ASSESSMENT OF TOURISTS' ATTITUDES TOWARDS MARINE AQUACULTURE: A PRELIMINARY INVESTIGATION OF UNH'S SEA GRANT *DISCOVERY* PASSENGERS

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Abstract: The development of a significant and sustainable marine aquaculture industry in New England is largely dependent on the ability of the coastal resource managers and planners, aquaculturalists, and the scientific community to design and develop the marine aquaculture industry in such a way as to best serve the interests and values of the public. To fully represent these interests, there is a need for scientific data that allows for an understanding of the public's beliefs, values, and attitudes towards marine aquaculture. This study determines current knowledge and attitudes towards marine aquaculture, interest in educationally based tourism associated with aquaculture, attitudes towards the consumption of aquaculture products, and beliefs about the leasing and use of common property resources for private enterprise. The results of this study will provide decision-makers with knowledge of the important positive and negative attributes of marine aquaculture from the perspective of tourists in New England and insight to how these attributes may influence the development and evolution of the marine aquaculture industry.

Introduction

Marine aquaculture offers the potential for regional economic development, improved balance of trade, new employment opportunities, and the replenishment of wild stocks of commercially and recreationally important aquatic species (Royal, 1993). Aquaculture products are easier to monitor than wild harvested product for compliance with official inspection standards, and the short time intervals between harvest and slaughter make cultured products safe and dependable. The production aspects allow for a reliable harvest which is of uniform size and weight, is devoid of seasonal fluctuations, and is appealing to both distributors and retailers (Lovell, 1991). The realization of these potential benefits, combined with declining stocks for capture fisheries, serves to stress the importance of the development of a marine aquaculture industry in New England.

The development of a significant and sustainable marine aquaculture industry in New England is dependent upon the willingness and ability of those responsible for its design and development to effectively involve the public and stakeholder groups who will be impacted by the industry. The breadth and depth of the potential impacts make such efforts difficult. Issues such as coastal water rights, jurisdictional conflicts, ecological disruption, processing plant pollution, and conflicts with traditional users groups have evoked strong public and stakeholder interest and potentially constrain the development of the industry (Weeks, 1992; Robertson, Lindsay and Gardoqui, 1996).

Marine aquaculture should be seen not only as a technical and biological innovation, but also as a socioeconomic enterprise that requires the same kind of social analysis as any other production system (Bailey, et. al., 1996). The social sciences can make significant contributions to the development of marine aquaculture in New England by operationally defining and analyzing its potential costs and benefits from the perspectives of those most likely to experience these effects. This information which results from this research will provide a better understanding of the constraints to the development of aquaculture which are posed by the public. It will also provide a mechanism for the public to participate in the design and development process, thereby facilitating the elimination or minimization of some of these sociocultural constraints.

Collection of sociocultural information early in the program or policy development process can substantially reduce its cost. Quality social science data serves to identify public concerns that should be considered during the initial phases of planning and design, rather than after substantial investments have been made. Such information allows developers and policy makers to maximize positive impacts and minimize or mitigate the negative impacts of the development, avoiding political controversy and costly legal delays which stem from design decisions based on inadequate information (Burdge, et. al., 1983).

Our research focuses on the social context of the development and management of marine aquaculture. We used social science research methods to measure the public's perceptions of the social benefits and impacts of the alternative use of coastal resources (i.e., marine aquaculture), and to examine the potential for tourism relating to marine aquaculture. Results of this study will provide decision-makers with knowledge of the important positive and negative attributes of marine aquaculture from the perspective of tourists in New England, and insight into how these attributes may influence the development and evolution of the industry.

Project Goal and Objectives

Social science research methods were used to provide both an understanding of public attitudes towards marine aquaculture and a mechanism for anticipating the public's response to specific design and development attributes of marine aquaculture. The goal of this project was to develop a better understanding of the attitudes of tourists in New England coastal communities towards various facets of marine aquaculture. The sample population was selected because they provide public representation of those who have no direct involvement with the aquaculture industry, but are impacted as potential consumers of aquaculture products, as current consumers in tourism, and as current common property resource users of the ocean.

Specific objectives of the project goal were as follows:

1) Determine public attitudes toward and knowledge of marine aquaculture development.
2) Assess public attitudes toward the consumption of marine aquaculture products.
3) Assess the public interest in marine aquaculture as a potential tourist attraction.
4) Identify specific, salient public beliefs about the leasing of a common-property resource (the ocean) for private enterprise.

Project Plan and Methodology

The project consists of three mutually dependent components. The first component is a Project Advisory committeee which is made up of key stakeholder groups associated with the planning, management, development, regulation, and operation of marine aquaculture, and with the traditional and alternative uses of coastal resources in New Hampshire and Southern Maine. The advisory committee insured that stakeholders with diverse perspectives (i.e., some who support marine aquaculture and some who oppose its development) were able to participate fully and effectively in the management and policy process of the industry. The committee also provided professional insights into marine aquaculture issues, input into the research process, and assistance with the transfer of the research into policy and planning initiatives.

The second component is a self-administered, mail survey of a representative sample of tourists who visited northern New England coastal communities. Subjects for the mail survey are identified from the passenger lists of NH coastal cruise ships (UNH Discovery, Isles of Shoals Steamship Company, and Granite State Whale Watch). The target audience consists of tourists who took passage on the cruise ships during the summer tourism season of 1998 (UNH Discovery only) and who will take passage during the Summer, 1999 (UNH Discovery, Isle of Shoals Steamship Company, and Granite State Whale Watch). The mail survey was designed and administered by the principal investigators, using standard data collection procedures and quality controls detailed in Dillman's Total Design Method (1978). Care was taken to insure that the researchers and the research instrument did not bias the sample population towards a predisposition to support or oppose marine aquaculture development. A participation incentive program was developed to promote a high response rate (30% anticipated).

The third component of the project is the summary report detailing and interpreting the research findings. The report will provide pertinent sociocultural information necessary for more effective marine aquaculture planning and policy. It will include an action plan, developed with the assistance of the project advisory committee, and will give detailed recommendations for the development of planning and policy proposals for significant and sustainable marine aquaculture in New England. (This portion of the project will be completed in the Fall, 1999.)

Results

The questionnaire was sent to all UNH Discovery cruise passengers of the Summer, 1998 season (n = 188). UNH Sea Grant, operator of the Discovery cruises, provided us with the names. A total of 103 completed surveys were received yielding a 55% response rate.

Demographic profile. Respondents of this survey are mostly female (64%) with a mean age of 52 years. They are highly educated: 84% have advanced education and degrees. Although many respondents work full-time (42%), one-third is retired. Their household income is above the national average: $45,000 to $59,999 (median). Most consider themselves politically moderate to liberal and half of respondents have their primary residence located less than 10 miles from the coastline. Table 1 provides a summary of the demographic profile of UNH Discovery cruise respondents.

Resource use. A list of 13 possible consumptive and non-consumptive activities of ocean resource use was provided. A five-step Likert-scale was used, asking respondents to indicate if they felt each activity was an 'extremely bad,' 'somewhat bad,' 'neither bad nor good,' 'somewhat good,' or 'extremely good' use of the ocean resource. Respondents were most supportive of preservation and restoration activities: 66% indicated that marine sanctuaries were an 'extremely good' use of the ocean resource and 58% felt wild fish restoration was an 'extremely good' use of the resource. At the other extreme, respondents felt most strongly about resource extraction and economic issues. Resource extraction received 29% 'extremely bad' and 39% 'somewhat bad' proportional response rates and community economic development received 14% and 28% proportional response rates in these respective categories. It is important to note that community economic development also received proportional response rates of 7% for 'extremely good' and 30% for 'somewhat good' use of the ocean resource.

Table 1: Summary of Demographic Information of Respondents

Summary of Demographic Information	
Age	52 years (mean)
Gender	64% female 36% male
Education	14% high school 52% AA/Bachelor's degree 27% Master's degree 5% Ph.D./professional degree
Income	$30,000 to $44,999 (mode) $45,000 to $59,999 (median)
Employment status	42% full time 32% retired 18% part time
Political orientation	35% Liberal to Moderately Liberal 37% Moderate 28% Conservative to Moderately Conservative
Distance of primary residence from coastline	52% Less than 10 miles from coast 40% 10 to 50 miles from coast 6% 50 to 100 miles from coast

Recreational fishing and general recreational activities were two categories that received the greatest proportional response for the 'somewhat good' response category. Although marine aquaculture and commercial fishing did not receive the highest frequencies of a particular response category; these activities still had relatively high support. See Table 2 for a summary of the Resource Use results of the survey. Additionally, although the eating preference portion of this study is not reported within this paper, 96% of respondents indicated that they eat seafood.

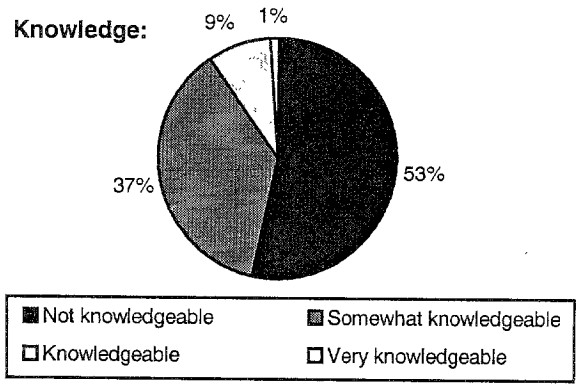
Table 2: Future Use of the Open Ocean – Activities Ranked by Greatest Proportional Response by Category.

Activity	Extremely Bad	Somewhat Bad	Somewhat Good	Extremely Good
Marine sanctuaries	2%	0%	32%	**66%**
Wild fish restoration	0%	2%	33%	**58%**
Recreational fishing	1%	4%	**53%**	30%
Recreational activities	0%	8%	**47%**	37%
Marine Aquaculture	1%	2%	38%	52%
Commercial shellfish fishing	3%	17%	43%	20%
Resource extraction	**29%**	**39%**	10%	3%
Shipping/Trade	6%	**30%**	34%	7%
Community economic development	14%	**28%**	30%	7%

Aquaculture: Knowledge and Relevance. Respondents were asked how knowledgeable they were about marine aquaculture and how important the issue and decisions about aquaculture were to them. Fifty-three percent indicated that they were 'not knowledgeable' about marine aquaculture, 37% were 'somewhat knowledgeable,' and 9% were 'knowledgeable' about the issue. Respondents were particularly responsive to questions pertaining to federal and state decisions about aquaculture and about

aquacultural issues in New England. See Figure 1 for the results of this portion of the survey.

Figure 1: Knowledge and Relevance of Aquaculture



Personal Relevance:	Important
Aquaculture	57%
Federal decisions about aquaculture	78%
State decisions about aquaculture	76%
Aquaculture in New England	76%

Aquaculture: Issues and Concerns. A list of 25 statements regarding common issues and concerns about the marine environment and aquaculture were provided. Respondents were asked to indicate whether they 'agreed' or 'disagreed' with the statements using a five-step Likert-scale: 'strongly disagree,' 'disagree,' 'neither,' 'agree,' and 'strongly agree.' The issues receiving the greatest frequencies for each combined response category are reported in Table 3. Respondents agreed that the New England fishery is in crisis (87% agreed/strongly agreed). They were consistent with who they felt responsible for the crisis: 78% felt large-scale fishers (those with boats greater than 50-ft. in length) were responsible for the crisis and 67% felt large-scale fishers were not responsible stewards of the ocean resource. Comparatively, 51% indicated they 'neither agree nor disagree' that small-scale fishers (those with boats less than 50-ft. in length) were responsible stewards of the resource, yet 63% 'disagreed' that small-scale fishers were responsible for the fishery crisis.

A majority of respondents 'agreed' that marine aquaculture would provide jobs (62%). They 'disagreed' that marine aquaculture would negatively change fishing communities (62%). Forty-eight percent 'neither agreed nor disagreed' that privatization of the ocean would promote efficient use of the resource.

Aquaculture in New England. Three subsections of the questionnaire assessed the respondents beliefs about marine aquaculture, their convictions about developing marine aquaculture in New England (NE), and their potential behavior towards marine aquaculture measured by their vote to support or oppose the issue were it proposed in a ballot initiative. The first subsection contained nine statements each of claims for and against marine aquaculture development. Respondents were asked to indicate whether they felt each claim to be 'true' or 'false,' using a five-step Likert scale ('definitely false,' 'probably false,' 'definitely true,' 'probably true,' and 'no idea'). Of the claims against marine aquaculture development, the three most frequent statements in the definitely/probably false response category were: a) privatization of what should remain open access (44%), b) the introduction of non-native species into the ecosystem (38%), and c) the requirement of lethal control of predators (32%). Respondents believe the following three claims for developing marine aquaculture to be definitely/probably true: a) provides economic development for coastal communities (76%), b) helps meet global demand for fish products (72%), and c) provides jobs for displaced fishers (64%).

Table 3: Aquaculture Issues and Concerns – Issues Ranked by Greatest Proportional Response by Category.

Statement	Disagree/ Strongly Disagree	Neither	Agree/ Strongly Agree
The New England fishery is in crisis	3%	10%	**87%**
Large-scale fishers responsible for crisis	4%	18%	**78%**
Marine aquaculture will provide jobs	8%	31%	**62%**
Small-scale fishers responsible stewards	17%	**51%**	32%
MA undertaken by large corporations	17%	**50%**	33%
Privatization promotes efficiency	23%	**48%**	28%
Large-scale fishers are responsible stewards	**67%**	23%	10%
Small-scale fishers are responsible for the crisis	**63%**	30%	8%
MA will negatively change the community	**62%**	31%	7%

Following these claims for and against the development of marine aquaculture were three sets of questions asking the respondents whether or not they thought marine aquaculture in NE is a 'good vs. bad idea,' a 'beneficial vs. harmful idea,' and a 'wise vs. foolish idea' given a five-step scale. Respondents were then asked how certain they were of their beliefs given a five-point scale with '1' = 'not certain' to '5' = 'extremely certain.' Respondents were consistent with their belief that marine aquaculture in NE is a positive idea: 76% indicated that marine aquaculture in New England was a moderately to extremely 'good idea;' 71% indicated that it was a 'beneficial idea;' and 72% indicated that it was a 'wise idea.' However, they were not extremely certain of their beliefs: 44 to 45% of respondents marked numbers '4' and '5' on the certainty scale for each question set.

The final question in this section of the survey presented the development of marine aquaculture in NE as a ballot initiative requiring a 'yes' or 'no' response. Respondents were asked: 'If there were a ballot initiative on the development of marine aquaculture in New England, would you vote to support or oppose marine aquaculture?' Respondents overwhelmingly supported marine aquaculture in New England with 89% indicating that they would vote 'yes,' however only 78% of respondents participated in this question compared to the 95% participation in the proceeding sub-sections of this questionnaire. See Table 4 for a summary of marine aquacultural development in New England.

Table 4: Marine aquacultural development in New England.

Do you think developing marine aquaculture in New England to be a:	
Good vs. Bad Idea	76% moderately to extremely good idea 45% certainty
Beneficial vs. Harmful Idea	71% moderately to extremely beneficial idea 44% certainty
Wise vs. Foolish Idea	72% moderately to extremely wise idea 45% certainty
If there were a ballot initiative on the development of marine aquaculture in New England, would you vote to support or oppose marine aquaculture?	89% yes, would support 11% no, would not support

Aquaculture: Recreational Initiatives. This section of the survey assessed the potential demand for programs and attractions related to marine aquaculture. Respondents were asked to indicate their interest in potential recreational initiatives, using a four-step Likert scale ('no,' 'probably no,' 'yes,' and 'probably yes'). The three activities receiving the greatest proportional response for the combined positive category reveal their interest in the marine environment and aquaculture. Eighty-nine percent would be interested in 'visiting a marine aquaculture site as part of a whale watch cruise,' 87% would 'tour a shore-based aquaculture farm,' and 87% would 'visit a museum about marine fisheries.' Comparatively, the three activities with the greatest dissenting proportional response were 'jet skiing areas' (91%), 'bike rental shops' (91%), and 'children's programs about the fisheries' (58%).

Conclusions and Future Work

This study provides a preliminary assessment of tourists' attitudes towards marine aquaculture development in New England. The sample is current consumers of marine tourism, users of the open ocean, and potential consumers of aquaculture products (i.e., seafood and tours). They are highly educated and interested in their marine environment, especially regarding conservation and restoration issues. They are supportive of marine aquaculture development in New England, yet only 45% of respondents were certain about that opinion. Additionally, they would be interested in participating in aquaculture-based tours. Development of such an initiative could advocate stronger support for marine aquaculture development in New England by this population.

This study will be completed in the Fall, 1999 with additional cases obtained during the Summer, 1999 survey of day-cruise tourists. The final report will include the issues reported within this paper as well as issues pertaining to eating preferences and preferences for aquacultured products. Additionally, statistical analysis will allow examination of the predictive validity of attitudes.

Notes

1 This study is ongoing with a completion date of Fall, 1999. Preliminary results using the UNH Sea Grant Discovery Summer, 1998 data are reported in this report.

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Economics of Outdoor Recreation and Tourism

ECONOMIC IMPACT OF ELK VIEWING IN RURAL PENNSYLVANIA

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Abstract: Pennsylvania's elk herd is attracting increased visitation to rural Elk and Cameron Counties. This study identified 73,500 visitor days associated with elk viewing in 1998. The 93% who were from outside the region generated over $900 thousand in value added impacts in the study area.

Introduction

A gradual increase in Pennsylvania's elk herd over the past decade to approximately 480 animals (Cogan 1999), and allied development of an elk viewing area by the Rocky Mountain Elk Foundation and the Pennsylvania Game Commission has resulted in a parallel increase in elk-viewing tourism. A study was instituted in 1997 through the support of the Rocky Mountain Elk Foundation to establish a profile of the visitors and estimate their economic impact in north-central Pennsylvania, namely Elk and Cameron Counties.

Study Procedures

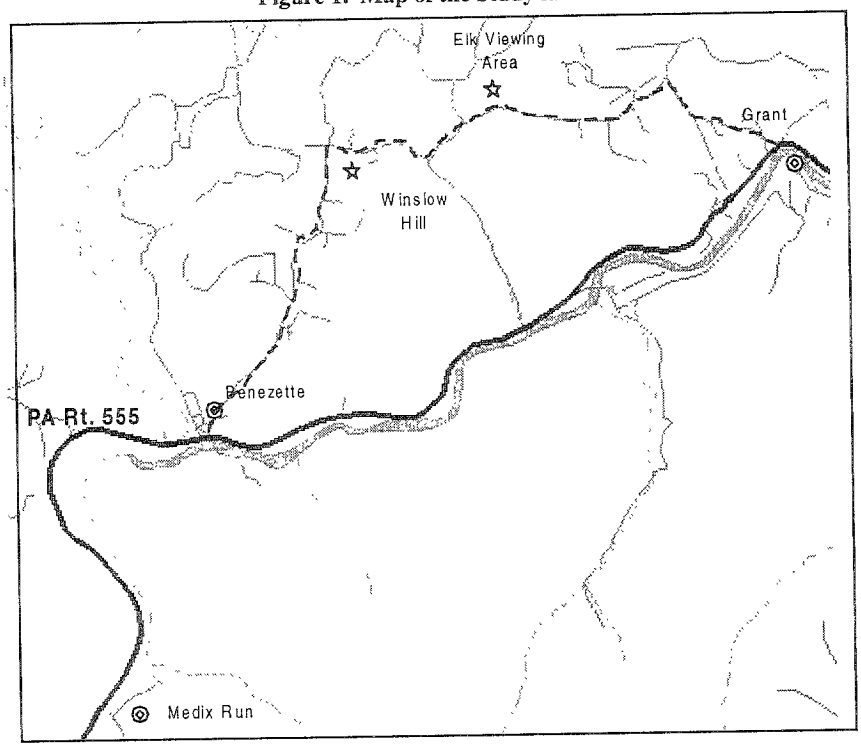
Visitor Surveys:
Fieldwork was initiated on Labor Day weekend of 1997. During the first year of the project (September 1997 - August 1998), 43 days of interview work provided 734 usable surveys. During the first two months of the second year of the project, 15 days were involved in survey work, providing 89 completed surveys. The highest rates of survey productivity were in September and October of the first year, with some of this production tied to having two survey persons on site. In contrast, our lowest production was in November, December, and January. This effort was warranted to identify the ebbs in attendance and the allied characteristics of the various audiences. During the second year, increased attention was paid to estimating the attendance patterns in the area, at the expense of individual surveys.

Attendance Estimating Procedures:
In conjunction with the on-site surveys of elk-viewers, traffic counts were taken to identify the number of people in the area. The traffic count system involved a total count of all non-commercial vehicles in the vicinity of the main viewing areas (Figure 1). During the first year, these counts were taken at various periods during the day. Special attention was made to securing counts near the beginning and end of the day. The intent of this system was to determine the patterns of visitation during the day, on different days of the week, and throughout the season. The system was modified during the fall of 1998 to better identify the daily patterns of visitation. This sample secured a total count of vehicles in the system, followed by a continual count of those entering and departing during 15-minute intervals. This combination provided a better identification of the peak visitation.

Vehicle counts were expanded to visitor days of usage based on the average passenger load per vehicle. From our interviw data, the average was 3.1 persons per vehicle. This average has been constant, ranging from 3.2 persons during the first four months of the study to 3.1 persons per vehicle over the entire sample period.

A two-stage procedure was established to expand these point samples of visitation into daily and then seasonal estimates. The first stage expanded the individual observations taken over any given day into a total estimate for the day. An examination of the data showed a bimodal distribution through the day, with peaks occurring at the prime viewing times of dawn and dusk. This trend was most pronounced during the fall when the number of visitors was large. In the winter and spring period there were fewer morning visitors than observed in the fall period, with the AM peaks less discernible. From the visitor surveys, we concluded that 39% of the AM users stayed the entire day. Similarly, 17% of the PM users indicated that they were involved in morning elk watching. With this information, an entire day's attendance could be predicted.

Figure 1. Map of the Study Area.



The second stage of the estimation process involved expanding daily measures into annual estimates. The year was divided into two periods. The first covered the elk rut season, starting with the Labor Day weekend and extending through November. This period peaked on Saturday, October 11 in 1997. After this date attendance tapered off over the remainder of the period. In 1998, the peak was on Saturday, October 3, and again attendance tapered off over the remainder of the period.

The second period represented off-season attendance and was characterized by a sharp decline in December, followed by a gradual increase through the spring and summer periods.

Nonlinear regression was fitted to each period's data to predict the non-surveyed days. A triangular distribution based upon the day of the year was the main predictor. This distribution centers on the peak day, and has visitation tapering in a linear fashion during the weeks before and after the peak. In addition, an indicator variable was used to identify weekend versus weekday differences. This variable showed visitation doubling on weekends during the peak season. These regression equations for each period were then used to predict the overall visitation levels throughout the year.

Economic Impact Procedures:

The economic impact of the visitors to the elk viewing area was generated by the Impact Analysis for Planning (IMPLAN) system. IMPLAN is a computerized data base and modeling system that provides a regional input-output analysis of economic activity. It is particularly well suited in describing the economic impacts from tourism. This input-output model was developed by the USDA Forest Service and the Federal Emergency Management Agency to estimate the regional impact of management plans for national forests (Alward et al. 1985). It is commercially available from the Minnesota IMPLAN Group, Inc. on a fee basis.

Economic impact was determined from the regional expenditures made by non-resident visitors to the viewing areas. Essentially these expenditures represent the "export" of recreational services to persons outside the region. Although the expenditures made by resident visitors are identified within the study, these amounts are not credited as a source of tourism impact.

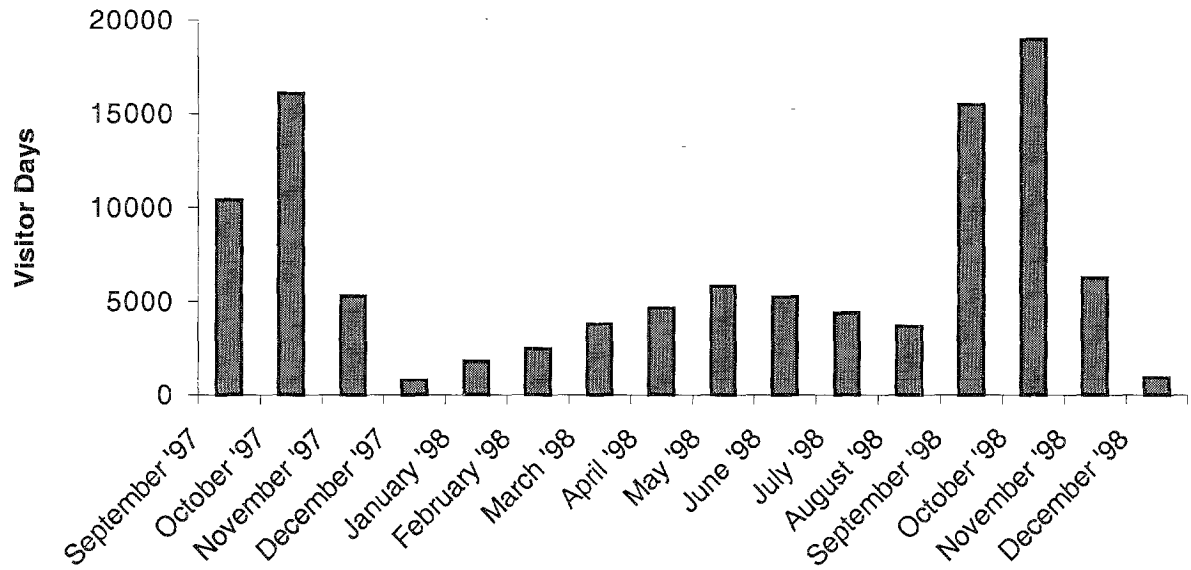
The economic impact of non-resident expenditures are identified in terms of (1) the direct impacts from sectors serving non-resident visitors, (2) the indirect impacts from other sectors having commercial linkages with direct sectors and, (3) the induced impacts from the regional expenditure of wages and salaries earned in the direct and indirect sectors. The latter two are often grouped together as secondary impacts.

Results

Attendance Characteristics

Attendance in the Benezette and Winslow Hill elk-viewing areas was estimated in terms of visitor days (one person's visit of some portion of any given day). Visitation for 1998 was estimated at 73,500 visitor days. The monthly distributions for the 1998 were 21% in September, 26% in October, and 9% in November; with this three-month span representing 56% of the annual visitation (Figure 2). The three-month winter span realized only 6% of the annual total. The spring and summer months gathered the remaining 38% of annual visitation. The fall period of September through November in 1998 was estimated to be 27% higher than the during the same period of the previous year.

Figure 2. Attendance at Benezette Elk Viewing Area, 1997-1998.



The most obvious trend during the twelve-month period was the major build of attendance during the popular elk-rut season. Obviously, the public arrived in large numbers to see the bulls assemble their harems and hear them bugle. However, what is also interesting is the comparatively low attendance registered during November through January. There was some speculation that the small game and deer hunting seasons, and the allied presence of regional hunting camps, might generate a complimentary interest in elk watching among hunters. Although a certain synergy did occur between these two pursuits, it was not of sufficient volume to swell December's attendance. In fact, December was the lowest attended month during the twelve-month period.

Visitor Characteristics

Geographic Origin: Over the 15-month study, 7% of those persons interviewed were from Elk and Cameron Counties, 86% were Pennsylvania residents living outside this two-county region, and 7% were non-residents of the state. These distributions have not changed during the past 15 months (Lord et al. 1998).

Vehicle Occupancy Level: As previously identified, the vehicle occupancy level among elk-viewers averaged 3.1 persons per vehicle. This level, no doubt, reflected the high percentage of family groups surveyed over the 15-month study (64% family groups, 18% peer groups, 16% individuals and 2% tour groups).

Relative Importance of Elk-Viewing: Elk viewing was a priority item on the travel itineraries of most visitors. In fact, 86% of the non-resident visitors indicated elk viewing was the primary reason for their trip (Table 1). An additional 12% listed it as a secondary reason for their trip, whereas only 2% considered it as an incidental component of their trip. Once again, these percentages did not change between the fall and winter/spring/summer audiences.

These rankings are important to expenditure and impact analyses. In our methodology, if an activity was the primary component on a travel itinerary, all of the visitor's regional expenditures were credited to that pursuit. Whereas, if it was considered secondary, the daily expenditures were divided among the various activities, and, if it was incidental, none of the expenditures were credited to the activity.

Table 1. Relative Importance of Elk Viewing to Non-Resident Visitors.

Reason	
Primary	86%
Shared	12%
Incidental	2%

Average Daily Expenditures: The average daily expenditure for visitors (regardless of their priority to elk viewing) was measured on a visitor day basis. The average non-resident elk viewer spent $19.10 per visitor day in the region. Resident viewers spent $5.73 per visitor day. The major expenditures among non-residents were food, transportation, and lodging, constituting nearly 90% of their expenses.

The level of non-resident expenditures for elk viewers was consistent with similar audiences from other tourism studies conducted in Pennsylvania (Strauss et al. 1996, Lord et al. 1996b). Furthermore, their distribution of expenses was consistent with other audiences engaged in over-night travel (sporting events, craft festivals, and heritage tourism). One exception was the lower percentage of expenditure devoted to lodging among elk-viewers. Several factors probably served to lower the amount spent on lodging, including the use of privately owned cabins within the region, over-nighting outside the two-county region, or not over-nighting at all.

Nights in the Region: Our survey of non-resident visitors showed 15% owning a second home within the two-county region. Among the non-resident visitors, 39% were involved in an overnight stay within the region (Table 2). If the 15% who owned second homes in the region used these facilities during their overnight stay, the remaining 24% either used commercial lodging or stayed with friends. An additional 13% of the non-resident visitors owned a second home in an adjacent county. Almost all of the over-nighting in adjacent counties was in second homes, with hotel usage negligible.

Table 2. Percent of Overnight Stays Among Non-Resident Visitors Within The Region or in Adjacent Counties.

	Number of Nights			
	1	2	3+	Total
In Region	15%	17%	7%	39%
Near Region	5%	5%	4%	14%
Total	20%	22%	11%	52%

Sources of Information on Elk-Viewing: The most prevalent source of information on the location and timing of elk viewing in the Benezette area was from "word of mouth", representing 61% of the sources. An additional 12% of the audience credited local or common knowledge as their primary source of information. These percentages include both resident and non-resident viewers, which probably increased access to local information. The combination of published information, from such sources as the Pennsylvania Game Commission's Game News, Rocky Mountain Elk Foundation publications, or other newspapers, magazines and brochures, represented another 20% of the information sources.

Average Annual Visitation Rates: The average annual visitation rate for residents of the two-county region was 11.8 days per year and for non-residents was 4.3 days per year. These annual participation rates are of value in determining the absolute size of the audience (visitors or people), as opposed to the "traffic count" measure (visitor days of use). Essentially, a division of the total annual visitor days of attendance by the annual visitation rates, as stratified by residents and non-residents, would provide an estimate of the absolute number of people involved in elk-watching. This absolute size of the audience is important from marketing or political viewpoints, whereas the measure of total usage (visitor days) is important to the logistical and economic impacts realized within the region.

Memberships in Outdoor Organizations: The most prevalent affiliation among elk-watchers was in terms of local sportsmen clubs, with 21% of those interviewed having such a membership (Table 3). The next most prevalent affiliation was with the National Rifle Association, representing 19% of those interviewed. Third most popular, identified among 8% of those interviewed, was the Rocky Mountain Elk Foundation (RMEF). Of interest, however, only 1% of those interviewed credited RMEF publications as a source of information on the Benezette destination. An additional 20% of the visitors listed affiliations with other wildlife or outdoor organizations.

Table 3. Membership in Outdoor Organizations Among Elk Viewers.

Organization	Percent of respondents
Local Sportsmen's Club	21%
NRA	19%
RMEF	8%
NAHC	7%
Wild Turkey	3%
Ducks Unlimited	2%
NWF	2%
Conservation Club	1%
Audubon	1%
Buckmasters	1%
Nature Conservancy	1%
Wildlife Forever	1%
Bow Hunters	1%

Suggestions for Improvements in Elk Viewing: Among the 823 persons interviewed, 528 suggestions were gathered from 48% of the respondents regarding ways and means for improving elk-viewing (Table 4). Apparently, 52% of the audience was sufficiently satisfied with their experience and had no further suggestions for improving the area. Among the people offering recommendations, 38% suggested improving the road and parking areas. Another 29% were related to the signing and information systems. About 7% of the respondents requested improvements to the rest room situation.

Table 4. Top 5 Suggestions for Improving the Elk Viewing (Out Of 823 Surveys).

Roads/Parking	152
Signs	82
Info	35
Bathrooms	27
More/Improved Viewing Areas	25

Economic Impacts

The expenditures of the non-resident audience were entered into the IMPLAN model. Most of the expenditure categories, e.g. lodging and restaurants, are identified as specific sectors within the IMPLAN model. Other expenditures entailed distributions among several sectors. Food purchased for personal consumption, and sporting goods are identified with a variety of economic sectors. These were based upon personal consumption expenditure profiles taken from the model.

Non-resident visitors spent over $1.3 million in the region during 1998. The direct output impact was $955 thousand, representing a loss due to imported goods and services (Table 5). This 27% reduction in visitor expenditures to direct impacts was consistent with other tourism-based studies. The direct and induced effects resulted in a secondary impact of $767 thousand and contributed to a total output impact of $1.7 million. The value added impact was $912 thousand. This economic impact generated $482 thousand in employment compensation, which supported 42 jobs in the region.

Table 5. The Annual Economic Impact of Elk Viewing in Pennsylvania,1998.

	Direct Output	Secondary Output	Total Output	Value Added	Employee Compensation	Jobs
Agriculture	20,211	5,692	25,902	22,322	4,289	0.8
Mining	258	665	923	505	149	0.0
Construction	0	37,982	37,982	19,559	9,732	0.5
Manufacturing	99,274	55,211	154,485	73,723	37,557	1.4
Transportation, Communications and Public Utilities	26,954	73,476	100,430	44,429	19,094	1.0
Trade	479,580	155,038	634,619	309,702	190,073	20.7
Finance, Insurance and Real Estate	0	166,204	166,204	106,011	12,189	0.6
Services	326,946	247,287	574,233	323,483	197,843	16.1
Government	1,845	23,234	25,079	10,381	9,063	0.2
Other	0	2,105	2,105	2,105	2,105	0.3
Total	955,068	766,892	1,721,960	912,219	482,093	41.7

The regional economy for Elk and Cameron Counties was modeled by IMPLAN as $1.1 billion in total industrial output. The percent of visitor expenditures retained as value added impact was 70%. This was somewhat lower than the tourism multipliers observed in other Pennsylvania counties (Lord et al. 1996a)

The aggregate of the trade sectors received the largest portion of the direct impacts ($479 thousand), reflecting the major role of the eating and drinking sector (Table 5). This was followed by the aggregate of the services sectors ($327 thousand), based largely on the hotel and lodging places sector. Significant direct impacts also occurred in the manufacturing sectors.

Secondary impacts were more broad based. The largest amounts were found in the services group ($247 thousand), the finance, insurance and real estate group ($166 thousand) and in the trade group ($155 thousand). Most of the secondary impacts were of an induced nature from household purchases (78%). This is a result of the high proportion of labor costs in the sectors making up the tourist industry, and the scarcity of locally produced material inputs to this industry.

Total impacts were also widely dispersed. The trade group was the site of $635 thousand in industrial output. This group also logged $310 thousand in value added impacts. Of this, $190 thousand supported 21 employment positions in the region. This was half of the employment attributed to elk watching. Almost as important was the $574 thousand of total output in the services group. The value added benefits in this sector were $323 thousand, larger than the trade group. Similarly, the $198 thousand in employee compensation was larger than for the trade group. The 16 employment positions were smaller, indicating a better wage structure in these industrial sectors. Total impacts were also significant in the finance, insurance and real estate group, the manufacturing group and the transportation, communications and public utilities group ($166, $154 and $100 thousand, respectively).

The individual sectors receiving the impacts tell a great deal about how the activity effects the local region's economy. The top two sectors, eating and drinking, and hotel and lodging places received 19% and 14% of the economic impact respectively. This was largely based upon direct impacts. The next largest impacted sectors are owner occupied dwellings (7.5%) and hospitals (5.0%). These are the largest two induced impact sectors (18% and 12% of induced impacts respectively).

Conclusions

Elk watching has become a significant source of tourism in Elk and Cameron Counties of Pennsylvania. Over 730 visitors were surveyed to determine their recreational profile and expenditure levels. Over 92% of the visits were by people from outside of the two county region. Elk viewing was the primary pursuit of 86% of the non-resident visitors. In 1998, the non-resident visitors spent over $1.3 million in the region. Almost all of this (90%) was spent on food, lodging and transportation. The region produced $955 thousand in industrial output to support this direct impact. Total impacts were $1.7 million. The value added component of this was $912 thousand and supported 42 jobs in the region.

The sectors receiving the direct impacts are largely connected to the primary expenditure categories of food, lodging and, to a lesser extent, transportation. The secondary impacts are broadly distributed, owing to their induced origin.

Only 24 percent of the non-resident visitors stayed overnight in local lodging places, with another 15 percent staying in private camps. An additional 14 percent stayed in private camps in adjacent counties. Hotel and lodging use in adjacent counties was almost non-existent. The economic benefits accruing from this tourism indicates that an expansion of the transportation and hospitality facilities in the region may be needed.

The size of the current impacts, along with the growth in visitation over comparable periods in 1997 and 1998 (almost 30% growth in the peak viewing period) indicate that continued monitoring of the situation is warranted.

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FISCAL TRENDS IN AMERICA'S STATE PARKS: AN 8-YEAR ANALYSIS

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Abstract: The National Association of State Park Directors (NASPD) has gathered data about state parks for 20 years. Consistent data has been available since 1992. Of particular interest is data relating to fiscal issues. This study looked at income sources, earned income, operational expenditures, state park budgets as a percent of the total state budget, and a comparative analysis of data. The data found that in every instance, except earned income, state park agencies minimally kep pace with inflation. State park agencies have more dollars to spend on operations in 1999 than in 1992. In 1992 sate parks had available an average of $98 per acre. By 1999 that had shrunk to $92 per acre (using 1992 dollars). Earned income can be viewed from different perspectives in relation to its importance to state park agencies. The utilization of earned income has increased steadily, but at the expense of compulsory income (tax dollars). Earned income is replacing some levels compulsory income so that total income available for operations is not increasing at the same rate. The number of full-time employee has decreased over the reporting period.

Introduction

America's state parks are a unique resource providing close to home outdoor recreation opportunities. The presence of these parks in America's urban and rural areas is a significant natural, historical and cultural resource that adds to the base of recreation and leisure opportunities. In many ways the 50 state park systems are both unique and common. Common in the sense that many state park resources seem to reoccur throughout the United States — the presence of large open spaces for play, recreation, and relaxation — and unique in ways that only a few sites in each state can represent, such as South Dakota's Custer State Park, New York's Niagara Reservation State Park, or Kentucky's Natural Bridge State Resort Park.

The National Association of State Park Directors (NASPD) is composed of the 50 state park directors in the United States. They meet on an annual basis to discuss common issues and are additionally linked through an executive director and several electronic communications methods.

The Annual Information Exchange

The Annual Information Exchange (AIX), first conceived in the mid 1970s, is the primary source of data available to state park directors and researchers, dealing exclusively with state parks. The AIX is published annually by NASPD in conjunction with the Department of Recreation and Park Administration at Indiana University. As with any on-going data gathering process, refinements have been made on a regular basis. Prior to 1991 the AIX struggled to gather consistent and reliable data. Since 1991 the data collection has become more consistent and reliable. Indiana University began data collection and reporting responsibilities with the 1997 AIX.

The existing AIX survey instrument is 19 pages long and secures data for 7 areas: 1) inventory of areas; 2) types of facilities; 3) visitation and use; 4) capital improvements; 5) financing; 6) personnel; and 7) support groups.

AIX Questionnaire

The AIX questionnaire is mailed every September to the 50 state park directors and their designated individual who completes the survey instrument. The information requested usually requires each agency to contact a number of individuals to gather all of the data. Sent with the AIX is a set of instructions on "how to" complete the survey and includes definitions relevant for all terminology used in the AIX. States can respond by completing and returning the survey that was mailed to them, or submitting the data via the world wide web. There is a 100 percent response rate every year. When data is not received in a timely manner, the Indiana University staff makes contact with the particular state park agency to encourage submission. The NASPD Executive Director makes a final contact to agencies who are particularly slow in submission. Submission, corrections, validation of data and publishing the final report takes six months.

The data received is inputted into a Microsoft Excel file and then compared to the previous year's data. When data is found to be inconsistent, the state is called and asked about the discrepancy. Changes in data may occur for a number of reasons. Changes may occur as a result of legislative action, current or previous clerical error, or agency change in designation of a particular area or type of areas. After all data has been verified, a draft copy of the report is prepared and mailed to the 50 state park directors. They have three weeks to review the data and to make corrections. After that period, the report is published. The report period covers from July 1 through June 30 of he previous year. The 1999 AIX, for example, covers a period from July 1, 1997 through June 30, 1998.

Data Limitations

Any longitudinal data set presents unique data collection challenges and the AIX is no exception. Key problems associated with data collection are an inconsistency within and between the states. It is not uncommon to have 3 different individuals complete the AIX over a 3 year period in one state. Each individual brings different interpretations to the data and responds accordingly. Even with definitions the same respondents will change their interpretations from year to year. When state park facilities do not correspond with AIX definitions the states either arbitrarily make decisions or ask the data gathering agency for clarifications. Attention to detail is another issue. Every year literally dozens of telephone calls are made to verify and correct data. The major data limitation, however, is the absence of accurate counting methods at many state park facilities. Typically state parks will have at least 6 months and maybe more when no one counts attendance. At states without entrance fees there may be no formal counting process.

Overview of the State Parks

It is helpful to understand the size and context of the state park estate. For the period ending June 30, 1998, state park agencies reported administering 5,870 areas of which 5,320 were operational (91 percent), including 12.7 million acres. Attendance at state park agency administered areas for the same period was 761 million visits. This included both day and overnight visits.

The State Park agencies administer 11 different types of areas, not all of which are common among the states. State parks are the largest single category totaling 1,769 and 7.9 million acres. Three states do not have the "state park" designation in their system and accordingly report none. The 50 agencies provide 206,000 campsites, 6,045 cabins, 115 lodges, 254 marinas, 291 swimming pools, and 26 ski slopes. Day visitation is by far the largest single type of use representing 92 percent of all users. Yet, 50 million campsites were rented in 1997-1998, and 2.3 million lodge rooms.

No matter how you look at it the State Parks are big business!

Data

This study looked at four fiscal trends over an 8 year period: 1) total income, 2) earned income, 3) operational expenditures, and 4) percent of state park budget as part of state budget. Data analysis was kept to simple descriptive statistics. Data prior to 1992 was not included. For comparative purposes 1992 dollars were used. A line running parallel to the horizontal axis (years) of the table. The Gross Domestic Product provided data for determining the deflator.

Income Types

There are six identified types of income as reported by NASPD. They are 1) unappropriated revenues, 2) appropriated revenues, 3) the general fund, 4) dedicated funds, 5) federal funds, and 6) other sources.

Each of the funding type provides a source of income to state park agencies. Figure 1 depicts total income from all sources for the fifty states as reported in the 1999 AIX. The general fund, a source of compulsory income, is the single largest source of income for state park agencies representing 47 percent of all income. Appropriated revenues rank second at 30 percent. Unappropriated revenues and dedicated funds were the next highest levels of income at 10 percent and 9 percent respectively. Federal funds account for only 1 percent of state park operating funds.

Total income is represented by all six income types identified in Figure 1. Table 1 depicts total income sources for the period 1992 through 1999. The data, reported in 1992 dollars, holds inflation as a constant. In other words, by using 1992 dollars inflation is allowed to be mapped as a single horizontal line beginning with 0 percent in 1992 and running horizontal and parallel to the base axis (year's). The data points represent the succeeding year's income converted via deflators to 1992 dollars. This is repeated in each table.

State park agencies fell behind inflation in 1993 and 1994. The 1993 decrease in funding represented a 3.6 percent decline in funds. This increased by 2.95 percent in 1994, but still remained behind inflation. Beginning in 1995 and continuing state park agencies have successfully secured income at a rate exceeding that of inflation. Inflation has changed an average of 2.29 percent over the period while state park income, when adjusted to 1992 dollars, has grown an average of 1.1 percent above inflation. 1993 was the only year where income decreased, but the growth of income has not been marked by periods of consistent growth, but rather by spurts. Three years showed growth above 2 percent (1994, 1996, 1999), two years between 1 percent and 2 percent (1995 and 1997), one year below 1 percent (1998), and one year an actual decline (1993). The purchasing power of state parks has increased minimally over the study period.

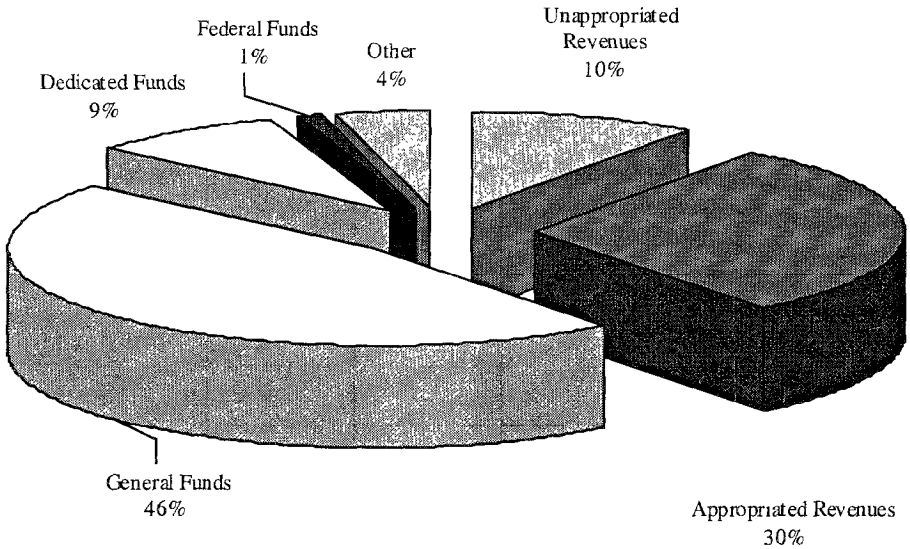

Figure 1: 1999 Reported Income Sources

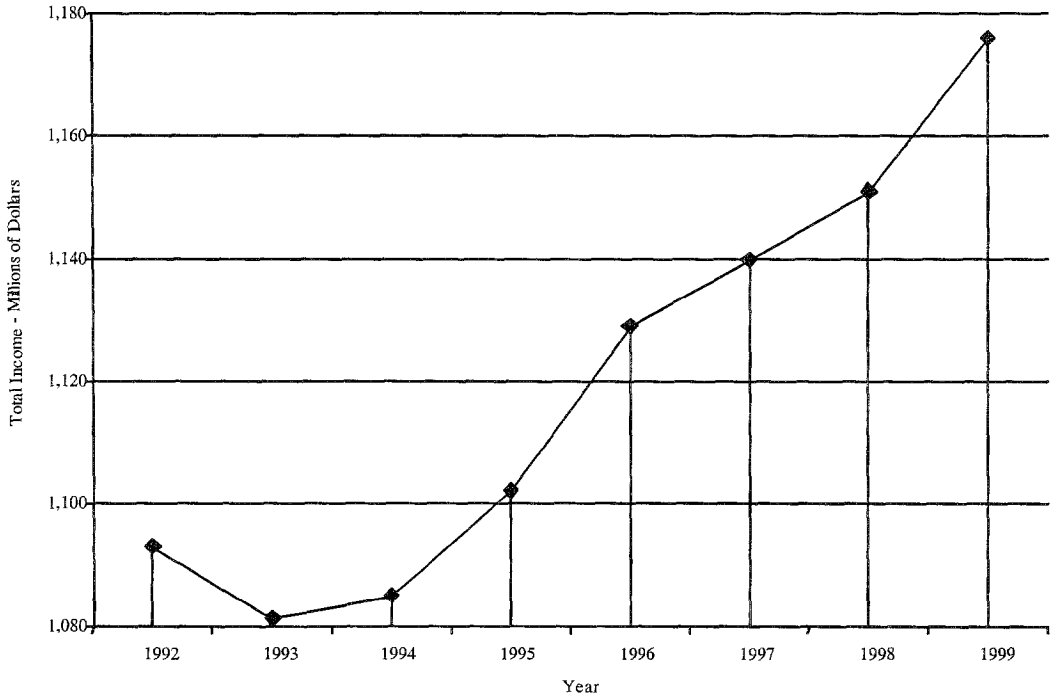

Table 1. Total Income

Earned Income

Earned income, as a part of total income is defined as "income generated from fees and charges assessed by the state for services and programs" (NASPD AIX, 1999). It may also include contractual income. Brayley and McLean (1999) identify earned income is an expanding source of revenue for public agencies. Earned income has increased steadily as a source of revenue for state parks during the last 20 years. During the course of this study earned income has grown at a consistent rate (4.2 percent), with the exception of 1993 (6.7 percent) and 1999 (15.7 percent) when it appears to have increased more dramatically (Table 2). The 1999 state data depicts one state increasing its income by $50 million while many other states showed modest increases. The increase by the single state may be a representation of a change in data gathering and reporting procedures or may be actual new income. Ensuing reports will assist in validating this growth. In two years (1994 and 1996) earned income showed a decline. In each case it was less than 2 percent and the next year provided an increase

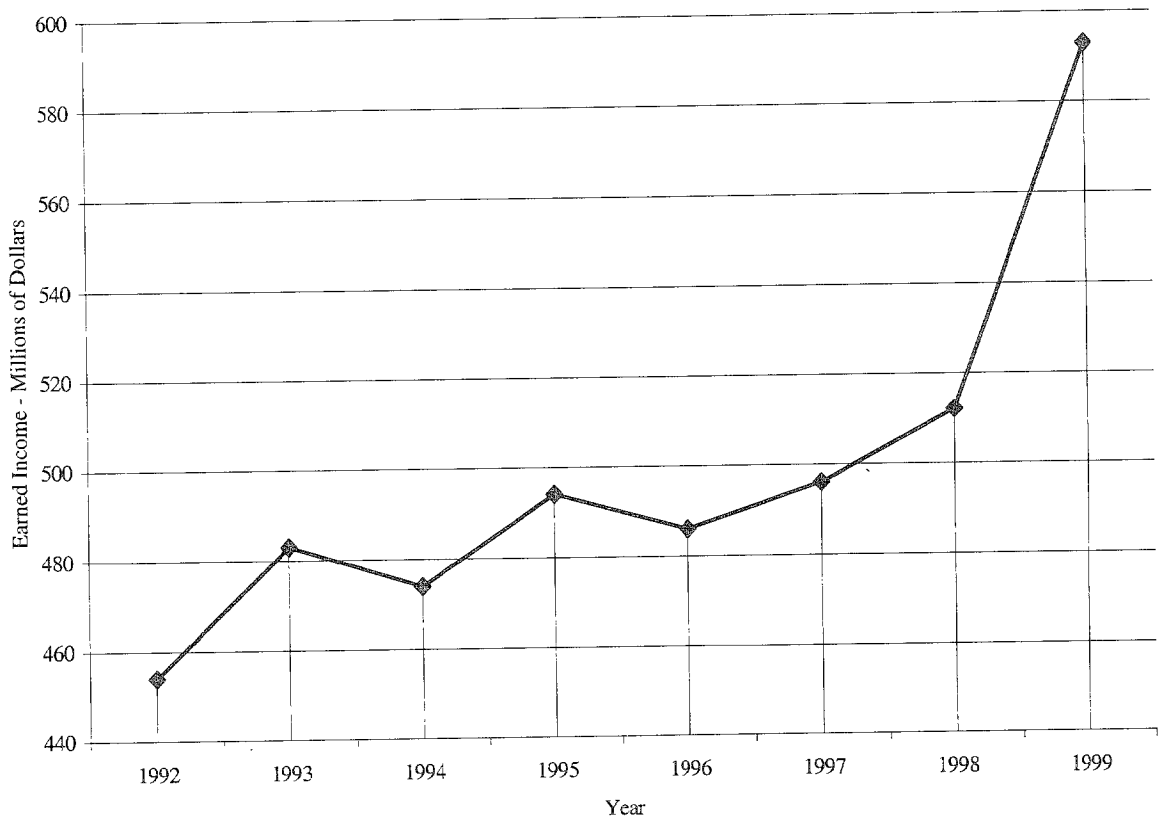

Table 2. Earned Income

Earned income has out-paced inflation, growing at an average annual rate of 4.03 percent. This may be a reflection of state park agencies becoming more entrepreneurial. There is some data to suggest that the entrepreneurial spirit is more a reflection of budgetary impacts and political philosophy (Brayley & McLean, 1998).

From a national perspective earned income has increased as a part of total income, but it has not significantly impacted upon the size of total operating budgets. Some states have been considerably more entrepreneurial than others. Total income has grown at an average of 1.1 percent when adjusted to 1992 dollars and earned income has grown over the same period at an average of 4.03 percent from $453 million to $593 million (1992 dollars). It is anticipated that earned income will continue to grow as state park agencies strive to diversify their sources of revenue. It is appropriate to note here that not all the revenue state parks generate may go back into the state parks. Disbursement of revenue earned is determined on a state by state basis. Conversely, several states have reported that as earned income has increased, general fund appropriations have seen equal levels of reduction (McLean, 1998). The data in Table 3 clearly reflects that earned income is growing faster than total income and is replacing some more traditional income sources.

Table 3: Earned Income as a Percentage of Total Income

Year	Total Income 1992 $	Earned Income 1992 $	Perecent of Total Income	Percent Annual Change
1992	1,093,204,469	453,645,060	41%	
1993	1,053,993,055	483,773,776	46%	7%
1994	1,085,047,381	474,217,954	44%	-2%
1995	1,102,343,698	493,741,425	45%	4%
1996	1,128,504,637	485,598,113	43%	-2%
1997	1,140,078,310	495,616,705	43%	2%
1998	1,150,721,163	512,266,033	45%	3%
1999	1,176,149,237	592,556,371	50%	16%
Mean	1,116,255,244	498,926,929	45%	4%

Operational Expenditures

Operational expenditures represent the lifeblood of daily activities among state park agencies. Operational expenditures do not include capital expenditures. Operational expenditures increased at an average rate of 1.01 percent over the study period, when measured by 1992 dollars. In 1992 and 1993 operational expenditures were below inflation. In 1995 operational expenditures barely exceeded inflation and did nothing to make up for the lost purchasing power of the previous two years. For that 3 year period operational expenditures showed a growth of only .17 percent. Beginning in 1996 operational expenditures grew at a rate of 1.6 percent through 1999. While operational expenditures have increased the growth has been slow, but the consistent growth over the last 7 years has been positive.

Percent of State Budget

State park agencies portion of the total state budget over the 8 year period is .2 percent of the total operating budget or .002 cents of every dollar represented in the state budget. The level of representation of state parks budgets within the total state system budget has remained fairly consistent over the study period. Some few states have received an amount equal to 1 percent of the state budget while others have received as little as .08 percent. It is not likely that state parks will see major increases in their share of state operating budgets in the near future.

Table 4: 1992-1999 Operational Expenditures (1992 Dollars)

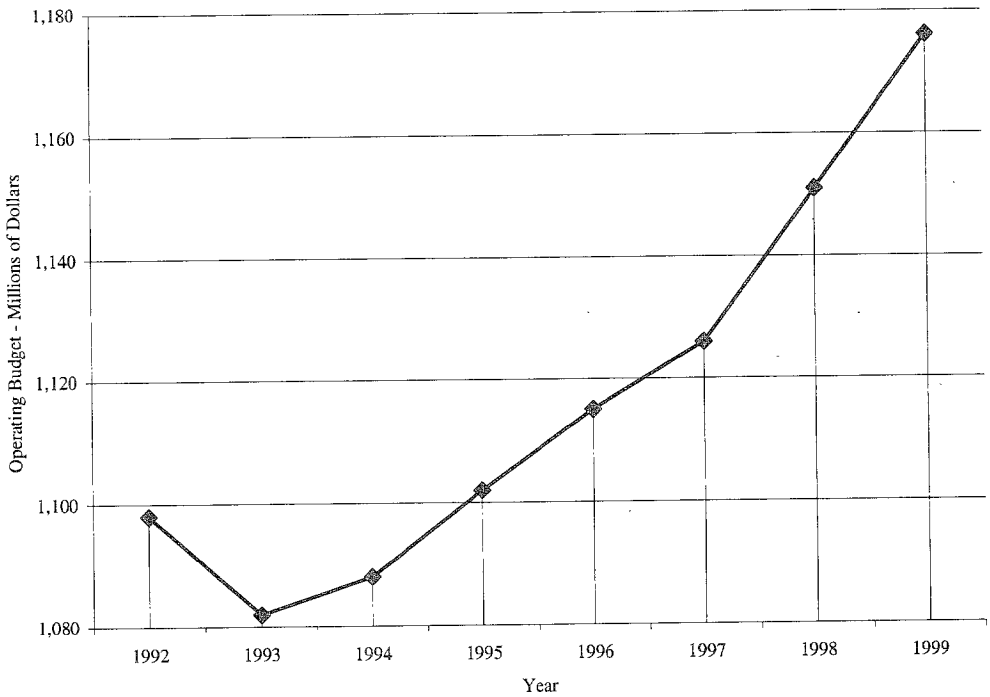

Table 5: 1992-1999 State Parks Share of State Budget

Year	Mean	Median
1992	0.25%	0.22%
1993	0.23%	0.19%
1994	0.22%	0.18%
1995	0.25%	0.19%
1996	0.32%	0.23%
1997	0.25%	0.19%
1998	0.23%	0.18%
1999	0.24%	0.20%

Comparative Analysis

Two additional factors were linked to the previously discussed fiscal issues: size of the state park estate, and number of employees (Table 6). Acreage grew at an annual rate of 1.84 percent over the reporting period. When operational expenditures were applied to acreage there were $98 available per acre in 1992. In 1999, using adjusted 1992 dollars there were $93 available. The decrease of almost $5 per acre (-.76% annual average) is reflective of the increase in acreage in the state park system growing at a rate greater than that of funding.

The number of full-time employees in state park systems has decreased by almost 300 personnel since 1992 (-.27 percent annualiy). Only in 1995, 1998, and 1999 were increases evident. The number of full-time employees has remained relatively flat as has operating expenditures. Acreage shows a steady increase beginning with 1996. State park agencies have less money and fewer staff per acre then in 1999 then in 1992.

Table 6: Comparative Analysis (1992 Dollars)

Total Area	1992	1993	1994	1995	1996	1997	1998	1999	Average
Operating Expenditures 1992 $	1,098,299,790	1,053,993,056	1,087,901,253	1,102,343,698	1,114,155,121	1,125,659,246	1,150,721,163	1,176,149,237	1,115,846,111
Acres Administered	11,147,594	11,612,090	11,610,084	11,684,937	11,671,020	12,271,641	12,484,046	12,653,569	
Dollars per Acre (1992 $)	$98.52	$90.77	$93.70	$94.34	$95.46	$91.73	$92.18	$92.95	$93.02
% change in acreage		4.17%	-0.02%	0.64%	-0.12%	5.15%	1.73%	1.36%	1.84%
% change in $ per acre		-7.87%	3.23%	0.68%	1.19%	-3.91%	0.49%	0.84%	-0.76%
Total Full-Time Employees	18,883	18,806	18,806	18,844	18,772	18,528	18,530	18,533	18,688
Change in No. of Employees		-0.41%	0.00%	0.20%	-0.38%	-1.30%	0.01%	0.02%	-0.27%

Conclusions

Trends reported in this study would suggest that there are increasing pressures on state park systems. State park operating budgets are minimally keeping pace with inflation. This concurs with Landrum's views, "Although state parks continue to be an important component of state government services, for the past two decades they have found themselves less able to compete effectively with other programs for public funding" (1999; p. 112). While state park operating budgets grew minimally, earned income expectations grew at a greater rate and in some cases replaced other forms of income. It can be expected that earned income will continue to play a large role in the fiscal operations of state parks in the future. Correspondingly, states can expect that general fund and other guaranteed incomes sources will decline. State legislatures and administrative bodies are placing increasing emphasis upon state park systems to be more revenue oriented.

The state park estate is an important component of the larger outdoor recreation estate. It is experiencing many of the same fiscal challenges faced by other public outdoor recreation agencies. State park agencies are responding to such challenges in creative ways. These include privatization, contract management, entrepreneurism, fund raising, grant writing and the like. In all likelihood such endeavors will continue.

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ECONOMIC IMPACTS OF A HERITAGE TOURISM SYSTEM

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Abstract: US history has often served as a theme for tourism. Within southwestern Pennsylvania, a system of historical sites depicting the region's cultural and industrial heritage was initiated in 1988. The Path of Progress included the renovation of 20 historical sites at a cost of $88.2 million. A five-year study monitored the growth and economic impact of 13-completed sites within the nine-county region.

By 1998, the 13 sites had an annual attendance of nearly 1/2 million visitor days, with 74% coming from non-resident visitors. Regional expenditures by non-resident visitors were $15 million in 1998. Total regional sales impacts from these expenditures amounted to $33 million.

Cumulative sales impacts from the entire system over the first 11 years of operation were $470 million, with 64% originating from non-resident expenditures and 36% from capital expenditures. A comparison of the original sites in 1988 to 1998 operations showed a net gain of $16 million in impacts from non-resident expenditures. More can be expected as the system expands.

Introduction to the Study

History is a popular theme for recreational travel. Tourists are intrigued by their past and the past of others. Consider England's Stonehenge, the Egyptian pyramids, or the Gettysburg battlefield. Our fascination with the past is a tribute to heritage and to time itself.

Various national parks are also time-oriented, with their focus being on geologic time and ecological events. Interwoven within these parks are elements of human history, from our more rudimentary marks to those of advanced societies. Gradually, we have collected and restored these remnants, and interpreted their cultures and heritage.

The industrial and cultural heritage of the US provides another setting for tourism. Williamsburg, Virginia; Sturbridge, Massachusetts; and Mystic, Connecticut have gathered attention to US colonial history. Certain museums have been dedicated to particular technologies; the Ford Museum in Detroit, the Space Museum in Washington, DC and the Steamtown Museum in Scranton, PA. Most of these centers are site-specific and do not address the regional character of heritage development.

In southwestern Pennsylvania, a regional tour system was organized to portray three centuries of heritage development. Its theme commemorates our nation's transition from the farming and extraction trades, through the Industrial Revolution, and on to our current mix of cultures and traditions. The Path of Progress (POP), includes an assembly of over 20 historic sites renovated over a ten-year period, 1988 to 1998, and is considered a prototype for other regional heritage systems.

The following paper presents the general structure of the system, its annual attendance and revenues, and the regional economic impacts generated over a thirteen-year period. Two sources of impact are considered; those organized from the development and restoration of the historic sites and those tied to the annual regional expenditures of non-resident tourists.

Literature Review

The economic impact of tourism has been investigated in the context of various regional and recreational activities.

Stoll et al. (1988) examined the specific impact of recreational boating within the Texas economy. Their data base was developed from a mailed survey of companies in the boating industry. The ratios of total sales impact to direct impact (Type II multipliers) for different elements of the boating trade ranged from 2.3 to 3.3. The multiplier for the entire industry was 2.8.

Fesenmaier et al. (1989) analyzed the economic impact of all recreation travel along the Texas Gulf Coast. Texas residents were surveyed regarding their regional travel expenditures, with the average placed at $57/visitor day. Total annual regional expenditures were $586 million. Regional and state-wide impacts were estimated with a Texas input-output model and were placed at $1.2 billion and $1.9 billion, respectively.

Johnson et al. (1989) identified the economic impact of tourist sales within six key industries along the Oregon coast. Tourist sales receipts were obtained from a survey of regional businesses and were treated as direct impacts. Induced impacts were estimated on the basis of the personal and business income generated by the initial sales. However, indirect impacts were not included. The proportion of income developed from direct sales ranged from 0.16 to 0.92. The smallest coefficients were in service stations and retail sales, with the largest in the amusement, food service, and lodging sectors.

Bergstrom et al. (1990) determined the economic impact of non-resident state park visitors within several state economies. Their work was based on the national-level Public Area Recreation Visitors Study (PARVS) and used an IMPLAN (Impact Analysis for Planning) model for economic analyses. The Type II multipliers for the various states ranged from 1.80 to 2.46, with the size dependent upon the complexity of the state's economy.

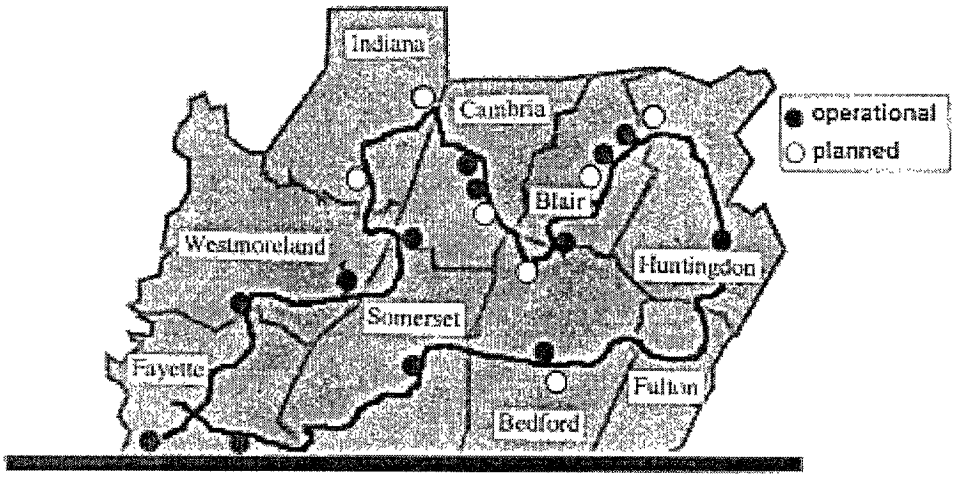
Strauss et al.(1996a) identified the economic impact of tourism within a nine-county region of Pennsylvania during 1995. Tourism was described on the basis of 26 activities, with total attendance amounting to 19.6 million visitor days. Non-resident visitors accounting for 41% of total attendance and $284 million in regional expenditures (59% of the total). An IMPLAN model of the region established the direct sales impact of non-resident tourists at $191 million and secondary impacts (indirect and induced) at $369 million. From this, $190 million was directed to wages and salaries in support of over 14,000 annual jobs. Seventy percent of the direct sales impact was placed in the lodging and food service sectors.

Certain variations are evident among these tourism studies in terms of their definitions of impact and economic modeling efforts. The more recent studies address the direct, indirect, and induced impacts of tourism expenditures, and are typically based upon an input-output model of the regional economy.

Objective and Procedures

This report establishes the sources and magnitude of regional economic impacts from a heritage system located in southwestern Pennsylvania during the period, 1986 to 1998. The system, represented by 13-operational sites, was organized as the Path of Progress (POP) in 1988 under the direction of the Southwestern Pennsylvania Heritage Preservation Commission. The impacts were identified for the nine-county region containing the POP system (Figure 1).

Figure 1
Path of Progress - Tour of 13 Heritage Sites



Two sources of expenditure were considered; regional investments in the planning, restoration, and expansion of the POP system and the regional tourism expenditures made by non-resident visitors to the system. The economic impacts from these expenditures were determined through an input-output model of the region.

The Region and the Path of Progress

The nine counties containing the Path of Progress represent 16% of Pennsylvania's land area (7260 sq. mi.) and 9% of its population (1.1 million) (PSDC 1995) (Figure 1). Nearly 30% of the region is classified as farm land, with another 64% forested (PASS 1996). A prominent geographic feature of the region is the Allegheny Mountains, extending through Somerset, Cambria, and Blair Counties. The Alleghenies were a major obstacle to the settlement of the region during Colonial times and to the industrial development of the US.

Much of the region's history was tied to the early efforts in moving across the Alleghenies, at first by foot and wagons and then by canal and railroad. This transition is a central theme of the POP system, with Fort Necessity and Fort Ligonier representing examples of colonial outposts along the early trail system (Table 1). Other heritage sites, including West Overton Museums, Old Bedford Village, Friendship Hill, and Somerset Historical Center interpret the early agricultural and trade settlements from the colonial and post-Revolution eras.

TABLE 1: Path of Progress Heritage Sites.

1.	Allegheny Portage Railroad	Blair County
2.	Altoona Railroad Memorial Museum	Blair County
3.	East Broad Top Railroad	Huntingdon County
4.	Fort Necessity National Battlefield	Fayette County
5.	Friendship Hill	Fayette County
6.	Horseshoe Curve	Blair County
7.	Johnstown Flood	Cambria County
8.	Johnstown Flood Museum	Cambria County
9.	Johnstown Inclined Plane	Cambria County
10.	Fort Ligonier	Westmoreland County
11.	Old Bedford Village	Bedford County
12.	Somerset Historical Center	Somerset County
13.	West Overton Museum	Westmoreland County

Allegheny Portage was a major engineering feat for the 1830's, when canal boats were lifted over the Alleghenies through an intricate system of inclined planes. However, by 1854, the railroad line which included the Horseshoe Curve was built over the Alleghenies, thus rendering the canal system obsolete. The flooding of Johnstown in 1889, commemorated by the Flood Memorial and the Flood Museum, was linked to a remnant of the early canal system. Following this devastation, Johnstown built its Inclined Plane as a safety measure and to facilitate expansion of the city along its higher elevations.

A century of railroad history is the central theme of the Altoona Railroaders Museum, reopened in 1998 as a "state of the arts" heritage center. Forty miles east of this center, tourists can ride the East Broad Top, a narrow-gauge railroad, used in the early 1900's to transport coal and timber from the Alleghenies.

This assembly of heritage sites was formally aligned as the Path of Progress in 1988. POP is marketed as an integral package of heritage sites, permitting tourists to trace three centuries of cultural development in a leisurely, yet systematic, fashion.

Study Procedures

This paper represents a summary of several studies. From 1991 through 1996, a five year series of annual studies established the expenditures and impacts tied to selected heritage sites within the Path of Progress (Strauss et al. 1992–1996). Economic impacts of visitor expenditures and capital investments were analyzed with a regional input-output model. This year-by-year evaluation of individual sites led to an analysis of the complete system involving 13-operational sites (Strauss et al. 1996). Allied with this effort was the development of a monthly attendance reporting system for all sites. Several heritage centers were re surveyed in 1997 and 1998 as a companion effort to a larger tourism study of the region (Strauss et al. 1996a). Capital investments within the POP system over the 1986-1998 period were provided by the Commission (King 1998).

In approaching this paper, the five-year series of impact studies was used as a base for interpreting the impact of the entire system over a 13-year span, 1986 to 1998. This span includes a two-year period of operations prior to the formal creation of the Path of Progress (1988), followed by eleven-years of POP operations. As previously identified, a systematic collection of attendance was maintained for all sites since 1991. Attendance for the 1986 to 1990 period was established from National Park Service records of four NPS sites (Allegheny Portage, Fort Necessity, Friendship Hill, and the Flood Memorial) and similar records for the Railroaders Museum, Horseshoe Curve, and Old Bedford Village. The attendance at all other sites during the 1986-1990 period was based on the trends developed from the previously noted sites.

In a similar fashion, the trend in the ratios of resident to non-resident visitations for the 1991 to 1998 period for each of the 13 sites was used to estimate their probable individual ratios during the earlier period. Expenditure profiles for resident and non-resident visitors at the 13 sites were evaluated in the same manner.

The economic impacts of non-resident and capital expenditures were generated by the Impact Analysis for Planning (IMPLAN) system. IMPLAN is a computerized modeling system providing a regional input-output analysis of economic activity in terms of 10 industrial groups involving as many as 528 sectors. The system is currently maintained by MIG, Inc. and is available on a fee basis (MIG, Inc. 1998). IMPLAN's data bases are periodically updated, with the earliest of the POP studies based upon 1986 US data and the more recent using a 1993 economic base. In addition, the nine-county model was updated by our research team to include changes in employment within key industries and allied trade relationships.

Results

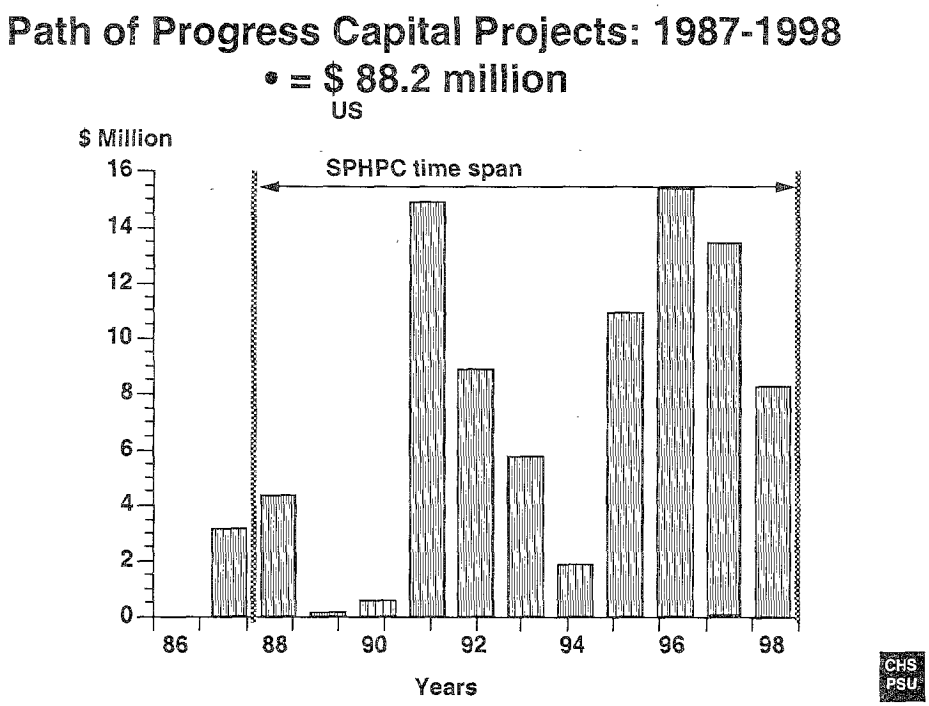
Capital Expenditures

One of the guiding principles behind POP was building and preserving a creditable system of historic sites that accurately portrayed the region's history. Both the technical and cultural attributes of the region's growth were considered. The system included private and public sites within its interpretative process. The selection of sites by the Southwestern Pennsylvania Heritage Preservation

Commission was accompanied by development plans that furthered the preservation, interpretation, and capacities of the various sites.

In total, $88.2 million was spent within the region on the design, restoration, and expansion of the POP system (Figure 2). Nearly 70% was directed to the initial set of 13 operational sites, allied components of these sites, and related POP infrastructure. The remaining 30% was used in the restoration and development of additional sites for the future system. Among the latter will be an operational coal mine in Cambria County, expanded canal projects in Blair and Indiana Counties, and a transportation heritage center in Bedford County.

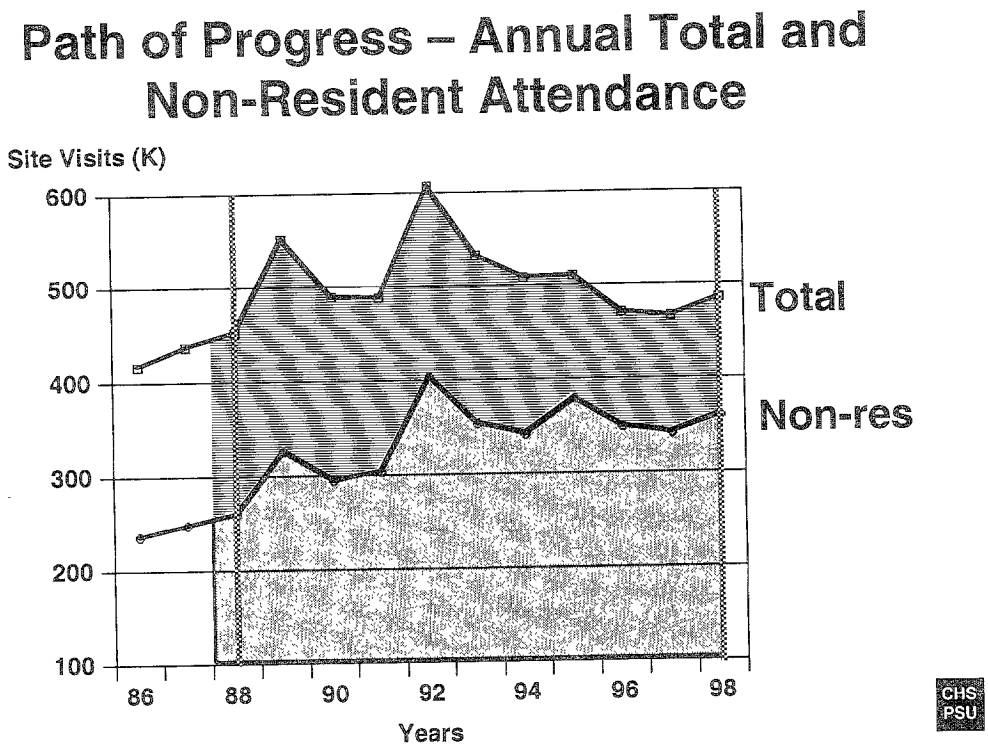
Figure 2



Attendance

During the two years prior to the advent of the Heritage Commission, annual attendance at the 13 existing sites averaged 430,000 visitor days (one person's visit over some portion of a day) (Figure 3). Nearly 57% of the attendance was from visitors outside the nine-county region (non-residents). Nearly 80% of the non-resident and total attendance, was registered at the Inclined Plane, the Flood Memorial and Museum, Fort Necessity, Fort Ligonier, Old Bedford Village, and the Horseshoe Curve.

Figure 3



The first major increase in attendance occurred in 1989 with the opening of the renovated Johnstown Flood Memorial and Flood Museum. Attendance at the Memorial nearly tripled, to 104,000 visitor days, and at the nearby Flood Museum, it more than doubled. Usage of the Inclined Plane also increased. Nearly all of the increased attendance for the POP system was from the three Johnstown sites. In the following year, the overall system experienced a 60,000 decline in visitations. Although attendance at the Johnstown sites was lower, it was still 50% higher than before the renovations.

The next surge in attendance took place in 1992, marking the dedication of the new Horseshoe Curve facility. Total attendance at Horseshoe exceeded 120,000 visitor days, representing a four-fold increase from its previous annual attendance. However, attendance tapered to 80,000 in the following year and has further declined to 55,000 visitor days in the more recent years. Over this period, non-resident attendance has increased, moving from 70% of the total attendance in 1990-91 to over 80% in 1997-98.

Total annual attendance for the entire system over the 1993-98 period has declined, dropping below 500,000 visitor days in 1996 but showing some increase in 1998 (485,000). Once again, the dedication of a new center, this time the Railroader's Museum in Altoona in 1998, caused a doubling of attendance at this site.

Non-resident attendance at all sites has also increased over this period, moving from 66% in 1993 to 75% in 1995 and holding at this level in 1998 (Figure 3). The system has had three peaks in non-resident attendance; 400,000 plus in 1992, 380,000 in 1995, and 360,000 in 1998. From its initial base in 1986-87, non-resident attendance grew at an average annual rate of nearly 11% to the first peak in 1992. Since then, the system has experienced an average annual decline of 2% in non-resident attendance.

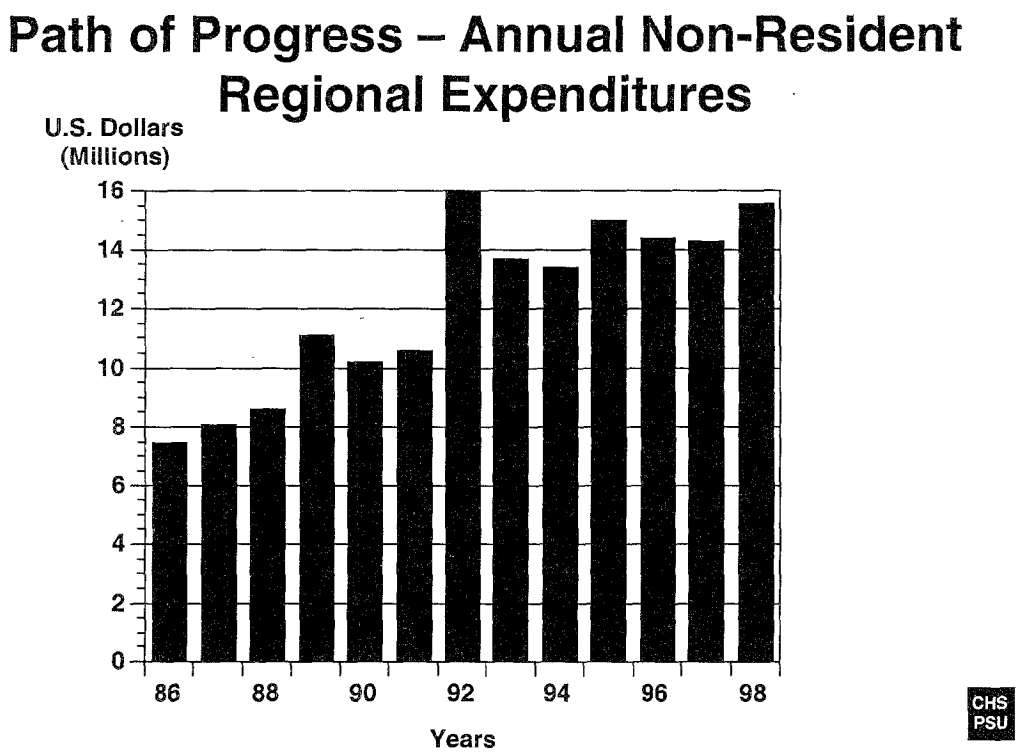
Non-Resident Expenditures

The primary force behind tourism impacts is the volume and type of expenditures from non-resident visitors. In essence, these expenditures represents an influx of "new" money to a regional economy through the export of recreational services. The financial response of the various sectors to these expenditures determines the various levels of direct, indirect, and induced impacts (Strauss et al. 1996a).

As might be expected, annual non-resident expenditures from the POP system (Figure 4) paralleled the growth in non-resident attendance. Before the POP system was formally organized, non-resident expenditures averaged $7.7 million annually during the 1986-87 period. After POP was developed, expenditures climbed to $11 million in 1989, marking the dedication of the Flood Memorial and Museum. A second peak of $16 million was realized in 1992, when the new Horseshoe Curve facility was brought "on-line". Following 1992, expenditures declined, but held

within the range of $14 to $15 million per year. The dedication of the new Railroader's Museum in 1998 raised non–resident expenditures to the $16 million level.

Figure 4



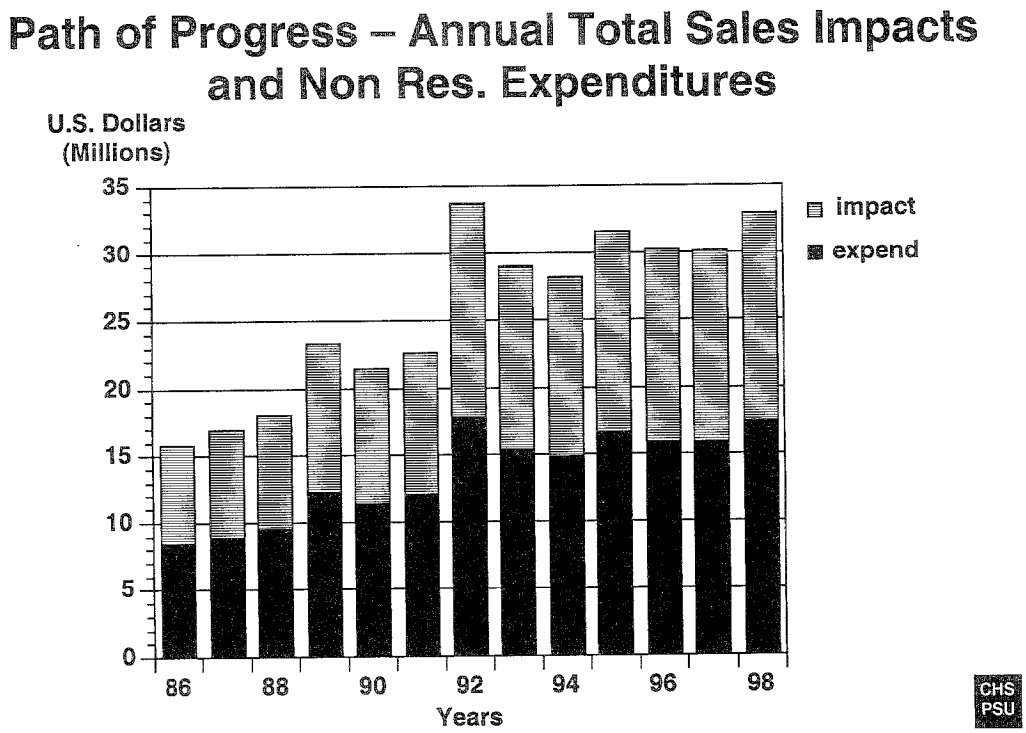
Economic Impacts

For purposes of this study, economic impacts were divided into those originating from capital expenditures on site development and those tied to non-resident tourist expenditures. Each source was identified in terms of its total sales impact, which includes the build of direct, indirect, and induced impacts within the regional economy.

Capital expenditures were separated into planning-design and restoration-construction phases for each project. On average, this division was 18% and 82%, respectively, with each component analyzed separately within the IMPLAN model. The regional impact of the $88.2 in capital expenditures totaled $168.5 million over the course of the 13-year period. This represented an average expenditure to total sales multiplier of 1.91. For the most part, these expenditures returned about 94% of their value as direct impacts. In turn, the direct impacts generated about 54% of their value as indirect impacts to other industrial sectors within the region. Finally, the induced impacts developed from the wage and salary component of the direct and indirect impacts represented about 32% of the total impacts.

The trend in annual impacts from non-resident expenditures (Figure 5) followed the pattern displayed by the expenditures themselves (Figure 4). Impacts for 1986 and 1987 averaged $16.5 million annually. During 1989, which marked the inauguration of the Flood Memorial and Museum, total impacts from non-resident expenditures at all sites increased to $23.4 million. A second peak was recorded in 1992, when the new Horseshoe Curve was brought on-line. Total regional impacts from all sites during this year were $33.8 million. Although annual impacts decreased to $28.2 million in 1994, the following years showed a gradual increase, with 1998 impacts estimated at $33.0 million.

Figure 5



The general pattern for non-resident expenditures shows about 75% remaining within the regional economy as direct impacts. These impacts were largely placed within the retail sectors serving tourists (lodging, food services, and allied products and services). The remaining 25% of expenditures was tied to the purchase of imported goods and services and, therefore, lost to the regional economy.

The next level of impacts represent the trade between the direct sectors and other regional businesses. Overall, indirect impacts were 32% of the value registered as total direct impacts. The induced impact were 110% of the combined value of direct and indirect impacts. The substantial size of induced impacts was caused by two factors; the labor-intensive nature of most tourist-related trades and a similar dependency among most retail and service sectors that meet household needs.

Impacts – Summary and Allocations

The 11-year total for tourist expenditure impacts was $301.8 million. An additional $168.5 million in impacts was generated by the capital expenditures in site development, leading to a grand total of $470.3 million.

Crediting this impact to the POP system might be questioned, since each of the sites did exist prior to the POP system. One approach for estimating the "net gain" credited to the POP system would be subtracting the pre-POP impacts ($16.5 million per year) from those recorded over the past 11 years. Using this approach, the total "net" gain in impacts over the 11-year period amounted to $120.9 million, or about $11 million per year. These annual net gains have increased over time, with 1998 having a net impact of $16.5 million.

Summary and Conclusions

Have the capital expenditures used in the restoration and expansion of the POP system proven to be a sound investment? In approaching this question, several financial aspects of the system might be considered. First, the total capital investments of $88.2 million fostered additional economic activity within the region, with an impact estimated at $168.5 million. The refurbished and expanded system gathered a larger attendance over its ensuing 11 years of operation. As previously identified, this net gain in impacts from tourist expenditures was $120.9 million. As such, the $88.2 million in capital investments generated impacts of $168.5 million, plus an added net gain of $120.9 million in tourism-related impacts, for a total of $289.4 million. This represents over a three-fold gain from the original investments.

However, these comparisons are somewhat misleading in that impacts are only a measure of gross economic activity and do not specify the profits earned by such investments. At best, we know that certain levels of gross economic activity were generated by these investments. Whether this amount of activity was sufficient to warrant the original investments is not resolved herein, and may be more of a policy issue . However, these impacts will continue into the future and should increase as the POP system is

expanded. These gains can be measured and should be added to any policy-related equations.

Acknowledgment

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SPENDING PRIORITIES FOR OUTDOOR RECREATION PLANNING IN NEW HAMPSHIRE: IMPLICATIONS FOR MANAGERS

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Abstract: Managers and planners responsible for the development of natural resources in a state need access to data that allows for informed decision making. With data of this type managers and planners can institute appropriate resource management programs. Such data can also be used to inform and educate local, state, and federal policy makers with respect to budgetary decisions. Such a process allows decisions made by policy makers to reflect the importance of natural and cultural resources to citizens in a given state. The purpose of this research was to collect information from a random sample of New Hampshire residents that would help improve the outdoor recreation and resource management programs in New Hampshire. One aspect of this research was to determine resident preferences for the funding of specific programs and projects.

Introduction

Douglass (1993) noted that "planning is the scheme or program for making, doing, or arranging something. It is the method for proceeding. Planning for forest recreation is arranging for the intelligent use of resources in providing satisfactory facilities and areas to meet present and future recreation needs" (p. 73). Outdoor recreation managers and planners can enhance the effectiveness of resource management and development by monitoring the resource and facility demands of participants in a wide range of outdoor recreation activities. Such a process helps to determine the types, quantity, location, and timing of recreation development. In general management requires an overall strategy and series of actions to achieve goals and objectives set by the agency (Hendee, Stankey, & Lucas, 1978). According to Jubenville and Twight (1993), there is a need to effectively and objectively analyze public input with respect to managerial decision making. They further suggested that the need for public involvement in decision making stems from the outgrowth of the environmental movement in the late 1960s and 1970s. The public demand to be heard eventually resulted in the institutionalization of policy that required agencies to air issues of resources use before the affected public.

Related to demand for public involvement in policy decisions is the increasing popularity of outdoor recreation in the United States (Bergstrom & Cordell, 1991). This increase in popularity will ensure that resource management agencies, legislators, and non-governmental interest groups will become more involved in the planning process. A concurrent problem associated the popularity of outdoor recreation, which suggests a need for effective and efficient planning, is the growth in the amount of services provided by recreation agencies. According to Crompton (1998) parks and recreation agencies at all levels of government provide more services, oversee more park acreage, and deal with increased levels of crime and vandalism than they did 10 to 20 years ago. Concomitant with these increased levels of responsibility has been the decrease in the number of full time staff members in many agencies.

Managers also need to involve the public in planning decisions because of the many and varied perceived benefits and impacts associated with recreational development. Lankford, Williams, and Knowles-Lankford (1997) reported that tourism and recreation development are often viewed by governmental jurisdictions as a tool for economic development. These authors noted that support for recreation development is primarily determined by one's perception about the adequacy of and access to personal leisure opportunities in the outdoors. Viewing recreation as a stand alone economic development strategy may result in more problems than solutions (Keith, Fawson, & Chang, 1996). In a study conducted in Utah these authors found that communities which primarily rely on tourism and recreation to maintain economic viability generally experience greater annual employment variability than do communities with other economic bases. They suggest that the variability of recreational employment may indicate a need for sound fiscal planning which would allow the community to weather boom and bust cycles. In essence planning can be viewed as a critical component for all park and recreation agencies due the increased pressures they face. Many would argue that recreation resource planning is more important today that at any other time in the past 50 years (McLean, Bannon, & Gray, 1999).

This paper examines spending priorities for outdoor recreation planning in the State of New Hampshire. It is

believed that outdoor recreation managers and planners can pursue more effective means of monetary resource allocation by monitoring how residents rank programs and projects related to outdoor recreation in their respective states. To that end managers and planners responsible for the development of natural resources in a state need access to data that allows for informed decision making. With data of this type managers and planners can institute appropriate resource management programs. Such data can also be used to inform and educate local, state, and federal policy makers with respect to budgetary decisions. Such a process allows decisions made by policy makers to reflect the importance of natural and cultural resources to citizens in a given state.

Purpose

The purpose of this research was to collect information from a random sample of New Hampshire residents that would help improve the outdoor recreation and resource management programs in New Hampshire. The study addressed a number of issues related to outdoor recreation. Four overall objectives were pursued: (a) resident participation in outdoor recreation activities for a one year period, (b) identification of natural and community resources utilized by respondents in specific outdoor recreation activities, (c) identification of perceived benefits associated with outdoor recreation, and (d) resident preferences for specific outdoor recreation management and development initiatives. One aspect of objective "d" as described above was to determine resident preferences for the funding of specific programs and projects. The information presented in this paper is de-limited to the respondents preferences for the funding of specific programs and projects in the state of new Hampshire.

Methods

One of the first steps in the research design process was to establish an advisory committee. The resulting group, the Statewide Comprehensive Planning Advisory Committee, made up of representatives from 12 agencies or organizations (state, federal, non-governmental) was charged with developing the survey instrument. The survey consisted of six pages of likert type scales and close ended questions which addressed the research objectives noted above. The final section of the survey consisted of demographic information. The resulting questionnaire was mailed to a sample of 3,000 households. This sample was drawn randomly from listing of persons licensed to drive in New Hampshire. A total of 928 usable surveys were returned resulting in a response rate of 30.1 percent.

Results

With regard to spending priorities for outdoor recreation in New Hampshire, respondents were asked to rate how future monies should be spent. Twenty-two different programs and or projects were rated as low, moderate, or high priority with respect to allocation of future monies. Findings indicated that high priority programs and projects included things like (a) preservation / restoration of native wildlife, (b) wetland preservation / protection programs, and (c) enforcement of environmental laws. Items that received moderate priority were things like (d) improved maintenance of existing park facilities, (e) safety and law enforcement programs in outdoor recreation areas, and (f) enhancement of fish and game stocks. Low priority items included things like (g) providing more facilities for outdoor recreation activities, (h) providing incentives to encourage provision of outdoor recreation opportunities on private timber lands, and (i) marketing outdoor recreation opportunities to residents.

Respondents were also asked to identify the top three priorities for New Hampshire State Government and the top three priorities for New Hampshire Non-Profit Organizations and Foundations. The top three priorities reported for state government were (1) protection / improvement of water quality in rivers, streams, lakes, and ponds; (2) preservation / restoration of native wildlife; and (3) enforcement of environmental laws. The top three priorities reported for non-profit organizations were (1) volunteer environmental monitoring programs; (2) protection and enhancement of cultural and historic resources; and (3) acquisition of lands for conservation / open space and habitat protection.

Discussion

This research, in establishing a baseline of information, suggests that residents of New Hampshire value the protection of natural resources as they relate to the provision of outdoor recreation experiences. As reported above, items ranked as high priority relate primarily to the preservation and protection of native flora and fauna. Also given high priority was enforcement of laws related to environmental issues. Most respondents felt that providing more outdoor recreation facilities and marketing outdoor recreation opportunities to residents, both of which would arguably increase use, were not overly important.

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DETERMINING ECONOMIC IMPACT THROUGH SECONDARY DATA

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Abstract:

Economic impact studies have proven to be a valuable tool to resource managers and planners. Not only can these studies help garner public support for proposed facilities or events, but they can also help to determine what actions or plans are the most economically feasible. However, determining economic impact requires data concerning visitor behavior and spending characteristics. The purpose of this study was to determine the economic impact of several proposed trail development alternatives within the Delaware Water Gap National Recreation Area (DWGNRA). Unfortunately, little data on land based visitors to the park was available, and time constraints made collecting new data unfeasible. This paper describes the methods used in calculating the economic impact of the proposed trail alternatives through extrapolating secondary data from similar areas to the users of the DWGNRA.

Introduction

The economic impact figures of recreational facilities, services and events are valuable assets to recreational managers and planners. Not only can these figures help garner public support for proposed facilities or events, but they also help determine what actions or plans will provide the most benefits to an agency or local region. Despite the popularity of these figures, determining the economic impact of recreational services or facilities can be a time consuming and expensive endeavor due to the collection and analysis of expenditure and behavior data derived from a sample of visitors. These data parameters can become increasingly difficult when there is very little time to collect data, and when little or no existing baseline data is available for the specific set of visitors in question. One possible solution to this problem is to estimate economic impact through the use of secondary data and sources. This involves the extrapolation of spending averages from previous studies to a new site of interest. The purpose of this paper is to provide a case study example of how this methodology was used to estimate the economic impact of three trail development alternatives at the Delaware Water Gap National Recreation Area (DWGNRA).

The DWGNRA Case Example

An economic impact analysis for three trail development alternatives at the DWGNRA was required as part of a larger environmental impact assessment. Due to time constraints that eliminated the opportunity to collect expenditure data from visitors, as well as the fact that very little data concerning the behavior of trail users to the area existed, the methodology of extrapolating secondary data from outside sources to the park was selected. This process included three distinct stages:

1. Estimate the number of trail users for each trail development alternative.
2. Estimate the average per person-per day expenditure figure for trail use.
3. Apply the per person-per day expenditure figures to the estimated trail users at the DWGNRA.

The first two of these stages relied on a thorough search of the literature and data available for similar studies concerning the economic impact of recreational trails. The third stage merely required that the figures from the first two stages be combined to estimate total economic data for trail use at the DWGNRA.

Estimating Trail Use

One difficulty that was immediately apparent in determining the number of trail users for the park was that there was very little data available concerning trail use at the DWGNRA. Therefore, a combination of visitor center counts, literature review, and park staff estimates were used to estimate the current or baseline total number of trail users. These figures are also used for the first trail development alternative, which was to keep the system "as is" with no further development. A breakdown of this estimate is provided in Table 1.

Table 1. Total Estimated Number of Trail Users at DWGNRA

Trail Activity	Number of Users
Foot Users	180,925*
Bicyclists	3,500**
Horse Users	500**
Total	184,925

* Based on formula derived from visitor center counts and literature review

** Based on park staff estimates

The figures represent use over 102 miles of trails that include:

- 102 miles of hiking trails, accounting for 1,774 hikers per mile of trail
- 12 miles of trails allowing horses, accounting for 42 horse users per mile where allowed
- 14 miles of trails allowing bicycling, accounting for 250 bikers per mile of trail where allowed

To estimate the number of trail users for the other two trail development alternatives, the number of hikers and horse

users per mile of trail were extrapolated to the new miles of trail for each alternative. However, for both of these alternatives, the changes to the trail system should make the park a much more attractive destination for bicyclists. Although bicycles are permitted on a few trails in the current situation, these trails are all rather short, and were not designed for bicycle use. Several of the new trails in this system are designed as multi-use trails and should attract more cyclists to the DWGNRA. The earlier estimate of 3,500 cyclists using the current trail system is not adequate to extrapolate to the new trail development because it does not adequately reflect the character of the new trails. Therefore, sources outside the DWGNRA were used to determine how many cyclists these new trails will attract. Mowen's (1994) study of users of the Mount Rogers National Recreation Area was chosen for this purpose because it is similar to the DWGNRA in that they are both National Recreation Areas within short distances of metropolitan areas. Furthermore, they both contain a wide variety of trails that are used for a number of different activities. Mowen found that Mount Rogers trail users were comprised of an equal number of hikers and bicyclists. By extrapolating these figures to the estimate of hikers on those trails that also allow bicyclists in the DWGNRA, the total number of bikers can be estimated.

Since the earlier estimate of trail use at the DWGNRA was made up of 180,925 hikers over the 102 miles of trail, and 500 horse users over the 12 miles of horse trails included in alternative 1, it was assumed that each mile of trail draws 1,774 hikers, and 42 horse users per year. These figures were extrapolated to the miles of new trails in each respective alternative. In addition, the number of bicyclists (where appropriate) was assumed to be equal to the number of hikers for those trails allowing both uses. Tables 2 and 3 provide a breakdown of the trail use by activity type for alternatives two and three respectively. These estimates will later be used to determine total visitor spending by alternative.

Table 2. Estimated Number of Trail Visits for Alternative 2.

	Existing Trails (Alternative 1)	New Foot Traffic Only Trails	New Foot Traffic and Bike Trails	New Foot Traffic and Horse Trails	Total Trails
Mileage	102	24	91	7	224
Hikers	180,925	42,576	161,434	12,418	397,353
Bicyclists	3,500	0	161,434	0	164,934
Horse users	500	0	0	294	794
Total Users	184,925	42,576	322,868	12,712	563,081

Table 3. Estimated Number of Trail Visits for Alternative 3.

	Existing Trails (Alternative 1)	New Foot Traffic Only Trails	New Foot Traffic and Bike Trails	New Foot Traffic and HorseTrails	Total Trails
Mileage	102	21	55	0	178
Hikers	180,925	37,254	97,570	0	315,749
Bicyclists	3,500	0	97,570	0	101,070
Horse users	500	0	0	0	500
Total Users	184,925	37,275	195,195	0	417,395

Estimating Expenditures

In order to estimate the expenditures of DWGNRA trail users, spending data from previously completed studies was extrapolated to the DWGNRA. Nine of the economic impact studies which summarize findings at 34 separate trails contained figures for per-person/per day spending. After using a consumer price index to convert these figures to 1995 dollars, an average was taken as a base figure to estimate per person/per day expenditures for DWGNRA trail visitors. Table 4 provides a summary of how this estimate was calculated.

Although the total expenditures per visitor is a useful figure, it can become more valuable if broken down into various expenditure categories. To accomplish this, further extrapolation was necessary. Four studies in the literature review contained economic data from trail users that provided a breakdown of expenditures by category. The percentage of the total expenditures for each spending category was calculated for each study (Table 5) and the average of these was applied to the $12.85 total spending figure calculated earlier. Table 6 provides estimates of trail user expenditures by expense categories.

Table 4. Summary of Per Person/Per Day Expenditure Data

Trail	State	Date	Per Person/Per Day Expenditures	1995 Dollars
Oil Creek State Park Bike Trail	PA	1990	$25.86	$30.91
North Central Rail-Trail	MD	1994	$6.30	$6.46
Heritage Trail, St Marks Trail, Lafayette Trail	IA, FL, CA	1992	$7.60	$8.27
6 Minnesota State Trails	MN	1990-91	$5.39	$6.44
19 Illinois Bike Trails	IL	1990	$7.95	$9.50
Elroy-Sparta Trail	WI	1989	$14.88	$18.64
Sugar River Trail	WI	1986	$9.04	$12.45
2 Mount Rogers NRA Trails	VA	1994	$17.20	$17.65
Ghost Town Trail	PA	1996	$5.46	$5.33
Average			$11.07	$12.85

Table 5. Percentage of Expenditures Per Category

	Trail				
	Mt Rogers	Heritage, St Marks, and Lafayette Trails	Oil Creek State Park Bike Trail	Ghost Town Trail	Average
Expense Category	%	%	%	%	%
Food					
Restaurants	10	30	NA	NA	20
Other Food and Beverage	11	13	NA	NA	12
Food Total	21	43	35	44	36
Lodging					
Hotel/Motel	20	6	NA	NA	13
Camping	5	2	NA	NA	3.
Lodging Total	25	8	10	3	11.5
Transportation	8	30	24	35	24
Retail Purchases	25	11	24	10	17.5
Attractions and Entertainment	6	3	7	0	4
Other	15	6	0	8	7

Table 6. Estimated Expenditures Per Person/Per Day by Expense Category for DWGNRA

Expense Category	%	Amount
Food		
Restaurants	22.5	$2.89
Other Food and Beverage	13.5	$1.73
Food Total	36	$4.62
Lodging		
Hotel/Motel	9.3	$1.20
Camping	2.2	$.28
Lodging Total	11.5	$1.48
Transportation	24	$3.08
Retail Purchases*	17.5	$2.25
Attractions and Entertainment	4	$.51
Other**	7	$.90
Total	100	$12.85

**There is very little literature stating what "Retail Purchases" includes. The assumption will be made that this category includes such items as Souvenirs, clothing, film and developing, and durable goods such as bicycle parts, hiking gear, or horse tack.*

***The "Other" category is usually used as a catch-all for respondents who have a difficult time fitting their purchases into one of the expenditure categories on the survey. This item is difficult to interpret and should only be used for the calculation of the total expenditures.*

The literature also supports the notion that different types of users spend differing amounts while visiting trails. In the studies that examined differences in expenditures between different trail user groups, it was found that on average foot users spent 89% as much as the "average" users, horse users spent 98% as much, and bikers spent 144% as much. These percentages were then applied to estimated spending averages to determine spending by different activity groups as shown in Table 7.

Table 7. Expenses Per Person/Per Day by Activity Type for DWGNRA

Expense Category	Foot Users	Bikers	Horse Users	Weighted Average
Food				
Restaurants	$2.57	$4.16	$2.83	$2.89
Other Food and Beverage	$1.53	$2.49	$1.70	$1.73
Food Total	**$4.11**	**$6.65**	**$4.53**	**$4.62**
Lodging				
Hotel/Motel	$1.07	$1.73	$1.18	$1.20
Camping	$.25	$.40	$.27	$.28
Lodging Total	**$1.32**	**$2.13**	**$1.45**	**$1.48**
Transportation	**$2.74**	**$4.44**	**$3.02**	**$3.08**
Retail Purchases	**$2.00**	**$3.24**	**$2.21**	**$2.25**
Attractions and Entertainment	**$.46**	**$.73**	**$.50**	**$.51**
Other	**$.80**	**$1.30**	**$.88**	**$.90**
Total	**$11.43**	**$18.50**	**$12.59**	**$12.85**

Determining Economic Impact from Trail Use at DWGNRA

To determine the economic impact of trail users at the DWGNRA, the number of users was multiplied by expenditures and weighted by activity type. This was accomplished for each of the various trail alternatives. For alternative one, which was to stay with the current situation, trail use in the DWGNRA accounted for $2,137,173.50 spent in the local economy. This figure was derived by multiplying the number of users from each activity group (Table 1) by their respective per person/per day expenditures (Table 7), and adding the totals. A complete breakdown of how this figure was reached, as well as expenditures per category can be found in Table 8.

Table8. Economic Impact resulting from the current use of trails at the DWGNRA

		Foot Users	Bikers	Horse	Total Expenditures
		n=180,925	n=3,500	n=500	
Food		Per Person/Per Day expenditures			
	Restaurants	$2.57	$4.16	$2.83	$480,952.25
	Other F&B	$1.53	$2.49	$1.70	$286,380.25
Food Total		**$4.10**	**$6.65**	**$4.53**	**$767,332.50**
Lodging					
	Hotel/Motel	$1.07	$1.73	$1.18	$200,234.75
	Camping	$0.25	$0.40	$0.27	$46,766.25
Lodging Total		**$1.32**	**$2.13**	**$1.45**	**$247,001.00**
Transportation		$2.74	$4.44	$3.02	$512,784.50
Retail Purchases		$2.00	$3.24	$2.21	$374,295.00
Attractions & Entertainment		$0.46	$0.73	$0.50	$86,030.50
Other		$0.80	$1.30	$0.88	$149,730.00
Total		**$11.42**	**$18.49**	**$12.59**	**$2,137,173.50**

Both Alternative two and three included extensive trail development and additions to the current situation expressed as alternative one. It was anticipated that these alternatives would generate an increase in trail use which was estimated in Tables 2 and 3. To estimate the economic impact resulting from this increased use, the same procedure of multiplying the number of users from each activity group by their respective per person/per day expenditures and adding the totals was followed for both alternatives two and three. The results of these respective procedures are depicted in Tables 9 and 10.

Table 9. Estimated Trail Related Expenditures for Alternative 2.

	Current Use Alternative 1	New Foot Traffic only Trails	New Multiple Use Trails				
Expense Categories		Foot Users n=42,576	Foot Users n=173,852	Bikers n=161,434	Horse n=294	New Trails Subtotal	Total Expenditures
Food							
Restaurants	$480,952.25	$109,420.32	$446,799.64	$671,565.44	$832.02	$1,228,617.42	$1,709,569.67
Other F&B	$286,380.25	$65,141.28	$265,993.56	$401,970.66	$499.80	$733,605.30	$1,019,985.55
Food Total	**$767,332.50**	**$174,561.60**	**$712,793.20**	**$1,073,536.10**	**$1,331.82**	**$1,962,222.72**	**$2,729,555.22**
Lodging							
Hotel/Motel	$200,234.75	$45,556.32	$186,021.64	$279,280.82	$346.92	$511,205.70	$711,440.45
Camping	$46,766.25	$10,644.00	$43,463.00	$64,573.60	$79.38	$118,759.98	$165,526.23
Lodging Total	**$247,001.00**	**$56,200.32**	**$229,484.64**	**$343,854.42**	**$426.30**	**$629,965.68**	**$876,966.68**
Transportation	$512,784.50	$116,658.24	$476,354.48	$716,766.96	$887.88	$1,310,667.56	$1,823,452.06
Retail Purchases	$374,295.00	$85,152.00	$347,704.00	$523,046.16	$649.74	$956,551.90	$1,330,846.90
Attractions & Entertainment	$86,030.50	$19,584.96	$79,971.92	$117,846.82	$147.00	$217,550.70	$303,581.20
Other	$149,730.00	$34,060.80	$139,081.60	$209,864.20	$258.72	$383,265.32	$532,995.32
Total	**$2,137,173.50**	**$486,217.92**	**$1,985,389.84**	**$2,984,914.66**	**$3,701.46**	**$5,460,223.88**	**$7,597,397.38**

Table 10. Estimated Trail Related Expenditures for Alternative 3.

	Current Use Alternative 1	New Foot Traffic only Trails	New Multiple Use Trails				
Expense Categories		Foot Users n=37,254	Foot Users n=97,570	Bikers n=97,570	Horse n=0	New Trails Subtotal	Total Expenditures
Food							
Restaurants	$480,952.25	$95,742.78	$250,754.90	$405,891.20	0	$752,388.88	$1,233,341.13
Other F&B	$286,380.25	$56,998.62	$149,282.10	$242,949.30	0	$449,230.02	$735,610.27
Food Total	$767,332.50	$152,741.40	$400,037.00	$648,840.50	0	$1,201,618.90	$1,968,951.40
Lodging							
Hotel/Motel	$200,234.75	$39,861.78	$104,399.90	$168,796.10	0	$313,057.78	$513,292.53
Camping	$46,766.25	$9,313.50	$24,392.50	$39,028.00	0	$72,734.00	$119,500.25
Lodging Total	$247,001.00	$49,175.28	$128,792.40	$207,824.10	0	$385,791.78	$632,792.78
Transportation	$512,784.50	$102,075.96	$267,341.80	$433,210.80	0	$802,628.56	$1,315,413.06
Retail Purchases	$374,295.00	$74,508.00	$195,140.00	$316,126.80	0	$585,774.80	$960,069.80
Attractions & Entertainment	$86,030.50	$17,136.84	$44,882.20	$71,226.10	0	$133,245.14	$219,275.64
Other	$149,730.00	$29,803.20	$78,056.00	$126,841.00	0	$234,700.20	$384,430.20
Total	$2,137,173.50	$425,440.68	$1,114,249.40	$1,804,069.30	0	$3,343,759.38	$5,480,932.88

Finally, the three alternatives can be compared to determine which has the greatest economic impact on the region. This comparison (Table 11) shows that alternative two should provide the greatest amount of economic impact to the DWGNRA region. The estimated expenditures for alternative 2 of $7,597,397.38 are more than triple the $2,137,173.50 of expenditures for the existing situation, and more than two million dollars over the $5,480,932.88 of estimated expenditures for alternative three.

Table 11. Comparison of Estimated Expenditures Between Alternatives

	Alternative 1 Current Use	Alternative 2	Alternative 3
Expense Categories		*Total Expenditures*	
Food			
Restaurants	$480,952.25	$1,709,569.67	$1,233,341.13
Other F&B	$286,380.25	$1,019,985.55	$735,610.27
Food Total	**$767,332.50**	**$2,729,555.22**	**$1,968,951.40**
Lodging			
Hotel/Motel	$200,234.75	$711,440.45	$513,292.53
Camping	$46,766.25	$165,526.23	$119,500.25
Lodging Total	**$247,001.00**	**$876,966.68**	**$632,792.78**
Transportation	$512,784.50	$1,823,452.06	$1,315,413.06
Retail Purchases	$374,295.00	$1,330,846.90	$960,069.80
Attractions & Entertainment	$86,030.50	$303,581.20	$219,275.64
Other	$149,730.00	$532,995.32	$384,430.20
Total	**$2,137,173.50**	**$7,597,397.38**	**$5,480,932.88**

Conclusions and Implications

The case study using the DWGNRA as an example shows that the economic impact created by recreational facilities or services can be estimated without the process of collecting on-site data. It is also possible to carry this analysis further by inputting the expenditure data into an economic impact modeling package such as IMPLAN, which would calculate indirect economic effects from visitor expenditiures. Furthermore, as time and financial resources continue to become restricted, this methodology may gain popularity as an alternative to more costly procedures. However, due to the fact that in this methodology the economic impact figures are based on averages from a group of sites extrapolated to a new site, no site-specific variables that may influence visitor spending can be accounted for. This restriction suggests several areas of caution for researchers and managers considering this method of determining economic impact including:

- Researchers and managers should make sure that all parties involved in a study using this methodology are aware of the limitations that it imposes, and agree to its use.
- Findings from this methodology need to be strongly qualified to insure that all parties are aware that the findings are estimates derived from outside sources which are similar to the study area.
- Managers and researchers must be careful to consider the source of the data to minimize the chances of inappropriate comparisons between outside sources and the study site.

These limitations suggest that this methodology may be best suited for purposes of justifying alternatives, or a favored plan rather than for decision making purposes.

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Contemporary Issues in Recreation and the Environment

INFORMATION SEARCH BY BACKPACKERS: A QUALITATIVE ANALYSIS OF PLANNING BEHAVIORS

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Abstract: Previous research has indicated that individuals planning trips in outdoor areas use a variety of sources to collect information necessary for the trip. In a previous study, this author found that individuals who backpacked tended to fall into social roles based on relative experience level within the travel group. These social roles were linked to the types and sources of information that individuals preferred. This study was designed to replicate that study for verification purposes. The findings from this study supported the effect of social role in the process of trip information collection.

Introduction

A variety of external sources of information may be used by outdoor enthusiasts as they make plans for travel in wildland areas. These external sources may range from highly reliable to highly unreliable, but most individuals planning outdoor travel do not make objective analyses of source reliability. Evidence suggests that individuals planning wildland travel typically travel in groups of two or more and do not share equally in the information search process (Ramthun, 1998). While there has been a great deal of research in the tourism field on information search (Manfredo, 1989; Perdue, 1993; Schul & Crompton, 1983), the information search process among backcountry travelers has received less attention.

In a previous study on information search by backcountry recreationists (Ramthun, 1998), qualitative interviews indicated that many backpackers relied heavily on more experienced members of their party for trip information. Individuals who traveled with more experienced others tended to rely on those more experienced others as their primary information source. Individuals who traveled with less experienced others had a greater tendency to seek out more formal sources of information, such as guidebooks and literature from management agencies.

Method

A qualitative structured interview process was developed and administered to 55 backpackers from southwestern Virginia during March and April of 1998. Lofland and Lofland (1984) suggest that qualitative methods may the most appropriate methodology for examining practices that respondents do not recognize as important. In this situation, the use of open questions allowed the respondents to provide their own lists of preferred information sources as well as to generate their own rationale for why those sources were preferred. A hypothetical scenario about an upcoming backpacking trip was read to the respondents in a series of episodes. Between each episode, the respondents were asked a series of open-ended questions about the type of information they would prefer to be collecting at this stage of the planning process, what their preferred sources of information would be and why they would prefer those sources. Responses were taped and later transcribed. Respondents were also asked to fill out a data sheet regarding their backpacking experience level. The data sheet also asked respondents if they typically backpacked with people who were more or less experienced than themselves, a critical factor in earlier research on this topic (Ramthun, 1998). Data analysis was done through the development of a series of typologies (Lofland & Lofland, 19840.

Protocol

The first episode of the hypothetical trip was a *trip proposal stage*, in which the storyline states that the respondent's friends suggest a trip to a location the respondent had not heard of before. The second stage of the storyline occurs three weeks before the departure and was referred to as the *early planning stage*. The third episode describes a *late planning stage* two days before departure and the final episode postulates that the trip has begun and that there are opportunities for information gathering in an *on-site stage*.

Respondents

A theoretical sampling procedure was used for this study. Respondents with varying levels of experience in backpacking (but with a minimum of two previous backpacking experiences) were sought out. In this case, 55 subjects were selected from a university population. There were 30 males and 25 females. The respondents had a range of backpacking experience from less than one year to over 12 years. Additional criteria for subjects were that they must not be currently or previously enrolled in any type of outdoor recreation course. Subjects remained blind to the purpose of the study throughout the interview process.

Results

Of the sampled respondents, 21 reported that they typically travel with people who were less experienced than themselves; 34 respondents reported that they typically travel with people who were more experienced than themselves. There were few differences between these types of respondents in the initial (trip proposal) stage of the hypothetical scenario. After having friends propose a trip, 60% of all respondents would trust their friends and agree to go while 40% said they would try to find more information before making a decision. With the exception of the trip proposal stage, there were significant differences between respondents who traveled with more experienced people and respondents who traveled with less experienced people.

During the second phase of the hypothetical scenario (the early planning stage), distinct differences in information collection appeared. Among individuals traveling with less experienced others, 71% would seek information about the site during early planning as opposed to 26% of the people traveling with more experienced others. Among those respondents who travel with more experienced others, 65% preferred information that was individually relevant (clothing requirements, fitness requirements etc). In the third phase (late planning stage) 76% of respondents traveling with less experienced others preferred technical information about the site and its management while only 41% of those traveling with more experienced others would seek that type of information. Individuals traveling with more experienced others continued to prefer information that was individually relevant at this stage. In the final (on-site) phase of the scenario, the differences between the two categories began to narrow. People traveling with more experienced others began to seek specific information about the site at a rate comparable to those who travel with less experienced people.

Preference for information sources was also different between "leaders" and "followers". Those who travel with less experienced others showed a strong preference for more formal information sources such as maps, guide books and material provided by management agencies. Individuals who traveled with more experienced others stated that they preferred "friends" as an information source and would use formal sources less frequently. Internet sites were cited as a preferred source by approximately equal numbers of leaders and followers.

When asked about the rationale for preferring these information sources, general trends in the comments by those traveling with less experienced others indicated that they preferred factual information from authoritative sources. There was also a trend across several respondents of preference for sources that "I could hold on to": which I presume to mean could be taken along on a trip as reference material. Trends in the comments by those traveling with more experienced others suggest a preference for information that is interactive, individually specific and easy to locate. These respondents prefer people as an information source because people could be probed for further information and because people were assumed to be capable of assessing the information seeker and his or her equipment and providing information that was tailored to their particular case.

In summary, those who travel with less experienced people (ie: play a leadership role) describe a greater preference for formal information sources at all stages after the trip proposal. These people in "leader" roles were more likely to want objective information about the site (common weather conditions, trail conditions, special attractions of the area). Those playing a leadership role also indicate a preference for collecting information about the site earlier in the planning process. Leaders were more likely to seek out information about site regulations earlier in the planning process. Respondents who traveled with more experienced people (ie: play a follower role) preferred to collect information from personal or interactive sources at all stages of the hypothetical planning process. These individuals preferred to get information from more experienced people (the most commonly occurring answer), visitor centers and the Internet. These individuals sought information that was more immediately relevant to them (clothing and equipment selection) during the early and late planning stages.

Implications

The results from this study supported the earlier research by again indicating that many differences in information collection behavior are associated with an individuals social role and relative experience within the traveling group. There is no assumption here that there is a causal relationship between these behaviors. It seems likely that people who are good at getting information (and therefore seem well informed) or who are so enthusiastic about the endeavor that they collect a lot of information are the same sort of individuals who will be selected as traveling companions by less experienced backcountry travelers.

The respondents in this study described a wide variety of information sources that they might prefer. Guidebooks, maps and literature from the managing agency were favored by people in leadership roles. People in follower roles indicating a preference for friends, other people who had been to the site, and the Internet as information sources. Land management agencies seeking to provide information for visitors must do so in a wide variety of formats for maximum effectiveness. Maintaining websites and having personnel available for information services will provide the best service to a large percentage of the relatively less experienced wildland visitors. Additionally, managers must be aware that site information is often transmitted to visitors through other visitors. Messages to visitors should be constructed in ways that are robust to transmission through one or more intermediaries. Many brochures and signboards, for example, rely heavily on graphic information, which is not likely to be effective if information is relayed between group members.

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