitations:

6. Key Findings:

From the vehicle counting program, it was found that the 1988 average weekend daily traffic (2-way) was found to be 17,930 vehicles per day. Weekend peak periods were identified as being between 11-12 a.m. and 4-5 p.m. The most substantial portion of travel seen during the Sunday study period was regionally oriented long distance travel, between Pike and Sussex Counties, and the New York/New Jersey Metropolitan area. Only a small percentage (11.3%) of the total weekend trips were associated with DEWA.

The postcard questionnaire survey showed that northbound travel was primarily oriented from the home to day-use recreational sites or other areas, while the southbound travel was primarily "vacationers" and "day-trippers," returning home Sunday afternoon and evening.

During the week there was a decrease in regional trips and a substantial increase in local trips. Traffic related to DEWA was slight, accounting for only 2.4% of the total weekday trips.

The Sunday study showed that 57% of the park's visitation was from "day-trippers" and 43% was from vacationers.

7. Location of Data:

Headquarter files, DEWA.

1. Author and Title:

Outdoor Recreation and Wilderness Assessment Group. 1989. Economic Effects of Rivers on Local and State Economies: NPS River System. Athens, GA: Southeastern Forest Experiment Station.

2. Date of Study: Summer season 1985.

3. Key Population Studied:

Recreational river users at Upper Delaware NSRR, Delaware Water Gap NRA, and New River Gorge NR.

4. Methods:

(1). Interviews were conducted during a recreation trip to describe visitors, their recreation behavior and their travel patterns; (2) selected visitors were mailed a follow-up questionnaire; (3) recreation planners and managers were asked to provide descriptions of visitation to their area.

5. Limitations:

Methodology summary aid did not include the sampling dates, locations, sample size or response rate.

6. Key Findings:

Annual visitation among the three NPS river sites was 232.6 thousand at Upper Delaware, 135.4 thousand at Delaware Water Gap and 100 thousand at New River Gorge. A good portion of the visitors were from out of state, and the vast majority were from outside the market area.

The average length of stay for the typical user at DEWA was slightly over 32 hours for water related sites. The total in-state expenditure per person, per trip averaged \$67.34.

The inclusion of resident spending with non-resident spending measures the overall economic interdependence between the river sites and local and state economy. Interdependence does not imply added income and jobs, except for that portion of total spending that is by non-residents. DEWA has the greatest such interdependence.

Overall, the recreation visitation at the three sites stimulates a large amount of economic activity. Forecasts indicate that river canoeing, kayaking, rafting and other floating will continue to be popular. As the economies around the river sites diversify and become more self-sufficient, spending by recreation visitors will have an even larger effect at the local and state levels.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Robison, L.K. 1976. Delaware Water Gap National Recreation Area: A Visitor Use Survey. City University of New York, NPS, Cooperative Research Unit.

2. Date of Study:

October 4-5, 1975.

3. Key Population Studied:

Visitors to DEWA.

4. Methods:

Survey was conducted through the use of a mail-back questionnaire.

5. Limitations:

372 questionnaires, representing 37% of the total distributed, were completed and returned.

Survey done during Millbrook Days, and this reflects perhaps on the number of first-time visitors and the interest in historic sightseeing.

6. Key Findings:

Few visitors to the Delaware Water Gap NRA come alone. Most visitors come with family or friends and are day users.

The majority of the respondents had visited the area before, and many had been here more than once during the past year.

Autumn was the time of year with the most visitation, followed by summer, spring and winter.

Most of the visitors had heard of the Delaware Water Gap through friends and relatives or through the printed media.

Almost all of the visitors to the area came there by car. Most visitors planned their trip solely to the Water Gap. The majority of visitors were from New York, New Jersey, or Pennsylvania.

The most preferred activity while at the park was sightseeing.

Park visitors do not spend much money in the park or in the surrounding area.

7. Location of Data: Peirce House, Headquarter files, DEWA.

1. Author and Title:

Strauss, C.H., B.E. Lord, and M.S. Miller. 1983. Boating Usage in the Delaware Water Gap NRA.

2. Date of Study:

Mid-May to late October, 1983.

3. Key Population Studied:

Boat users in the Delaware River.

4. Methods:

Attendance surveys.

5. Limitations:

Dingman's Ferry was the primary site.

6. Key Findings:

Total use during this survey period was estimated at nearly 124,000 visitor days. Commercial canoeing represented more than half of this use.

Dingman's Ferry was the most popular site on Fridays and Saturdays for the launching of multiple day canoe trips. Buskill and Smithfield Beach use more typically involved one-day trips. On Sundays, less use was made of Dingman's and more attention placed on shorter trips initiated at Smithfield Beach and Milford Beach.

Most traffic departed between 9 a.m. to 11 a.m., and arrivals were usually concentrated in the 3 p.m. to 5 p.m. time span.

Kittatiny Canoes, Inc. was the largest commercial canoe operator, having almost half of all commercial canoes placed in Delaware Water Gap during 1983.

Currently, all of the access sites have size and design restrictions that constrain the flow of boating traffic on peak-use days. These limits may, however, serve some purpose by limiting the volume of boating traffic on the river.

7. Location of Data: Peirce House, Headquarter files, DEWA.

1. Author and Title:

Strauss, C.H., G.L. Storm, and R.H. Yahner. 1988. Expenditure, Demographic and Attitudinal Characteristics of Sport Hunters Using the DEWA NRA. University Park: Pennsylvania State University, The Pennsylvania Cooperative Fish & Wildlife Unit.

2. Date of Study:

1987-88 hunting seasons.

3. Key Population Studied:

Sport hunters using DEWA.

4. Methods:

Over 800 hunters were contacted, using a direct interview process, with the sample stratified on the basis of 7 major hunting seasons and in terms of the Pennsylvania and New Jersey sides of the park. Hunting attendance estimated from vehicle counts.

5. Limitations:

6. Key Findings:

There were 47,000 days of hunting use for the combined 1987-88 seasons in the Delaware Water Gap. The vast majority of this use was on the New Jersey side of the park.

Although hunting expenditures were estimated at \$1.4 million, 80% of all purchases were made near the hunter's home areas.

Very little of the hunting use originates from the areas immediately adjacent to the park. Most hunters come from the areas surrounding the nearest largest cities.

Most hunters could be classified as white males, middle-aged, middle-income and employed in blue collared trades. Hunting seems to be a family activity, with many groups made up of fathers and sons.

Most hunters were familiar with the Delaware Water Gap area and held positive attitudes toward park resources, the management systems, and their own hunting experiences.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Todd, S.L. 1987. Level of Experience and Perception of Conflict Among Canoeists on the Delaware River. Master's Thesis.

2. Date of Study:

May 9-September 1, 1986.

3. Key Population Studied:

Canoeists on the Upper Delaware SRR and the Delaware Water Gap NRA, aged 14 and older.

4. Methods:

On-site interviews.

5. Limitations:

Sampling was limited to canoeists whose schedule was flexible enough to permit a 20-30 minute interview.

6. Key Findings:

To the Delaware River canoeists, being with family and friends as the most important goal of their trip. They also enjoyed being close to nature and getting away from the usual demands of life. The majority of canoeists were not concerned with developing their canoeing skills or with social recognition.

As a whole, the canoeists did not perceive much interference in achieving their goals. Interference was noted most with the goal of getting away from other people.

Non-human factors were listed most often as interfering with achieving such goals as developing skills and having thrills and excitement.

For those canoeists interested in being close to nature or getting away from other people, it was the presence or behavior of others on the river that interfered most with their trip. "Other canoeists" was also the reason listed most often for interfering with thinking about personal values or getting away from the usual demands of life.

7. Location of Files: Peirce House, Headquarter files, DEWA.

1. Author and Title:

Todd, S.L., A.R. Graefe. 1988. Conflict Among Delaware River Canoeists. University Park: Pennsylvania State University, Department of Recreation and Parks.

2. Date of Study:

Summer of 1986, 53 days between May 9 and September 1, 1986.

3. Key Population

Canoeists aged 14 years and older using the Upper Delaware Scenic and Recreational River and the Delaware Water Gap NRA during these 53 days.

4. Methods:

On-site exit interviews that included both closed-ended items and open-ended questions.

5. Limitations:

6. Key Findings:

The majority of canoeists rated being with family and friends higher than they rated being close to nature or getting away from the usual demands of life as the most important goals of their trip.

Most canoeists did not experience much interference in achieving their goals. Canoeists reported the most interference for getting away from other people.

Non-human factors which contributed to goal interference were the Delaware River, signs of civilization and man-made structures.

Many canoeists believed that there was nothing to see or that maps were poor. They also felt there was a lack of information and/or access.

Conflict was also experienced by canoeists due to other canoeists and members of their own parties.

7. Location of Data:

Peirce House, Headquarter files, DEWA.

1. Author and Title:

Wellman, J.D., and E.H. Belcher. 1989. Appropriate River Recreation Use Study: Managerial Perspectives on Determining Appropriate River Use. Blacksburg: Virginia Polytechnic Institute, Department of Forestry.

2. Date of Study:

First interview 1985, second interview 1987, follow-up 1988.

3. Key Population Studied:

NPS managers at Upper Delaware SSR, Delaware Water Gap NRA and New River Gorge NR. Also, questions by telephone survey were NPS and Forest Service managers on nationally designated rivers.

4. Methods:

Personal interviews designed to explore individuals' ideas—open-ended conversational interviews. Second interviews focused on specific questions which had arisen earlier.

5. Limitations:

6. Key Findings:

Conflicts and issues identified by managers at the Delaware Water Gap fell into three areas: river use, land management, and the National Park Service and its operations.

Managers at the Delaware Water Gap view scientific research and data collection favorably when it is timely and presented in a manner which helps them facilitate decisions.

Receptivity to management technologies at the Delaware Water Gap was mixed. Although there is general agreement among the staff that the mission of the park is to provide quality recreation opportunities and protect the resources, there is not general agreement with the ways the park is carrying out this mission.

Communication, both external and internal, was a concern of most managers. It is felt that local communications must be improved. Little communication within the park between the units causes misunderstandings.

Although the staff felt that they provided input into decisions, they felt that the Superintendent alone decides park objectives.

7. Location of Data: Peirce House, Headquarter files, DEWA.

1. Author and Title:

Wellman, J.D., and E.H. Belcher. 1989. Appropriate River Recreation Use Study: Managerial Perspectives on Determining Appropriate River Use. Blacksburg: Virginia Polytechnic Institute, Department of Forestry.

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Although the staff felt that they provided input into decisions, they felt that the Superintendent alone decides park objectives.

7. Location of Data: Peirce House, Headquarter files, DEWA.

APPENDIX 2: NOMINAL GROUP WORKSHOP PARTICIPANTS AND MATERIALS

Social Science Research Planning Nominal Group Workshop

February 21, 1990

Participants

Dick Ring, Superintendent, DEWA
Jim Zinck, Assistant Superintendent, DEWA
Elizabeth Johnson, Resource Management Specialist
Ann Selwood, Administrative Office DEWA
Dennis Carter, Visitor Services, DEWA
Chris Ward, PA. District Ranger, DEWA
Karl Theune, A.C. Ranger DWG
Karl Merchant, Subdistrict Ranger, Dingman's PA, DEWA
Paul Stoehr, Chief of Maintenance, DEWA
Deborah Adam, Park Ranger
Jeff Marion, MARO Research Scientist
Barry Sullivan, N.J. District Ranger, DEWA
John Woodling, Director, Monroe County Planning Commission
Ed Nowicki, Planning Pike County
Richard Miller, Warren County Planning Department
Russell A. Miles, Warren County Planner
Joanne P. Carr, Sussex County Planning Department

Delaware Water Gap NRA
Social Science Planning Workshop
Scoring Form 1

What are the most important social science research questions facing
Delaware Water Gap NRA?
(all should end with a question mark)

Questions (not necessarily in order of importance):

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

**Delaware Water Gap NRA
Social Science Planning Workshop
Scoring Form 2**

From the posted list, please choose the five questions you believe are most important. Please list the question and its number from the list.

Questions (not necessarily in order of importance):

(#)

1. _____

2. _____

3. _____

4. _____

5. _____

Delaware Water Gap NRA
Social Science Planning Workshop
Scoring Form 3

From the final list, please give each question a share of 100 points. The more important you think the question is, the more points it should receive.

Question	Points
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____
5. _____	_____
TOTAL	100

APPENDIX 3: SOCIAL SCIENCE QUESTIONS FROM NOMINAL GROUP WORKSHOP

Social Science Questions from Nominal Group Workshop

1. What things in DEWA are of interest to visitors? (present and potential)
2. What social rules do visitors and residents recognize in park setting?
3. Will visitors return for a repeat visit?
4. How do visitors learn about DEWA?
5. What community needs can the NPS meet?
6. What are the needs of special visitors?
7. What visitor needs are not being met?
8. What is the economic impact of DEWA on the local economy?
9. Who are the visitors?
10. How can we maximize the economic development potential of DEWA?
11. How can we minimize the negative community impacts of DEWA?
12. Where do visitors go during their visit and what happens at each place?
13. What kinds of recreational opportunities *should* DEWA provide?
14. How do local residents feel about DEWA visitors?
15. What are the best ways for DEWA and surrounding communities to resolve conflicts?
16. How do visitors, local residents, and NPS describe the regional environment?
17. How are regional growth and park visitation related?
18. What career advantage opportunities does DEWA offer?
19. How many visitors had contact with uniformed NPS employees?
20. What are DEWA visitors' recreational priorities?
21. What do visitors think about DEWA facilities?

22. What role did DEWA play in the visitors' role in the region?
23. What expectations do local residents and governments have about DEWA's operation and development?
24. What role does DEWA's road play in the regional transportation system?
25. Can a generic sampling program be developed to assess public opinion?
26. How will NPS water quality policies (socio-economic) impact the surrounding region?
27. Are the various governments cooperating on mutual problems and policy? How can this be improved?
28. How effectively does the NPS communicate environmental values (of DEWA) to visitors?
29. What travel routes for visitors would local residents prefer?
30. Can the local communities be involved in determining the recreational opportunities in DEWA?
31. What, if any, problems are associated with the busy seasons? How can they be managed?
32. How do visitors to DEWA perceive the park?
33. How significant is DEWA to the local residents and governments?
34. What recreation impacts are due to the tourism industry vs. DEWA alone?
35. What is the relationship between DEWA and the regional tourism industry?
36. What is the relationship between field and management (park and region)? How can it be improved?
37. What transportation types did visitors use?
38. What role does DEWA play in regional migration?
39. Why do employees leave the park or transfer from the park?
40. What interests do local residents have in NPS employment?

41. How can the NPS help visitors enjoy DEWA?
42. Can we identify short- and long-term visitors and their specialized needs?
43. How effectively does the NPS manage visitors?
44. What kinds of people work at DEWA?
45. How would passenger rail impact recreational activity and potential in the region?
46. How can DEWA best cooperate with Steamtown and Upper Delaware?
47. What kind of commercial services do visitors need inside the park?
48. What is the historical pattern of use of DEWA by visitors and local residents?
49. How do small groups interact in DEWA and why?
50. What volunteer and community groups can contribute (more than \$) to DEWA, and how best could they accomplish this?

APPENDIX 4: SAMPLE DRAFT 10-238

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICEPAGE _____ OF _____
FOR THIS PACKAGE

DEVELOPMENT/STUDY PACKAGE PROPOSAL

PACKAGE
NO.
REVISION
NO.

ORG NO.	PARK (OR OTHER ORIGINATOR) Delaware Water Gap NRA	DEVELOPED AREA (NAME)	DA CODE	REGION																											
STATE Pennsylvania/New Jersey	STATE CODE PA NJ	COUNTY(S) Sussex, Northampton	CONGRESSIONAL DISTRICT(S)																												
PACKAGE TITLE																			STUDY PACKAGE NEW CONSTRUCTION ☐ REHABILITATION ☐	NEW PACKAGE ☒ REVISION ☐											
CRITERIA (INSERT X S)																											PARK PRIORITY	DATE	REG'N PRIORITY	DATE	
PROGRAM THRUST, STATUS AND OTHER INFORMATION																															
WILL ADDITIONAL OPERATING FUNDS AND POSITIONS BE NEEDED UPON COMPLETION OF THIS PACKAGE? (IF YES EXPLAIN NEEDS IN SECTION XI OUTLINE OF PLANNING AND MANAGEMENT REQUIREMENTS)																															
YES ☐ NO ☐																															

FULL PACKAGE DESCRIPTION

FY-1 A basic economic impact study will be conducted and completed. It will provide empirical estimates of the economic impact of DEWA upon local communities and the region. Inputs will include NPS as well as visitor expenditures, and outputs will be both job and wealth creation by key economic sector.

Data will be gathered from primary and secondary sources, including visitor studies, NPS records, county and state records. Using a standard econometric model (such as the USFS's IMPLAN), estimates will be prepared and a draft report prepared. A workshop with park staff and local officials will be held. A final report will be published.

PACKAGE JUSTIFICATION/CONSEQUENCES

- DEWA is part of a fast-changing region, and the NPS has had significant impact upon local and regional economies. Further development and management activities are likely to also have economic impacts. Data are not available to assess DEWA's contribution to the local economy, or reliably estimate the economic impacts of management actions.
- This project would 1) allow NPS and local officials to evaluate DEWA's economic role in the region, 2) provide objective estimates of potential economic impacts of various NPS management actions, and 3) enhance economic development in the region by providing necessary economic data to private sectors such as the tourist industry.

PLANNING AND MANAGEMENT REQUIREMENTS (Follow instructions and outline provided in Program Formulation Guideline)

SEE ATTACHED.

ORIGINATOR (Signature and Title)	DATE	CONCURRENCE (Signature of Superintendent or Equivalent Official)	DATE
APPROVAL (Signature of Regional Director or Equivalent Official)			DATE

Delaware Water Gap NRA Science Research Plan

Planning and Management Requirements

Significant Issues and Influences

1. **Available Information:** No economic impact study has been conducted for DEWA. Data are not available that would allow estimates of economic impact, except by generalizing from other parks. The unique characteristics of DEWA make this approach inadequate.
2. **Project Type:** Research.
3. **Mandated Project:** No.
4. **Park Resources:** No park resources would be affected.
5. **Immediacy:** This information is crucial to provide support for management actions to be taken in the next several years. Conducting the study in FY91 allows for timely use of the 1990 census data, which will increase the cost-efficiency of the work. Deferral would make the project less cost-effective.
6. **Magnitude:** The total lack of empirical data on DEWA's economic impacts suggest this is a problem of some magnitude. An estimate of resource damage (if project is not funded) cannot be made.
7. **Park Resource Management Plan:** While not in the resource management plan, this is one of the highest ranked projects in the DEWA's Social Science Research Plan.
8. **Health and Safety:** Health and safety would not be affected.
9. **Scope of Contribution:** The project's immediate scope would be limited to the DEWA and its surrounding region. The data and economic forecasting model will be useful (with revisions) to other parks in the MARO.
10. **Data Collection:** This project develops a baseline data set that does not now exist. It will allow future monitoring efforts to assess change in economic impacts.
11. **Cost and Staffing:**
 1. **Cost:** \$35,000

2. **Funding Staff Commitments:** Park staff will prepare cooperative agreement or RFP and study requirements. An economist with experience in this kind of research will be hired to conduct the study.
3. **Other Funding Sources:** MARO, WASO and local governments may participate in cost-sharing.
4. **Benefits of Immediate Funding:** The project will be made more cost-effective by coordinating it with the release of 1990 U.S. census data.

APPENDIX 5: SAMPLE DRAFT 10-237

DETAIL OF ANNUAL OPERATING REQUIREMENTS

PARK NO	INC NO	ACT	ID 1	FISC YR	DEV AREA	ST ATE	PKG	PRG	CAT	PRIORITIES PARK REGION	
4	5	7 8	9	10	11 12	13 14	15 16	18 19	20 21	22 23	26 27 30

2	CONCISE DESCRIPTION & JUSTIFICATION	LINE 1	CONCISE DESCRIPTION & JUSTIFICATION	LINE 2
3		LINE 3		LINE 4
4		LINE 5		LINE 6
0		45 46		

ITEM	A C T	PWE	NET AMOUNT	P N	PERM POS	M Y O T H E R	PAY PLAN	G R. A D E	POSITION TITLE/COST COMPONENT	I N C R E F.
5			:			:				
5			:			:				
5			:			:				
5			:			:				

910 11 12 13 15 16 21 22 23 25 26 28 29 30 31 32 33 70 71

FULL DESCRIPTION AND JUSTIFICATION (*Typewritten*)

Delaware Water Gap is faced with critical and necessary research needs in the social sciences. The park has developed a detailed 4-stage plan for accomplishing the needed research, and transferring the knowledge to management. Local government officials, park staff, and NPS social scientists have all contributed to this plan. To accomplish the plan's research agenda, a Social Science Coordinator (SSC) is required. This .25 FTE position will be responsible for enacting the park's social science plan including 1) preparing all funding requests and reporting documents, 2) promoting, reviewing, supervising, and evaluating all social science research proposals (funded and unfunded), 3) managing the archive and database requirements in the plan, and 4) promoting the use of research findings by providing training for park staff and advice to the Superintendent on matters pertaining to social science research.

The monies requested (\$69,000 over 4 fiscal years) would fund the part-time position and provide modest support funds (materials, operating expenses and so forth). Funding this position is critical to success of the park's social science research plan, and will result in a cost-effective program of research.

PARK OR OFFICE:	SUPERINTENDENT OR OFFICE CHIEF	DATE	REGIONAL DIRECTOR APPROVAL	DATE
	(Signature & title)		(Signature & title)	