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Northeastern Forest
Experiment Station

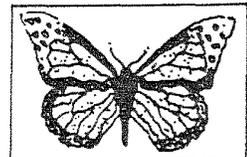
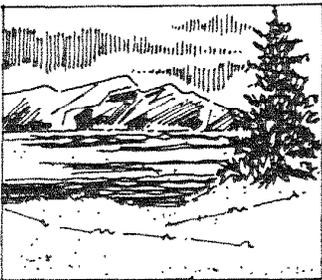
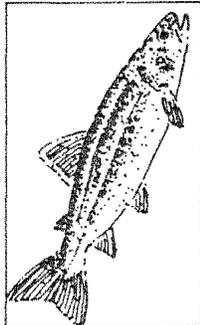
General Technical
Report NE-185



PROCEEDINGS of the 1993 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM

April 18-20, 1993
Saratoga Springs, New York

Environmental Awareness
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Picnicking
PARKS
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Historic Places
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Travel
Tourism
NATIONAL
PARKS



NORTHEASTERN RECREATION RESEARCH MEETING POLICY STATEMENT

The Northeastern Recreation Research meeting seeks to foster quality information exchange between recreation and travel resource managers and researchers throughout the Northeast. The forum provides opportunities for managers from different agencies and states, and from different governmental levels, to discuss current issues and problems in the field. Students and all those interested in continuing education in recreation and travel resource management are particularly welcome.

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PROCEEDINGS of the 1993 NORTHEASTERN RECREATION RESEARCH SYMPOSIUM

April 18-20, 1993

**State Parks Management and Research Institute
Saratoga Spa State Park
Saratoga Springs, New York**

Compiled and Edited by:

Gail A. Vander Stoep
Michigan State University
Park and Recreation Resources Department

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MANAGEMENT ROUNDTABLE SESSION

The Role of Social Science Research: A) Should recreation researchers adopt a more explicit role of advocacy? B) Pandering to the public: do visitor surveys undermine recreation management? Tom More, USDA Forest Service.

GREENWAYS

Scenic Roads: Access to an Educational Opportunity. Steven Brower, Burlington, IA.

Seaway Trail: A Scenic Byway Teresa Mitchell, Seaway Trail, Inc.

LANDSCAPE / VISUAL PERCEPTIONS

Landscape Perceptions: Understanding Viewer Needs and Desires. Steven Brower, Burlington, IA.

OUTDOOR RECREATION MANAGEMENT AND PLANNING

Testing an Evolutionary Model of Recreation Partnerships. Steve Selin, West Virginia University; Debbie Chavez, USDA Forest Service.

SOCIAL PSYCHOLOGY

Boating Identity and Behavioral Change: Self-referent Behavior or Discursive Outcome? Walter Kuentzel, University of Vermont.

Recreational Fishermen and Their Preferred Fish Species: An Exploratory Analysis of Angler Characteristics. David Loomis and Robert Muth, University of Massachusetts.

The Conscious Experience of Recreation. Tom More, USDA Forest Service; James Averill, University of Massachusetts.

ECONOMIC DEVELOPMENT ASPECTS OF TRAVEL AND TOURISM

Whitewater Rafting as a Tool for Economic Development. Sharon Hurt, West Virginia University.



OPENING SESSION:
Recreation Trends and
Where We're Headed

$$T_1 + T_2 = T_3 ?$$

TIME + TRANSPORTATION = TRAVEL ?

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In an attempt to set the stage for discussion of "Trends and Where We Are Headed", I have chosen to focus on two variables influencing recreation and travel participation--time and transportation. I have drawn extensively on the University of Michigan Project "Americans' Use of Time", directed by John P. Robinson.

Introduction

Total hours available for leisure increased nearly three fold for the U.S. population between 1900 and 1950 (Clawson and Knetsch 1966). A less phenomenal, but modest increase in leisure time was realized between 1965 and 1985 (Cornish, Fields, and Willard 1991). Even though two income families may work more hours, labor saving devices and innovative practices have increased individuals' total discretionary time. When time is valued more than money, air travel becomes the logical transportation choice for travel to the more distant destinations. The airlines have an opportunity to capitalize on this, and possibly improve overall profitability of operations.

"Americans' Use of Time Project"

The first "Americans' Use of Time Project" was conducted in 1965 by Converse and Robinson (Cornish, Willard, and Fields 1991), and sponsored by The National Science Foundation (NSF). Time diaries were obtained from 1,244 respondents aged 18-65 across the country. The study was repeated in 1975 by Juster, this time with 2,409 adults of all ages, again with the support of NSF. Robinson received another NSF grant in 1985 to extend the time-diary study to 5,000 Americans of all ages.

The time-diary kept by study participants was, essentially, a record of all activities in a 24-hour period. If time spent in one activity went up, time in another activity had to go down. This "zero-sum" requirement gave sociologists, like Robinson, the information needed to measure "trade-offs" made by the public as new technologies were introduced over the 20 year period 1965 to 1985.

Discussion of Findings

T₁--The Time Variable

Robinson's analysis over the 20 year period shows that "free" time has increased from about 35 hours per week in 1965 to about 40 hours per week in 1985. This newly found "free" time was the result of a reduction in time spent in three other activities--(1) working at a job, (2) doing housework, and (3) caring for children (because of smaller families). While young women have joined the workforce, women over age 55 have not. Also, men over age 55 are working shorter hours and retiring younger.

Total time spent doing housework declined over the 20 year period, however homes were considered just as clean as they used to be. Labor-saving appliances and devices have made the job of housework a more efficient operation.

"The Americans' Use of Time Project" and its director, John Robinson, moved to the University of Maryland at College Park, Maryland, where work is continuing. Robinson asked diary keepers to indicate the degree to which they liked or disliked each of 200 activities, rating each on scale of 0 to 10. Few activities fell below 5, and the average for all 200 activities was 7 (Robinson 1993). The rating of a few selected leisure time activities and the time spent per year in the activity is shown in Figure 1 as a perceptual map. This map was generated from Robinson's data using multi-dimensional scaling, with enjoyment level plotted on the Y axis and time spent plotted on the X axis.

A perceptual map, like the one shown in Figure 1, is a useful tool in advising the recreation-tourism business community on consumer preferences. Such information is also important to public providers of recreation-tourism activities. Activities that fall in the upper right quadrant of the perceptual map can be called "solid gold" (the public really enjoys these activities and many hours are spent participating).

Activities plotted in the upper left quadrant are enjoyed as much as those in the upper right quadrant, however fewer hours are spent participating. Activities in the lower two quadrants are not really enjoyed by the public. Entrepreneurial opportunity is present in the lower right quadrant--many hours are spent by the public in these activities with very little associated enjoyment. The astute entrepreneur will find a way of making the activity easier or more enjoyable, creating a product desire on the part of the potential consumer.

The availability of time is one of the most important factors influencing family vacation plans (Mason 1990). Americans are innovative and will find time for family vacations, balancing work schedules and career development with a perceived need for family togetherness.

Suzanne Cook, Executive Director of the U.S. Travel Data Center, has developed a "travel intensity index" for American age cohorts (Cook 1992). Cook's index is shown in Figure 2. When combined with population trends, this index becomes a useful tool in predicting recreation and tourism activity. Children born between 1940 and 1945 (Age 48 to 53 today) are more likely to camp or vacation in an RV than any other age cohort. Those individuals born between 1946 and 1957 (Age 35 to 47 today) are much less interested in camping or RV travel. Park managers should study these findings carefully as they consider park development policy.

T₂--The Transportation Variable

David Swierenga, Assistant Vice President of the Air Transport Association, presented data at the 1991 Outlook for Travel and Tourism Conference, indicating that while air travel represents less than 20 percent of all travel nationally, it is the only mode of travel increasing its share of total travel (Swierenga 1990).

Two other points made by Swierenga are especially important: (1) seat occupancy on U.S. airlines has consistently stayed in the sixty percent range in the last decade, and (2) the net profit margin of U.S. airlines has consistently been lower than the profit margin of U.S. industry (Figure 3).

Perhaps the U.S. airline industry should extend "senior citizen pricing privileges" to the general public. This would undoubtedly increase the seat occupancy rate, which could, in turn, improve over-all profitability of airlines, bringing them more in line with profits of U.S. industry. If this were the case, the airline share of the travel industry might increase dramatically.

Summary

Available time and appropriate transportation are, without question, the key elements that will be linked with increased travel in the years ahead. Despite the increase in two income dependency and its associated time requirement, innovative Americans will find time to travel. To conserve time, the fastest mode of transportation (airplane) will be used, if prices are affordable. It is this researcher's feeling that air travel will be more affordable and used more extensively. Yes, $T_1 + T_2 = T_3$.

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THE ROLE OF THE SOCIAL SCIENCES IN NATURAL RESOURCE MANAGEMENT: RESTRUCTURING FOR THE NEXT CENTURY

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Historically, the social sciences have not been adequately utilized in the formation of policy and decision-making in natural resource management. Three trends are now impacting the role that science plays in natural resource management: the growing political power of science, the diversity of values people place on natural resources and the growing impact of humans upon the natural resources. Some examples are provided to illustrate how the social sciences can contribute to the management of natural resources.

Introduction

In 1968, Eric Forsman, a young biologist working for the Forest Service as a summer fire guard, could scarcely believe his eyes when a northern spotted owl landed in the front of his ranger cabin. Who could have foreseen that the perfect ecological representative had just landed in his yard. Just as assuredly, who could have forecast that this seemingly innocuous creature would bring the Pacific Northwest's biggest industry to its knees in less than 25 years.

It's almost as if the entire natural resource profession was blindsided by an insignificant little bird that few people even knew existed and fewer still that really cared. Besides the intense debate about ecosystems versus jobs are there other factors that need to be considered? Without a doubt, the message received will be influenced by an individual's area of responsibility and interest. The "where you stand is where you sit" phenomenon. Some timber people will see a significant reduction in harvest levels; professional ecologists will see a threat to the fabric of the ecosystem, environmentalists will perceive a worldwide loss of biodiversity, and the list goes on.

The emerging message is that there is another dimension to consider from the current debate, namely that the social sciences can and must play a more important role in the development of our natural resource management systems. Before discussing that role, however, a short digression regarding some of the current trends facing natural resource management may be instructive.

Current Trends

A number of trends now permeate the current situation surrounding science and natural resource management. First, there is the growing political power of science (Dietrich, 1992). There are good reasons for this increased political power, such as the relatively objective nature of the research endeavor. It should be noted, however, that the social sciences are as vulnerable to scientific myopia as the other disciplines. We trivialize science we do not like or understand and automatically assume validity and worth to the science we like (Buttel and Taylor, 1992).

Other reasons for the growing influence of science in the political process include: the increasing complexity of the problems, the different scales of effects (e.g., site, forest, landscape, ecosystem, and global), and the overall lack of comprehensive data bases. In the latter case, the lack of comprehensive data sets allows the manager and social

scientist to develop premature closure on specific issues. For example, believing that overharvesting is simply a result of leveraged buyouts and economic incentives among some of the timber companies tends to disregard other data and oversimplifies a complex phenomenon.

Relative to the complexity issue, the number of situations now confronting natural resource management far exceeds the capability of any one scientific group or governmental organization to adequately deal with these issues. A sampling of these issues would include the following:

- Global deforestation and environmental degradation
- Global climate change
- Loss of biological diversity
- Changing demands for forest products
- Wilderness preservation and the proper role of reserve areas
- Production and harvesting practices that are sustainable
- Forest health
- Conflicting demands from society for preservation, recreation and commodity production

Moreover, scientists increasingly are asked to make their "best guess" with complete and historic data often lacking. Accordingly, we can expect that natural resource management will insist that science do the following things:

- Provide a foundation for the development of policy by defining the various alternatives. This implies that research serves an "up-front" role in decision-making instead of merely providing "backfill." That is, research-generated information that is used to develop policy rather than support for a decision already made.
- Provide monitoring information about the outcomes and quality of the decisions and policies implemented.
- Maintain an air of impartiality despite the pressure from the political process.
- Develop multi-approach and multi-discipline predictions rather than uni-dimensional solutions.

A second trend is the growing diversity of values human beings place on natural resources. This diversity is not only situational but also a function of space and time. For example, to a person building a house, the wood products and price of those products is of critical importance. Most of us, however, only build one or two houses in our lifetime and in the interim, other values tend to take precedence in our value system. These other values might include wanting an intact forest in order to escape the noise and congestion of the urban environment or cherishing the recreational activities offered by the forest environment. Others would place a high-degree of value on large wilderness landscapes as a way to experience adventure and challenge.

Westman (1977) has previously distinguished between the goods and services produced by the natural environment. Goods include marketable products such as timber or forage or even the use of the environment for recreation. Services, on the other hand, are the functions of an ecosystem and how these various functions interact. These services include: the absorption and breakdown of pollutants, the cycling of nutrients, and the fixation of solar energy. One example of this is the buffering effect that coastal wetlands serve.

Juxtaposed to the issue of goods and services is the concept of values. A number of authors have identified a wide range of values associated with the natural environment (Roston, 1985). As shown in Table 1, these values include scientific, therapeutic and recreational entities (Ewert, 1990). Associated with all of these values are differing levels of potential conflict. For example, aesthetic values have a high potential for conflict because of the individual nature of aesthetics. One person's beautiful setting is another person's boring scene.

Table 1. Selected values associated with wildland areas. 1, 2

Values	Level of Potential Conflict	Comments
Scientific	Low	Not well advanced; Loss of wildlands is outstripping the ability to collect information.
Therapeutic	Low	Many acknowledge the cathartic and rehabilitation qualities of wildland environments.
Ecological/ Bio-Diversity	Low	Widely-recognized is the importance of saving gene pools for future generations.
Recreational	Medium	Can conflict with other values such as scientific; As a highly personal quality of life issue, these values often invoke high levels of emotion.
Symbolic/ Cultural Identity	Medium	Symbols from wildland areas such as the bald eagle or bison represent certain societal and national values (e.g., freedom, strength, "rugged individualism").
Aesthetic	High	The intangible and subjective nature of these values often lead to disagreement as to worth and value.
Inherent Worth	High	For many, wildlands have an intrinsic value just being there. Others feel that wildlands should be more "productive" for the good of society.
Market	High	Usually are extractive and compete with most other values. This exclusivity creates high levels of emotion and conflict.

1 Adapted from Roston (1985)

2 From Ewert (1990)

A third trend surrounding the interface of science and management is the growing omnipresence and omnipotence of human impact upon the earth's landscape. There can be little doubt that few landscapes or sites now exist free from the influence of man. Most scientists agree that the net loss of the world's forests due to human activity since preagricultural times is on the order of eight million square kilometers or an area about the size of the continental United States. Of this amount, more than three-quarters has been cleared since 1680. In addition, the annual human withdrawal of water from natural circulation is now about 3,600 cubic kilometers or an amount exceeding the volume of Lake Huron. In 1680, the annual withdrawal was less than 100 cubic kilometers. There are a number of other statistics that point to the decline of global and environmental health (Postel, 1992).

When considering these trends, one fact becomes increasingly clear: people need to be considered in any long-term management strategy. It would be a challenge for the research community to describe any major scientific advancement that ultimately did not involve a human dimension. Reidel (1992) poses the idea that in natural resource policy, perhaps management has been asking the wrong questions. We, in the research community, could also be asked the same question. What then would be the right questions and how can information be generated toward answering those questions?

The Role of the Social Sciences in Natural Resource Decision-Making

Bormann (1993) suggests that concepts of the environment such as sustainability, forest health, biodiversity, and ecosystem management are essentially human constructs that serve as expressions of human values. If we believe that natural resource management is one manifestation of the society in which we live, what type of scientific structure must be in place to provide the type of information necessary for effective natural resource decision-making? Machlis (1992) makes the observation that biologists, ecologists, and other natural science professionals are now faced with a hard reality: ultimate solutions to natural resource problems lie in social, cultural, economic and political systems; the very systems that are the focus of the social sciences. While, traditionally, the social science disciplines have included political science, geography, anthropology, sociology, psychology, economics, and philosophy, more recent areas of inquiry could include the recreation and leisure sciences, education, demography, and social ecology.

What role can the social science disciplines play in the formation of natural resource policy? Global climate change presents one scenario that is both timely and of profound importance. The irony in this example is that while the issue has primarily been defined in terms of meteorological and chemical processes, the causes are almost exclusively human. Indeed, Maloney and Ward (1973) suggest that most environmental crises facing our society and the world are really "crises of maladaptive "human behavior." Consider the following roles that the various social sciences could play in the development of a comprehensive solution to any emerging changes in the global climatological systems.

- **Anthropology**--What have been the patterns of human adaptation in response to historical changes in the climate? Did communities develop large scale adaptive methodologies, migrate, or simply die out? Knowing how our ancestors reacted may provide some insight into how the species generally behaves in this type of crisis.
- **Political Science**--What political and/or governmental institutional structures have been effective in producing global awareness, monitoring, and enforcement procedures? As a global community, we already have some examples of international discussion and action on far-reaching environmental issues such as nuclear weapons, regulating the use of the oceans, and international cooperation on issues such as illegal trade of threatened and endangered species (Feldman 1991).
- **Economics**--What mixes of economic incentives would be most effective in altering behaviors to produce a more environmentally-friendly set of actions?
- **Education**--What educational vehicles would be most influential in modifying the behaviors of individuals? What will be the most effective mechanisms whereby methods of education can be translated into behaviors and knowledge that are not detrimental to the global environment?
- **Psychology/Sociology**--How can the individual and collectively, the society, take more responsibility in modifying their behaviors to lessen the overall impact upon the natural resource base? What specific attentional cues "tell us" that there is a threat to global health?
- **Recreation and Leisure Sciences**--As outdoor recreation is often the primary avenue from which a large segment of the population experiences a direct contact with the natural environment, can the outdoor recreation experience be managed in such as way to increase the individual's sensitivity and willingness to act in an environmentally-conscious way (Ewert, 1991)?

These are a few of the potential types of information that would add to the overall mix of solutions to global climate change. The same concept could and should be applied to other issues in management and policy-making for our natural resources. Holden (1988) has argued that:

"The social sciences have lagged far behind in assessing the interactions between physical changes and human activities. Far more is known about the processes of global warming, deforestation, resource depletion, and pollution than about the processes of the human institutions that create these effects."

A growing body of literature now speaks to the need for integrating the social, physical, and biological sciences (Heberlein, 1988). The fact that our research community has failed to do so points to a message of inertia and lack of willingness on the part of the scientific institutions we have developed. Moreover, as scientists and managers we often overlook the "cultural cornerstones" that guide our behaviors and the way we collect and filter information.

However, merely rallying against the status-quo can ultimately be counterproductive. As we seek to bring about a greater awareness of the need for the social sciences in the context of natural resource research and decision-making there are a number of points to consider (Machlis, 1993).

- Include incentives for the integration of the biological and physical sciences. That is, competitive grants, research proposals and workshops could frame the questions in such a way as to be of interest to the other sciences. For example, identifying the inelasticity of entrance fees at a particular location could also include the anticipated physical and biological impacts upon the resource based on the different use levels.
- Social science research programs need to be multi-scale including individuals, groups, communities, landscape and counties (human-equivalent landscape level), ecosystems, biomes, and global systems.
- To the extent possible, recreation and similar disciplines should be linked with the mainstream social science literature. Failing to do so tends to marginalize the information and can ultimately downgrade the information our scientists generate in the eyes of other disciplines and the courts.
- From a funding agency perspective, design our cooperative agreements to bring the output more in line with natural resource management needs, both in terms of the actual science but also with respect to the overall visibility of the research. In addition, priority should be given to cooperative agreements that incorporate a consortia of universities and other research institutions in order to bring a variety of ideas and approaches to the issue under study.
- Increasing the sensitivity for the fact that many of our managers and public are not always cognizant of the human dimensions part of natural resource management. The social sciences need to pay more attention to defining what the human dimension in natural resource management is in addition to identifying the potential research questions.

While this list is incomplete, the emerging scientific challenge is to incorporate the social sciences into the policy and decision-making agenda because they bring a scientific focus on the human dimensions aspects of natural resource use. Disciplines such as recreation and leisure research need to redefine their role in this developing scenario. The issues now go far beyond visitor and experience characteristics and often include the very fabric of many of our social systems. In the case of global climate change, the spotted owl, old growth and any number of other issues previously mentioned, one is

reminded of the Yukon traveler in Jack London's "To Build a Fire." The man was wise in the ways of the world but not in their significance. He never "saw" the clump of snow hanging from the tree, directly over his fire. The clump of snow that eventually but surely killed him. Our failure to build in the human component to our environmental decision-making may doom us to a similar fate. People make the problems but they also create the solutions. At this point, however, we still have a choice about what the future holds for some of our natural resources and perhaps, even for us.

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UNIVERSITY RECREATION AND PARK PROGRAMS: TRENDS AND CHALLENGES FOR THE FUTURE

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Trends and challenges are discussed in regard to three aspects: (1) the status of educational curricula (programs/departments) in relation to three essential elements -- excellence, relevance, and identify; (2) productivity focusing on Faculty, and (3) preparation of students and accreditation, directed toward Students.

There are three aspects on which to reflect as to what the future may bring for higher education.

- I. The Status of Educational Curricula (Programs/Departments)
- II. Productivity (Faculty)
- III. Preparation of Students and Accreditation (Students)

All three aspects are directly related to society. Sometimes we forget we are "within" society and that we are only one element within a larger framework. We must keep in mind our environmental milieu. The context within which we must operate impacts upon us. We often act as if we are in our own "cocoon," oblivious to that around us. We don't practice what we preach/teach, especially in marketing and relevance to constituencies. While we are but a small entity within a large arena, we can either remain "snug in our cocoon" and be dug out when not germane or we can be like a pebble or rock when tossed into a pond, send ripples out. If we truly believe in the importance of parks and recreation to society and individual human beings, we will consider sending ripples; but, you know, no ripples can be sent unless a rock is tossed into the larger pool, often an unknown.

I. The Status of Educational Curricula (Programs/Departments)

The first aspect focuses on Programs/Departments. What is happening? Here we are tied directly to the economy. Budgetary support has been very important in all areas of the United States; but, California, the midwest, and the east seem to all have had the greatest state budget problems. Most of our state-supported universities, of course, are heavily dependent on state funding. The only area of the United States which seems to be thriving and has adequate budgetary support at this time is in the south — both southwest and southeast. So, what is the response to budget reductions? Two approaches to less financial resources need to be distinguished: 1) budget reduction through elimination or merging of departments and 2) budget reduction related to efficiencies. One can only be so efficient — there have to be adequate operating dollars. As regards elimination or merger, the question is "how does a department survive?" *There appear to be three essential elements — excellence, relevance, and identity.*

Excellence

To be excellent is not enough, but without excellence, one will get no where. A national reputation within our own field is not enough to save us at the institutional level. We must be making contribution to the wider arena of the institution and the state, e.g. community economic development, youth-at-risk, environmental quality.

Relevance

Dr. Phil Rea stated in the SPRE Newsletter (Spring 1993) that 11 programs have been eliminated in the last two years. The question is why and what can be done so as not to be such a victim. Rea's article, a survey done this past year, and my own perceptions would indicate relevance to the institution's mission and to the funding agency's perception of what it's getting for the dollars is critical. But, there is no literature that I have seen which has said what relevance is! Here are some possible considerations.

First, we tend to be self-centered and often individual professor-centered and not institution- or department-centered. Researchers, especially, lend to this point of view with such statements, as "Don't bother me, I'm doing important work (to whom?) and bringing in dollars." Really? We are self-centered in what we're doing topic-wise and in contribution to the larger institution and profession. Are we only "housekeeping" or really moving forward the objectives of the institution and profession. Research can provide a very valuable service to influential constituents and politicians, but we have to articulate our findings, as well as work in concert regarding important issues needing researching. Further, we should be researching to acquire data for decision-making.

What is relevance?

1. Identification of program/department as essential to the various tasks of the institution and tied to the mission of the institution. We must have strength in areas valued by the institution.
2. Involvement in the wider college/school and university.
3. Initiating program changes to lead in meeting challenges before the institution. We must be proactive, not reactive.

Identity

Merger of a department or program into another is not the answer, for we lose aspects of the program, lose identity and autonomy, and are low on the budget "totem pole" and in further cuts, we continue in jeopardy. We must be identified as an important, unique contributing factor enabling an institution to meet its mission — its mission focuses on educating students and servicing its constituency. We must be valued as a contributor.

We must have interdepartment and interdisciplinary cooperation, but beware you do not "shoot yourself in the foot," e.g., saying that it makes no difference who teaches something or does some task. Some people believe that recreation is not a science or discipline; however, each discipline, and I include recreation in this, should bring special perspectives germane and important to the goal. Again, recreation must be identified and valued as an important member of the team. What does your department bring to the "team"?

The foregoing attributes profile a nonthreatened program/department. So, the watch words regarding the status of departments are *excellence, relevance, and identity*. All three are essential and in that order; however, it must be noted that while excellence is critical, excellence without the other two will not be sufficient to "save" a program or department. What does it mean for the researcher? Excellence, of course, means quality. Relevance — relevant to whom? It must be relevant to the institution's objectives. Identity — not only identity to the outside, but also identity within the university.

II. Productivity (Faculty)

The second aspect focuses on Faculty. In society and the business world, the question is productivity. And within productivity, we are talking efficiencies, effectiveness, and accountability. If an agency gives you dollars for research, it wants a product. Similarly, the institutional funders (students and government legislators) want something for their dollars. At least five Big Ten institutions are in states where they already have legislation, or legislation is being considered,

regarding productivity mandates -- when one does not "clean up one's own house," then the legislature moves in!!

What is productivity? We too often have defined productivity in our terms, not that of the financing entities. Productivity means: 1) educating students, 2) service to constituency in solving their problems, and, then 3) research. We also have defined productivity as circumstances existed in the 60's and 70's, not as they are now in the '90's. Even though you may not have been in the profession then, the practices and attitudes have been handed down, especially in land grant colleges.

Productivity must be redefined in terms of "what do I get for my dollars toward the mission/tasks?" Specifically, what does this mean? The direction of all state mandates is teaching, especially undergraduate. Particularly "research institutions" and researchers have the reputation either of not wanting to be bothered with teaching, especially undergraduate teaching, or they are poor teachers and cannot relate to students.

1. We must become more "student friendly." Isn't this what we tell our students? "Consumer services."
2. We must generate more SCHs (student credit hours) per unit. This doesn't necessarily mean all classes must be larger, but there must be efficiencies by using technology or other strategies, depending how best the topic can be learned.

While research is not factored in to any extent, faculty are expected to produce scholarly activity for tenure and promotion. This gives a dilemma to faculty who are teaching heavy loads. Also, service is essential, but often not as highly valued for tenure and promotion -- another dilemma. Do we have a two- or three-tier workload system, differentiating untenured and tenured but not assistant and full professors? Do we have "teaching" faculty and "research" faculty? Whatever is worked out, *it must be productivity valued by the institution and its funding agency.*

In terms of our watch words, efficiency, effectiveness, and accountability, more for less is the pessimist's view. The nature of the product is critical. I am concerned with the seeming overriding materialistic attitude of educators today and the seeming less vitality in scholarly inquisitiveness. "Why should I do it if I'm not paid extra?" is asked frequently by educators today. Why? -- for what it can bring to the quality of your work, insights, and new understandings.

III. Preparation of Students and Accreditation (Students)

The third aspect's focus is on the student. This aspect ties closely to the profession and job market. Changes in student interest? Or is it changes in educator/professional perspective. A little history -- in the 60's there were great increases in student numbers, primarily in public parks and recreation. Then, there was the growth in therapeutic recreation followed by a change in the attitudes of the educators towards "we are administrators/managers." The attitude seemed to be: 1) denigration of direct leadership; 2) position-wise, one does not have to work up from the bottom to an administrative position; 3) change the curriculum courses and titles to lure students; and 4) a feeling of inferiority and that changing titles of programs and departments to "leisure/leisure studies" will give status.

Then, in the 80's, and especially the mid-80's, there was a decline in public park and recreation positions. The young people who entered the profession in the 60's and 70's still headed the programs, and there were few new departments or additional positions. There were great decreases in some institutions in student enrollment because of this decline in public park and recreation positions. Therapeutic recreation retained its numbers and has even increased since then. Then, in came commercial recreation and tourism. There are

misperceptions in commercial recreation as many of the positions are low-level service positions with no career advancement.

And, what happened to outdoor recreation and natural resources? Natural resources land grant institutions had gone their merry way, ignoring Curriculum Accreditation. The job situation related to natural resources and public parks has changed considerably. There now seems to be two-tiers; and, the attitude and focus also have changed. Regarding the two-tiers, there now is very clearly a professional and a non-professional hierarchy. However, the professional parks and recreation curriculum major is not yet accepted as essential background for the professional management positions. The nonprofessional positions are heavily maintenance, and the attitude is that anyone can do these and are expendable. Today, students want the management positions, but the dilemma is that they are not always very qualified. Management in outdoor recreation has focused either on management of the natural resource or management of the people and their total experience. Further, there are two types of management as related to people -- visitor *management* and the participant *experience*. Some natural resource-management types have been trying to approach behavior, and some behaviorists (most nonrecreationists) are finding the outdoors as a human experience.

What is the future in natural resource-based recreation? For parks and recreation majors, it does not appear to be in natural resource management, for one cannot be forestry, wildlife, fisheries, etc. specialists and also a recreation specialist who understands human behavior in the outdoors. However, there must be basic understandings of both the ecosystem and human dimensions. There do seem to be indicators that both aspects of management of people are needed. Look what management is now being asked to do, specifically, the development of strategic planning, and this involves management of people on the resource. Recreation professionals should not try to be a specialist in forestry, wildlife, and fisheries, but specialists in the resource itself should be utilized. The park and recreation curriculum focus should be on the quality of the experience in the outdoors. This focus on setting, the natural resource, is to be distinguished from the focus on the outdoors as a modality, or a change agent. The outdoors is a modality to meet the needs of all people, to enhance individual development, and to enhance learning. It also is a therapeutic agent. Most of the topics at this research conference deal with management of the resource as a setting. While there is some research, we must have more human dimensions research concerned with a diversity of values and the impact on human activities. The values of the outdoors as both setting and modality are extensive.

Accreditation

How does the foregoing relate to Accreditation? There is no disparity between accreditation curriculum competencies and the management of people, but there definitely is as related to the management of natural resources. A brief review of the revised 1990 Accreditation Standards will evidence such. Before revision, the Council on Accreditation had as many as 27 different options being accredited! Careful study was made and two conclusion were reached by the Council.

1. There was a basic program of competencies which should be required of all majors, regardless of size of institution or career thrust.
2. There are only four areas of differentiation for options: a) administration and management, b) natural resources, c) behavior-leadership group organization, d) therapeutic recreation, i.e. therapeutic modality. Of course there is some overlap.

So, the revised Accreditation Standards provides for a strong basic program, a "stand-alone" program. It is not, as in the previous Standards, a core to which an option is attached for a

complete program. Under the revised Standards, an option becomes an in-depth specialization or focus, requiring additional course work and experiences. Where natural resource management educators say there is disparity is a matter of what is perceived important -- more natural resource (fisheries, wildlife, forestry, et al) courses or more management and behavior-related courses or recreation/leisure concepts, history, and philosophy. However, of greater concern is or should be fitting the curriculum into the larger university/college requirements, particularly emphasizing interdisciplinary courses, global concerns, and free electives. In terms of curriculum and educational experiences, there must be more innovation, a greater relationship to practitioners, and more experiential experiences or field projects. Yet, the student must get the basics of education. *Obsolescence should be one of our fears. The curriculum must prepare students for the changes in professional tasks and the opportunities of the future.*

One thing is certain, we are in an era of change, and the question is, "Will we manage change or will change manage us?" We cannot sit back.

*MANAGEMENT SESSIONS:
Roundtable and Panel Discussions*

ALLEGANY STATE PARK MASTER

PLANNING PROCESS:

ISSUES AND EXPERIENCE

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Allegany State Park is the largest New York State Park encompassing approximately 100 square miles in the southwestern part of the state. The natural and recreational resources provide a wide range of year round passive and recreational, environmental, educational, and cultural opportunities. A contiguous mature hard wood forest covers the park interspersed with significant and unique resources. A master planning process was initiated to provide an overall direction for the park. During this process significant issues were addressed concerning unique resources, forest and wildlife management and oil, gas and mineral rights. Many of these are applicable to other park systems. This report will focus on these issues and public participation process and the experience gained through the planning process.

Key Words: Allegany State Park, master planning; public participation; unique natural resources; diversity; forest management; wildlife management; oil, gas, and mineral rights

Introduction

Allegany State Park is the largest New York State Park and has two major recreation areas. The natural and recreational resources provide a wide and diverse range of year round active and passive recreational, environmental, educational, and cultural opportunities ranging from overnight camping to swimming, hiking and hunting. Much of the infrastructure and developed recreation facilities are old and in need of rehabilitation. Allegany State Park is significant from both a regional and park perspective in terms of types and diversity of species and habitats. There is a need to provide a direction for the park to maximize and integrate the recreational, environmental educational, cultural and natural opportunities of the park without compromising the character and integrity of its natural resources. Without providing an overall direction for the park, the opportunities the park has to offer will not be fully utilized and some of the significance of the natural resources could be lost.

A master planning process has been underway since 1974. Although the final plan has not yet been adopted by the Commissioner of the Office of Parks, Recreation and Historic

Preservation, many of the issues addressed in the draft plan and the experience gained through the planning process are likely to be applicable to other national, state and local park systems. The preferred alternative identified in the draft plan (Fig. 1, next page) may be modified through information received and concerns expressed during the public input process.

This report will focus on five major issue areas:

- Planning process / public participation
- Significant and unique natural resources
- Forest management
- Wildlife management
- Oil, gas and mineral rights.

Setting

Allegany State Park occupies approximately 100 square miles of Cattaraugus County in southwestern New York. Approximately ninety-five percent (62,600 acres) of the park's 67,000+ acre is state owned. It is estimated that over forty percent of mineral rights beneath the public lands are held by private interests.

The park is bounded on the south by the Pennsylvania/New York State line (Allegheny National Forests northern border), on the west and north/northeast by the Seneca Nation of Indians Allegany Reservation (including the City of Salamanca and the Allegheny Reservoir), and on the east by the CSX Railroad right of way and the Village of Limestone.

The park's location is geologically unique since it was not covered by the last Continental Ice Sheet. Hence, the primary features of the park were not modified by ice erosion or morainal deposition. The regions valleys, wooded slopes and meandering streams create an area of striking beauty.

The character of the forest at Allegany State Park is primarily a result of logging activities which occurred up to the time of the park's creation in 1921. Since most of the forest was clear cut, today's forest is predominately second growth and a mixture of even age stands.

In addition to the expansive, contiguous forest there are numerous significant and unique resources located in the park. Among these are: the Big Basin (a portion of which contains the largest area of old growth forest remaining in the park and perhaps in western New York), Thunder Rocks (a unique geological area), several types of forest that possess regionally significant attributes, Science Lake area (site of work of the former School of Natural History), Old Baldy (potential historic district), the Wolf Run area (relatively undisturbed oak forest plus rare plants), and streams and associated habitat areas throughout the park.

Since the early 1920s, Allegany State Park has been providing a variety of recreational opportunities for the public. Throughout the years, recreational opportunities have been expanded and today the park is truly a four season recreation facility. There are two major recreation areas: Red House and Quaker; 382 cabins, 323 tent and trailer sites, 5 group camps, 2 beach areas, 4 picnic areas, 1 launch ramp, 78.6 miles of hiking/snowshoe trails, 8.5 miles of self-guided nature trails, 45 miles of horseback riding trails, 61 miles of snowmobile trails, 24 miles of cross-country trails and 5.7 miles of bicycle trails. Other activities and programs include environmental education, bird watching, hunting, fishing, and touring. These resources and facilities are utilized by over 1.2 million people annually.

Planning Process / Public Participation

The draft master plan represents the culmination of an extensive effort of information gathering, analysis and public input dating back to 1974. The actual initiation for the preparation of the master plan occurred in early 1985. The 1981 Preliminary Draft Forest Recreation Management Plan (FRMP) focused on the management of the forest resources.

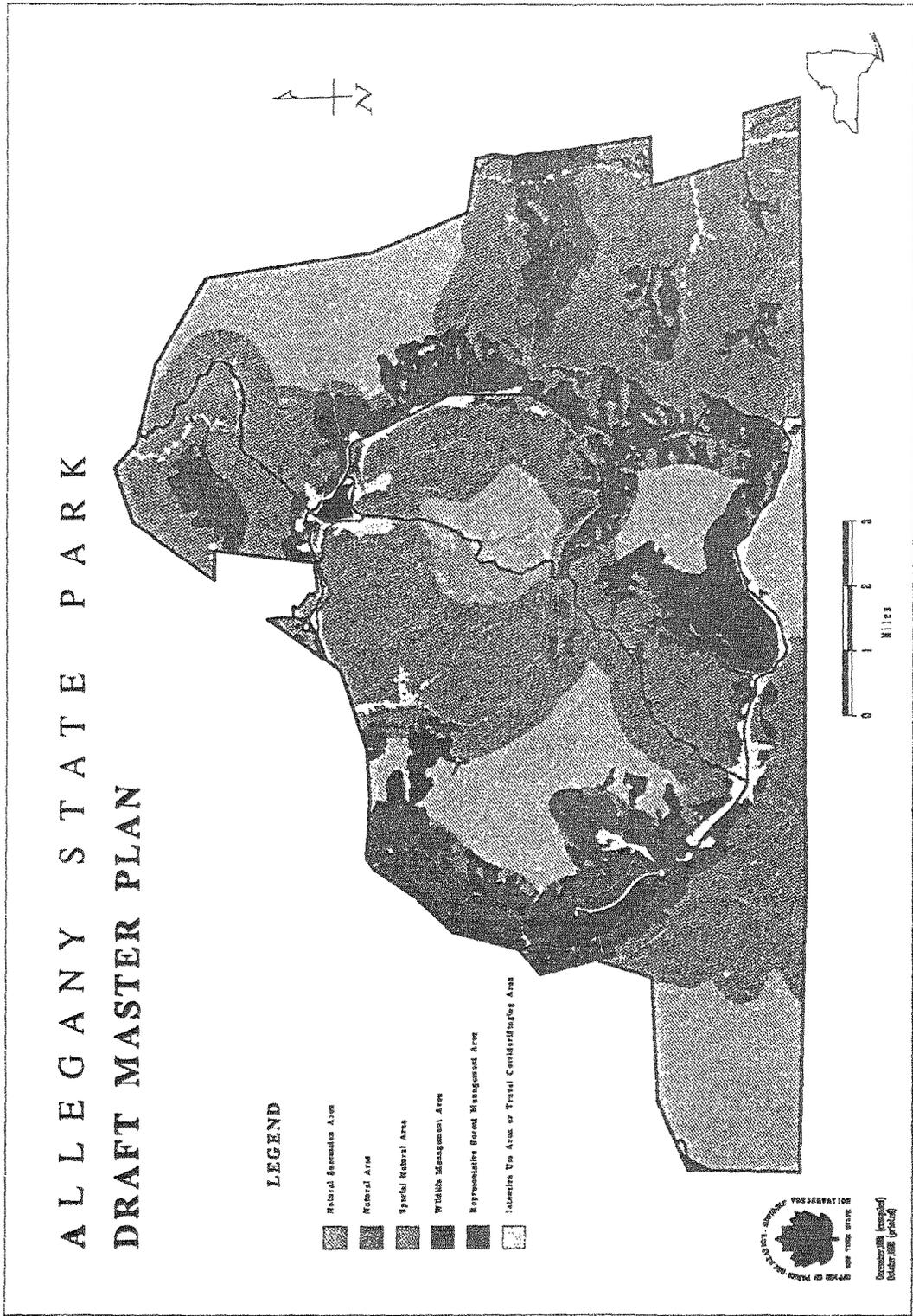


Figure 1. Allegany State Park Draft Master Plan.

Many viewed the draft plan as a commercial timber harvesting plan. Through the scoping process and extent of public input, the agency recognized the need to assess both the recreational, natural and cultural resource needs and potentials in a comprehensive manner. As a result, the Commissioner directed that a comprehensive master plan should be prepared. Public master planning workshops held in 1985 represented an initial step in the master planning process. Following the workshop, a Scoping Findings document was prepared that analyzed 73 issues and concerns. In 1985, an extensive public survey was conducted to obtain public input on various issues. Three user/interest groups were targeted: (1) a representative sample of the general public from the Buffalo, Jamestown, Salamanca and Olean regions of New York and Bradford and Erie, Pennsylvania; (2) campers and cabin park users; and (3) the Advisory Task Force.

As a further means of increasing public involvement within the planning process, representatives from 65 interest groups were invited to participate on an Advisory Task Force. Members of a wide variety of recreation, trail, environmental, sportsmen, forestry and oil and gas organizations as well as governmental and academic representatives participated on the task force. The task force was designed to provide a balanced representation among the various interests. However, some groups felt it was not balanced. This is a basic problem in the formation of any task force. Four workshops were held during the planning process with the Advisory Task Force.

For various Task Force representatives with opposing viewpoints, it was an opportunity to work together in addressing issues and developing criteria that would be utilized in the planning process. As identified in Figure --, there was an increase level of coordination and cooperation among the representatives throughout the workshops. However, once the draft plan was released for review, polarization between task force members occurred. They were basically divided between opposing any actions that would require cutting (logging) of trees and promoting commercial logging in the park. It should be noted that the draft plan proposed implementation of management techniques that would be required to achieve a wildlife or representative forest objective and not commercial logging in the park. It appeared that the opposing groups were partially directing their opposition to each other rather than what was proposed in the draft plan. None of the opposing groups supported the plan.

The various environmental groups were generally opposed to any wildlife and forest management within the park. From their viewpoint this translated into commercial logging. Various campaigns were initiated primarily within the Buffalo metropolitan area to gain public support for their position. As a result hundreds of letters focusing on the logging issue were sent to the Agency and the Governor. The Agency acknowledged receipt of each letter and included a one page fact sheet of the draft plan in response.

The pro-resource management side was primarily composed of local government and tourism/economic representatives, logging interests, sportsmen groups and selected trail groups. A primary concern of these interest groups was the economy of the region which is depressed, increasing tourism and improving hunting and fishing opportunities. Some of the rationale for increased management focused on initial 1921 legislation creating the park which did not mandate timber management but provided for reforestation and propagation of fish and game.

This resulted in the basic conflicts between urban versus rural and environmental groups versus pro management / economic interests. As a public agency it was our role to listen to both groups and determine what is an appropriate direction for the park. Some of the opposition to the plan was the likely result from "baggage" from earlier actions, actions that have occurred elsewhere and the "who can you trust" syndrome. In terms of "baggage", there was considerable opposition to the

Draft Recreation Forest Resource Management Plan in 1981. As mentioned above, many view this as a timber management plan. It was and continues to be difficult to separate this from the draft master plan. Many feel that the draft master plan is just a cover for timber management. The draft plan is driven by a completely different set of policies and objectives that are not based on timber yield or the generation of funds.

It is likely that national issues concerning the Forest Service and National Park Service with their management of western lands has had an impact on how the public has viewed the draft plan. In some cases, what is proposed in the plan is different than what the public may perceive. For instance, the plan proposes as a potential management technique patch cuts of 3 to 5 acres to allow for regeneration of various forest types. Numerous letters received view this as clear cutting at least 22 to 50 percent of the park.

There may also be a credibility problem with all levels of government today. Will the agency propose one thing and do something else? This concern goes well beyond the draft plan.

Finally, there is a basic issue of what is a State Park, how does it differ from other public lands and how should it be managed. The draft plan states that the type and condition of the natural and cultural resources, the approach to acquisition, and the establishing legislation are unique and specific to Allegany State Park. Adoption of a plan for Allegany State Park does not have any bearing on the management of recreational or natural resources of any other facility within the New York State system of parks and sites. Again, not all the public believes that this will be the case and that the action will not be precedent setting for similar actions in other parks. In addition, some of the public feel state parks are unique and the natural resources should be allowed to go through natural succession processes. Likewise, there is another segment of the public that feels natural resources should be used and not wasted. Both of these are basic philosophical beliefs.

There has been a considerable opportunity for public input during the public review process. Over 500 people attended the 2 public hearings and nearly 2,000 letters have been received. There has been considerable media coverage and numerous newspaper articles. The agency will review all the letters and address all substantive comments. The issues, concerns and information will be considered in the development of the final master plan.

Significant and Unique Natural Resources

The park's geological and biological resources are a unique natural resource. The Park is located within a geologically unique area in New York State that was not affected by the last glacial era. As such, there are types of habitat different from areas to the immediate north. The park's geographic location between the Great Lakes and the Allegheny Mountains provides a relatively humid climate with higher than average precipitation which contributes to the enhanced growth of the forest and forest systems. Other characteristics which contribute to the park's uniqueness are the expansive areas of mature forest, and the considerable amount of research and information on the park's environment.

Also contributing to the significance of the park as a whole is the relative lack of timber management activities since its creation. The character of the Allegheny State Park forest is very different from that of the surrounding region. Most of the forest within the park is between 70 and 100+ years old with the most notable example being the Big Tree Area which contains trees 220 years old and older. The relatively low acreage of early succession systems (and the low numbers of species associated with those systems) has lowered the park's overall diversity of species. The Park, however, contributes significantly to regional biodiversity. Early successional ecosystems and species are abundant in areas outside of the park while these same outside areas are lacking in old growth

systems similar to those within the park. While protection of the parks existing old growth areas will considerably enhance regional biodiversity, the Parks greatest value to the region may very well rest in its potential for providing additional old growth systems in the future (Anderson et. al., 1991).

In the Allegany draft master plan, a natural area is defined as one within which the character of vegetation and wildlife is to a large extent the result of natural events. The primary aim of natural area designation is the protection of forest succession processes rather than the maintenance of a particular forest type or age class.

Natural areas have many values. One important value is the contribution of natural areas to biodiversity. The identification of forest areas for limited or low management contributes substantially to the overall diversity of a region because of the relative scarcity of such areas.

Uninterrupted natural succession leads to old growth systems. These systems consist of more than just old trees. They include dead and down trees and an understory microclimate conducive to species preferring areas with reduced light. The numbers and types of insectivores using down trees for habitat contribute to biodiversity and serve as food sources for species of animals preferring older forest systems. Natural Areas that have reached old growth conditions contain important pathways for fixing nitrogen and retaining and recycling nutrients. Lichens, which are plentiful in older forests, take nitrogen from the air and release it to the soil when they decompose. Biomass decomposition also involves many different organisms such as bacteria, fungi, mites, and salamanders, all of which are connected to the overall forest ecosystem. It contributes to the humus, or organic component within the soil.

Old growth systems, however, are not devoid of early succession species. As clumps of trees fall either through death and/or storm events openings in the canopy are created allowing for growth of early succession types of species. This patchwork or mosaic of forest is itself unique and contributes even further to biodiversity. The early succession patches differ from similar systems in managed areas in that they include the dead and down component of the forest which provides greater diversity of food and cover opportunities.

There are several values of Natural Areas that are associated with people. These include the psychological well being and rejuvenation of the spirit, the potential for contributing to human health and research in the future, economic benefits associated with tourism, historic and scenic importance, and resources for environmental education.

A major rationale for providing natural areas within the park is the contribution of such areas to the diversity not only of the park but of the entire region. The character of the park forest is different than that of the surrounding region due to the relative lack of large scale timber harvesting since the park was created. There are at least 745,000 acres of public/private managed forest in the region surrounding the park including NY State Forest land, State Wildlife management areas, the Allegheny National Forest and Hammermill Paper Company Lands. While approximately 9,000 acres of the Allegheny National Forest was recently designated by Congress as wilderness and the ANF also contains approximately 6,000 acres which are designated as natural or scenic areas, this represents only about 3 percent of the ANF's acreage. There are no areas in western New York specifically designated for natural area management.

NYS Biological Survey in their 1984 report pointed out that the park harbors the largest publicly owned, contiguous block of forest in western New York and provides important habitat to species of mature forests and to those requiring large home ranges or isolation from human activities. Promotion of the increase of successional and open site species, which have

abundant habitat in the region surrounding the park, while reducing habitat of mature forest species could lead to a reduction in the regional diversity of wildlife.

They concluded, however, that diversity of the park could be increased through active management without adversely affecting regional diversity as long as certain guidelines are followed. These guidelines include:

- leaving all existing old growth forests undisturbed;
- allowing forests on slopes greater than 30% to develop into old growth;
- leaving sufficient buffer to prevent edge effects from degrading conditions in the interiors of the mature stands;
- allowing old growth stands to function as natural systems;
- elimination of exotic species;
- reduction of the deer herd; and
- designation of preserves in the following areas: The Big Basin area (entire), southwestern oak and mixed mesophytic forests and the area lying south of Quaker Run from Mt. Tuscarora to Bear Bog.

Designation of some areas of Allegany State Park as natural areas is consistent with the current management of most New York State Parks. Since these areas are not actively managed for wildlife or timber, they are, in effect, natural areas, although they may not be formally designated as such. The only forest management activities occurring on a regular basis in most state parks are fire control, hazardous tree removal, scenic vista maintenance, insect and disease control and mowing (e.g., along road shoulders). Thus, the forests within state parks are basically allowed to undergo natural succession.

Allegany State Park contains some forest that is considered to be old growth (e.g., the hemlock stand in the Big Basin). Because of the rarity of old growth in the Eastern United States, its retention should be given priority. As recommended by the Biological Survey (1984) all old growth in the park should be left undisturbed and allowed to function as natural systems. Map 15 illustrates areas of the park with high probability of possessing characteristics of older forests. The old growth areas map is based on a 1934 map showing areas identified as mature vegetation.

The primary issue is regional diversity versus park diversity and old growth. It is recognized that the park has some old growth areas but most of the park is mature forest. This mature forest will eventually develop into an old growth system and the character and associated wildlife of the existing forest will change. There is considerable public perception that the park is primarily old growth. In addition, the general public likes the existing park character and would like it kept that way. Likewise, they like viewing the existing wildlife. This in itself is conflicting. From one perspective the public favors old growth (many of which view this as old trees) and at the same time likes the diversity the park has to offer. Both concepts are complex and it may be uncertain whether the general public has a complete understanding of each. Since the agency recognizes the value of old growth and its importance in the park, the question is how much of the park should be designated as natural areas. If all the forested areas of the park are so designated, the existing character of the park will change and park diversity will occur but it will take many years. Similarly, from a biological viewpoint, does the importance of regional diversity takes precedence over park diversity. The Biological Survey feels that both can be achieved in the park. Others feel regional diversity is of primary importance which has been reinforced by the concern of lower populations of various neo-tropical insectivorous bird species.

Forest Management

As mentioned, the present character of Park forests are a direct result of the logging activities conducted in the region from 1820 to 1920. During that interval, intensive operation of the sawmill and chemical wood industries resulted in removal of

most of the original forest cover on lands which are now within the boundaries of the Park. These early cuts laid open the forest floor to the sun and fast-growing, light-demanding species such as Black Cherry, White Ash, Red Maple, and Aspen established themselves as the predominant tree species in most areas of the park. These species gradually became the older, dominant trees of the even-aged tracts in the park today, 70 to 170 plus years later. Some areas in the park, which were harvested earlier or were lightly thinned, are in a mature to old growth condition today. One such area is the Big Basin where Hemlock-Hardwood stands have reached ages of approximately 200 years. Since the different forest tracts of the region were cut clear during different episodes and over an interval of some 100 years, the forests within the Park today display a mixture of tracts of even-aged stands of different ages. These issues must be addressed and resolved within the Final Master Plan/FEIS. The draft plan calls for placing 70% of the park in some type of natural area designation. A forest inventory conducted in 1974 recognized five forest types. These consisted of the following categories:

Table 1. Vegetative categories.

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1. Allegheny Hardwoods (AH)
This type is quite variable across the Park as relates to species composition. Composed primarily of Sugar Maple, Black Cherry, Red Maple and White Ash with American Beech, Hemlock, Black Birch, Yellow Poplar and Cucumber tree as common associates. Sugar Maple and White Ash with American Beech tend to dominate Park stands. Red Oak sporadically occurs on dryer upland sites within the type.
 2. Hemlock-Hardwood (H-H)
Type composed of an association of Eastern Hemlock and various deciduous hardwoods form an association. Recognized where Hemlock constitutes 50% or more by volume, of stand composition.
 3. Oak (oak)
Type composed of White, Red and/or Chestnut Oak. Oaks occur in association with other deciduous hardwoods or Hemlock. Recognized where Oak species constitute 50% or more by volume of stand composition.
 4. Cherry (CH)
Type is a special type of the Allegheny Hardwoods in that Black Cherry constitutes 50% or more by volume of stand composition.
 5. Plantations (PL)
Conifer species planted on open fields, or within forest openings, in either pure or mixed stands. Red Pine, Scotch Pine, Norway Spruce, Larch and mixed Conifer plantations are recognized.
 6. Open/Brush (O)
Openings that range from small grassy clearings to larger complexes of grassy fields with patches and fingers of woody and/or shrubby cover interspersed.
 7. Protection Forest (PF)
Forested or open lands owned by the U. S. Corps of Engineers and managed by the OPRHP - Allegheny Region, under a cooperative agreement.
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From this inventory various age/size classifications were developed. The classifications are defined as:

Seedling-Sapling	1-25 years	<6" diameter
Immature tree	25-70 years	6" - 11.9" diameter
Mature tree	70-199 years	12" - 23.9" diameter
Old Growth	200+ years	24" + diameter

Only 6 percent of the forested area is in the immature tree class and, as mentioned above, there is no sapling class. Ninety-four percent of the forested land is in the mature or old growth tree size class. These figures are indicative of the distribution of the age classes on the Park. Of the total forested area it is estimated that on 15 percent the trees are over 100 years old, on 50 percent average tree age is 80-100 years old, on 35 percent between 60 and 80 years of age and on about 5% are immature.

The fact that almost 90 percent of the land area of Allegheny State Park is forested underscores the fact that forest-dependent recreation and wildlife species will dominate the area. Consequently, the character of the forest as determined by plant species composition and physical structure as determined by age class composition, will exert the dominant role in determining not only wildlife abundance and diversity, but the future long term composition of the forest vegetation and the benefits recreationists derive from it. Due to natural succession and wildlife pressures on the forest, many forest areas previously in earlier stage forest have been eliminated. Continual shading of the forest floor, compounded with overbrowsing by wildlife, has resulted in virtually no advance vegetative reproduction being present in today's forest. In addition, Aspen stands valuable for wildlife, which once comprised a significant percentage of Allegheny's forest have all but disappeared.

Currently, the Park forest is undergoing successional changes which have and will continue to displace vegetative species associated with high light conditions (sun-loving), resulting in a near climax forest composed of primarily shade tolerant species. The most obvious change in the forest at Allegheny State Park is the loss through natural succession of early successional forest. Approximately 17 percent of the land evaluated in 1937 was Aspen type. Substantial stands of Aspen type species are not present in the Park today. Also, substantial numbers of intermediate types of trees such as Black Cherry, White Ash, Yellow Poplar and Oaks are being replaced by the very shade tolerant Maple/Beech type.

In some areas of the Park a grass sod or continuous cover of Hayscented and New York fern has formed. These complexes adversely affect forest regeneration through dense shading and inhibition of tree species. The presence of the fern complexes is believed to be related to high deer populations because deer browse the tree seedlings that would otherwise have inhibited the spread of ferns. The presence of ferns and high deer populations result in a change in vegetative species composition of reproduction from Black Cherry, Hemlock or Sugar Maples to Beech and Striped Maple because these species are not preferred by deer as browse and can grow through the fern cover. (Horsley, 1984, NYS Biological Survey 1984.)

The need to manage the forest resource at Allegheny State Park is centered about two basic concerns, 1) wildlife habitat and management, and 2) long term perpetuation of the forest and its composition.

Allegheny State Park contains forest types that are special, unique or important enough that steps should be taken to assure that representative areas of these types will be present for Park users to interpret, study and enjoy in perpetuity. Discussions concerning the character of the Park forest have pointed to the presence of forest types and conditions such as old growth hemlock, the absence of previously occurring aspen types and extensive tracts of hardwoods judged unique due to size, species composition, age or condition. If one goal of the master plan is to enhance and protect the regeneration and growth of native species of plants, then the need for the restoration, maintenance and preservation of certain unique forest types, requires consideration independently from justification solely as wildlife habitat to focus on what has been termed "representative forest types."

The representative forest principle is based on the assumption that maintenance of existing forest character is a reasonable goal and begins to address which areas contain forest types of such importance to the character and recreational value of the Park, and regional diversity, that natural succession should be controlled through active management practices. The authors of the 1984 Biological Survey concluded that it should be possible in an area the size of Allegheny State Park to maintain successional regimes while protecting the significant tracts of old growth forests and their important species.

The maintenance of this diversity of types is twofold in purpose. First, the greater the diversity of plant habitats, the greater the probability of providing a livelihood for all endemic species, and secondly, the maintenance of a diversity of tree species, types and plant communities is the most effective way to preserve a diversity of genotypes for future culture and human use.

Representative forest types serve as resource bases for educational and research purposes and can provide economic benefits through tourism and environmental benefits through diversification and aesthetic quality.

A forest stand can be defined as "a community of trees possessing sufficient uniformity of species composition, age and condition to be distinguishable from adjacent communities." Forest stands may be of an even age or uneven age type, depending on the age structure present within the stand. Criteria were developed to define each representative forest type. They were utilized by the GIS to identify areas that met the criteria.

Table 2 (adjacent column) of the Park forest types contains the criteria utilized to identify those areas that are best maintained as a representative forest type.

Through the public Scoping and Advisory Task Force meetings, two perspectives on forest values emerged:

1. The process of succession has value and eventually leads to a desirable level of biodiversity, and
2. The existing forest has value and is worth protecting by actively managing natural succession processes.

Representative forest management will help achieve the goal of maintaining certain types of exceptional forest as "representative" of those types over time. The decisions of locating and identifying the extent of various representative forest types necessary to help maintain current forest character was a step-wise process of alternative development consisting of data inventory, analysis including interpretation, criteria identification, overlaying and synthesis (i.e. combining and understanding the interaction of various systems affecting park land character). This process of identifying management options has been greatly aided by the use of overlays, produced by a geographic information system (G.I.S.). Utilizing the information produced through the G.I.S., it was possible to conduct an analysis of data supplied by the forest inventory such as forest types; major tree species; stand locations; tree density and size, and subsequently weighing these against other parameters included within the data base such as roads; trails; buildings; watershed boundaries; slope, and environmental and unique resources.

The minimum stand condition that will allow for perpetuation of the various forest stands and subsequently, types, to retain the present representative forest character was determined. For example, to perpetuate a cherry type so that mature cherry stands exist 100 years in the future requires us to make certain a stand of one year old cherry regeneration exists today, and that it survives over the next 100 years. To do so, requires that this forest type be composed of various conditions and ideally would contain stands that represent each of the conditions from 1 through 100 years in age. The minimum condition necessary to maintain the forest type centers around the minimum stand size.

Table 2. Representative forest type criteria.

ALLEGHENY HARDWOODS - (AH)

Distinguishing Criteria:

- Type contains at least 25% CAPS (Black Cherry, White Ash, Yellow Poplar) and 50% beech, Birch and Maple
- Northern aspects
- Minimum stand size 12.4 Ac (5 hec.)

CHERRY (CH)

Criteria:

- Type contains at least 50% Black Cherry
- Occurs on all aspects
- Minimum stand size is 12.4 Ac. (5 hec.)

OAK (OAK)

Criteria:

- Type contains 75% or more Oak composition
- Southern aspects, dry sites
- Minimum stand size 19.7 Ac. (8 hec.)

HEMLOCK-HARDWOOD (H-H)

Criteria:

- Type contains 50% or more Hemlock
- All aspects
- Minimum stand size is 12.4 Ac. (5 hec.)

PLANTATIONS (PL)

Criteria:

- Planted forest stands containing 90% or more of conifer species
- All aspect
- Minimum stand size of 12.4 Ac. (5 hec.)

OPEN/BRUSH (O)

Criteria:

- Openings that range from small grassy clearings to larger complexes of grassy fields with patches and fingers of woody and/or shrubby cover interspersed.

ASPEN (AS)

Criteria:

- Type contains 50% or more Aspen composition
 - All aspects
 - Minimum stand size is 12.4 Ac. (5 hec.)
-

The N.Y.S. Biological Survey (1984) contained biological criteria relative to stand size. The authors referenced to maintain natural forest conditions and species composition requires a minimum stand size. Light penetration and air movement at the edge of a forest stand permits the development of a different community than that of the interior of the forest stand. As stand size decreases the relative importance of the edge increases and of the interior decreases until, below some minimum area, the interior of the stand itself is affected by edge conditions and no longer supports conditions of continuous forest cover.

In addition to minimum stand size requirements to maintain a particular type the age of the stands constituting the type was considered. For this purpose, the physiological age of the dominant tree species constituting the type is used as the cycle age. For example, Aspen generally has a physiological life span of 40 years, therefore, to maintain an Aspen type in an old age condition, stands of Aspen between 1 and 40 years should be maintained. An Aspen type, dependent on sites, composed of 40 stands each constituting the different forest age condition, with a minimum size of 5 or 8 hectares (mesic vs. xeric) would account for a representative forest type parkwide of between 496 acres and 788 acres. The following Table 2 illustrates the various forest types and minimum acreages necessary for maintenance of representative types across the Park.

Table 3. Minimum stand size.

Forest Type	Stand Cycle Age	Stand Gen. Size (ACRES)	Repres. Type Site	Forest Acreage
AH	200 yrs	12.4	Mesic	2,480 acres
Cherry	125 yrs	12.4	Mesic	1,550 acres
Oak	125 yrs	19.7	Xeric	2,462 acres
Hemlock/Hdwd	220 yrs	12.4	Mesic	2,728 acres
Plantation	40 yrs	12.4 to 19.7	Variable	496 to 788 acres
Open/Brush	25 yrs	12.4 to 19.7	Variable	310 to 493 acres

While modification of the Parks woodlands is an important element in maintaining representative forest types and other values within the Park, so also is the Parks contribution to regional diversity and in providing those forest types contributing to regional diversity values, such as old growth Hemlock. One objective of the need to modify woodlands to preserve, maintain or enhance forest derived values, is to achieve a sensitive balance between use and protection of the biological, physical and cultural resources of the Park. Specific goals and objectives have already been identified for plant diversity but are repeated here; these are: (1) to protect critical environmental areas; (2) to enhance and protect the regeneration and growth of native species of plants, and (3) to provide and maintain a diversity of habitats.

The draft plan attempted to provide a balance between natural successional processes and the evolution of climax forest types with the maintenance and preservation of representative forest types. This will meet the goals and objectives mentioned above. Representative forest stands should be managed at or near a minimum level required to perpetuate a forest type. Wildlife habitat needs could be further enhanced through the management of a forest type. As such, a comprehensive and coordinated approach is recommended for the management of forest types and wildlife habitat. Aspen and Open/Brush forest types were not considered as "representative forest types" due to their existence outside the park, but are considered important for wildlife habitats.

In order to maintain representative forests will require implementing various forest management techniques to achieve a desired objective. Many of these techniques are similar to those utilized in commercial timber operations. However, the difference is the objective and how and to what extent the various techniques are utilized, managed or modified. For instance, the draft plan identified the potential use of patch cutting which is defined as the removal of the entire stand in one cutting with reproduction obtained artificially (planted) or by natural seeding from adjacent stands or from parent trees cut in the operation. These are usually small, less than 5 acres, irregularly shaped cuts located to preserve forest species, maintain or create diversity, and to provide wild life openings. A segment of the general public interpreted this as clear cutting hundreds of acres of the park.

This raises another problem in preparing a technical document that requires general public review. Although all the technical terms were defined in what was considered to be an easily understandable manner, there was criticism that the document was too technical and utilized complex terminology. Translating a management science into simple language is a difficult task for forest management strategies as well as with many other sciences. In some, cases we were asking the public

to understand concepts that took professionals years to learn. The end result can be detrimental to the planning process. The public may view the plan as purposely written in a technical manner to "hide" some action being proposed or just too technical for them to understand. The net result was a negative response. This was compounded by the length of the document. To define and assess the existing conditions and evaluate the alternatives in a comprehensive manner resulted in 400 + page draft plan and 28-page supporting GIS map atlas. To simplify the document could also increase its volume. This is not to criticize the intelligence of the public in understanding complex management strategies but more to determine how such information can be presented and understood by the public. There may be no easy answer.

There are also value judgments that had to be made by the public and the agency. The most basic of these, was do you cut trees in a state park to achieve a management objective. In this case, management techniques are being evaluated against the end result. This raises the question of which is more important, the objective or the means to achieve that objective. It is further difficult for the public to understand that the techniques may be similar to commercial operations but the implementation and controls within the park would be different. This is a perception, public trust and educational concern. There is also a generic problem for both pro-management and non-management sides of the issue. Such concerns are intensified by opposing viewpoints by the various segments of the public.

Wildlife Management

The park contains the largest block of contiguous forest in western New York and this is a significant feature in providing a variety of habitats for all wildlife common to the region. It is estimated that 361 species may occur on Allegany State Park. Information on their abundance and distribution is limited. The total number of species by major groups are as follows:

Table 4. Estimated number of species in Allegany State Park by major groups.

Mammals	49	
Birds	242	(107 residents, 135 migrants)
Reptiles	16	
Amphibians	24	
Fish	30	

It has not been determined that all of these species reside permanently in Allegany State Park. The NYS Breeding Bird Atlas project survey data for Allegany State Park (1980-84) indicates 99 confirmed species, 28 probable species and 22 possible species.

Since vegetation and wildlife resources are closely related, it is generally recognized that wildlife abundance and diversity is primarily a function of adequate types, location and amounts of habitats. The fact that more than 90% of the land area of the park is forested dictates that forest-dependent wildlife species will dominate the park. The forest character will dictate wildlife abundance and diversity.

The current mix of Allegany hardwoods, hemlock hardwood, oak and cherry forest types, as well as the combination of northern and southern forest types presents great potential for the park being highly productive in providing wildlife. There are certain recognized major characteristics of habitats on ASP which are regarded as being major limiting factors to a greater abundance and diversity of wildlife. Those factors are:

1. Limited amounts, concentration and distribution of (a) conifer stands, (b) grassy-herbaceous openings.
2. A complete lack or virtual absence of any early-stage forest growth.

3. Low level of interspersed and structural diversity of stands.
4. The absence of younger age classes of conifer cover over large areas of the park.
5. High populations of deer, raccoon and beaver.

The objective for wildlife management is to provide habitat that maintains wildlife population levels over the park area and to maintain the resultant populations in suitably balanced numbers so visitors have reasonable opportunities to view and interact with wildlife communities. The desire for and experience of seeing wildlife ranked very high in public opinion surveys and was a need brought out during the public scoping sessions. The ability to provide visitors the opportunity to encounter wildlife species that inhabit early stage, mature and old growth forest conditions will occur if the Master Plan provides for the creation and maintenance of habitats that support a large variety of species. In order to have all of the wildlife species which the public expects the park to provide, some forms of wildlife habitat management will have to be provided.

The key to planning the management of all wildlife species is to know their habitat requirements and to provide them in a variety of habitat combinations that meet the needs of as many species as possible. To this end, wildlife must be viewed as wildlife communities that respond over time to habitat changes. A decision to do no wildlife habitat management at Allegany could lead to a reduced number of wildlife species. The management decision to create and maintain all forest growth stages over the entire park may maximize wildlife abundance and diversity, but would significantly reduce the opportunity to provide large contiguous blocks of mature and old growth forest conditions which have regional significance and could also lead to a reduced number of wildlife species. Therefore, it is incumbent upon the agency to prepare a master plan which addresses not only the public's needs and desires, but to select appropriate management strategies and activities which best serve the wildlife, the habitat and the People of the State of New York.

The vegetative characteristics of most habitats undergo continual change as a result of growth and succession of the plants that comprise them, and natural and man caused disasters can dramatically alter growth and succession. The agency recognizes the need for providing park areas of no management treatments and areas where treatment must be conducted in order to maintain specific conditions. An example is the need for large remote areas for black bears, while at the same time areas must be provided which produce soft mast crops to sustain them. The designation of areas for long and short term wildlife management practices that periodically treat the vegetation in order to maintain and protect habitat complexes, assures that particular characteristics and conditions are ever present for wildlife within the park.

By designating use zones managers have the opportunity to establish management practices that will assure the park of continually containing a variety of forest and community habitats, as well as diversified stages of each. Certain areas can be zoned for the natural diversification process, while others can be diversified through wildlife habitat management treatments.

The needs of the vast number of wildlife species that inhabit the park vary greatly. Therefore, some species will benefit and some will not by any single event or management practice. No one practice or event will provide for the occurrence of viable populations of all wildlife species. Management of the resources must take on a holistic approach where each resource is considered in context with all other resources. It is only through the process of interdisciplinary consultation and careful planning that coordination becomes effective. In order to provide for abundant and diverse wildlife as a whole requires the agency to create and maintain forest acreages of each stage of forest growth from grassy herbaceous to seedling/sapling through large diameter, mast producing trees to old growth

areas with their cavity-prone trees and snags. However, recent evidence strongly indicates that management for high local diversity can be disastrous if applied to all areas across a landscape. Diversity becomes reduced due to the loss of habitat interiors and by fragmenting certain habitats to a point where wildlife species cannot locate them easily.

Therefore, the draft master plan only provides management on a portion of the park's habitats in order to compliment other habitats and species that exist on the park. By so doing, the park as a whole, as well as total wildlife populations, will be benefited as wildlife species respond positively to the overall variation of forest conditions that will be present.

The selected approach to addressing the need for providing abundant and diverse wildlife and forest habitats on the park, identified during the scoping process and task force meetings, was through the analysis of the wildlife species and their habitats. The task of selecting which wildlife species were to be favored in the park was not easily accomplished due to diverse public interests. The task is further complicated because the agency has a stewardship responsibility to provide for the welfare of all native wildlife species. The challenge was met through research of other agency treatment methods, identifying the constraints and limitations of natural resources and recognizing methods which would be responsive to a majority of the wildlife and public interests. By analyzing all the species and their required habitats, it became evident that some species had preferred habitat requirements that if managed for could support a much greater number of species, thus meeting the goals for species diversity and abundance, as well as public recreation. The selection process for determining which species would be used to meet the goals required narrowing the number of species to those which provided habitats for the benefit of as many species as possible, thus increasing the opportunities for visitor interaction as well as improving the abundance and welfare of as many species as practical. There are various management approaches which could have been used by the agency in preparing the Master Plan. Research of the approaches found that the Management Indicator Species concept best fulfilled the wildlife management goals.

The selection process for determining which species were to be used as recovery, featured, habitat and ecological indicator species involved researching the habitat requirements of all species that could, did or do occur on the park as well as a review of the literature written about the parks previous and current habitat conditions. Several factors entered into the selection process which had to be given extra weight due to social expectations/requirements, habitat availability, species range, species that occupied or are currently occupying the park, species that have high recreational values, species that have legal protection status, species that are specific habitat users rather than general habitat users and species which have significant impacts on large numbers of other species.

The selection of indicator species indicates that planning and management with the Management Indicator Species concept offers maximum potential for meeting 1) legal requirements, 2) issues raised by the public and Advisory Task Force, 3) management concerns on the designated areas and 4) resource development potential on the designated area. The MIS concept essentially combined the concepts of featured species, key species and ecological indicator species management. This combined with a goal for maintaining diversity will provide the areas necessary to make Allegany State Park a showcase for wildlife viewing, research and enjoyment into the next century and for generations of future park users.

Through the use of inventory data and literature searches of habitat requirements, the GIS was successful identifying habitat areas, and with knowledge of conditions produced by various management techniques it will be possible for managers to maintain and improve forest characteristics and

wildlife diversity. The planning, direction and implementation of the management techniques or stewardship tools for the establishment and maintenance of trees, shrubs, ground cover and habitat conditions, whether accomplished naturally or through management intervention, will be done by using responsible stewardship practices with environmental and cultural sensitivity. The use of responsible stewardship practices, to protect or develop wildlife habitats where appropriate, will be those which are only necessary to directly improve or maintain a specific habitat deficiency or condition.

Similar to representative forests, there was public concern expressed on the need of maintain wildlife habitats in state parks and the management required. At the same time the public expressed their desire to view wildlife. This in itself is conflict. There were also concern expressed that cutting of trees would "destroy the homes of animals". On the flip side of the issue, segment of the public felt that not enough habitat was being proposed for selected wildlife species. Again, some of the public seemed to have difficulty in understanding the various management concepts and indicator species concept. Many seemed to focus in on the particular species selected to represent a habitat condition and not all the species that would be provided by that species. Again, this might have been a public trust issue, in that, regardless of what the plan identifies, all the management will be directed toward a few species (primarily game species).

Oil, Gas And Mineral Rights

Oil and gas rights/ownership within the statutory boundaries of Allegany State Park is a complex issue. The State did not purchase mineral rights for many of the properties when it purchased the land to form Allegany State Park. In fact, by the time the Park was formed in the early 1920s, it was already very difficult to obtain subsurface rights on many of the parcels of land acquired by the State. Historically, these rights had been sold by the original land owners to other interests, who then sold them to others or contracted for their exploration and use.

At this time there are some parcels which are inholdings in Allegany State Park which are wholly in private ownership. There are other parcels where mineral rights are held by many private owners and the surface rights are held by OPRHP. Also there are yet more complex situations where several different owners retain rights to minerals within different strata under yet another surface landowner. The State Park ownership pattern includes all these combinations of ownership patterns.

There is no up-to-date comprehensive deed search of all parcels within Allegany State Park. In the past the NYS OGS as Administrator of OPRHP's O&G leasing program, conducted an informal deed search of selected parcels within the park, but this information is not comprehensive. Based on historic regional ownership records and the OGS deed search in sample areas, it is estimated that over 40% of the mineral rights beneath public lands within ASP are held by private interests. The inholdings in approximately 10% of the park, which remain wholly in private ownership include all private mineral rights. These rights can be exercised at any time. The tracts involved, although concentrated in the southeast quarter of Allegany, are spread almost like a crazy quilt throughout the entire park, with some sections showing several layers of ownership.

There are two forms of non-public rights in Allegany State Park.

1. Reserved rights which appear in the deed as part of the process which transferred the land to public ownership; these are usually easy to determine, and
2. Excepted rights which were separated from the ownership of the land prior to the existing deed; these are almost always a problem to unravel and authenticate.

As previously mentioned, it is estimated that approximately 40 of the subsurface rights in Allegany State Parks are privately owned. Oil and gas (mineral) rights issues will impact parts of the park to differing degrees. The density of private oil and gas rights ownership varies throughout the Park but is highest in the southeast. For example, an investigation of 42 contiguous parcels, which include some 20,661 acres of park lands, shows that the public has undisputed oil and gas rights to only 713 acres or about 3% of the area. This represents serious present and future problems for the Park, for the Agency and for the public. Accordingly, the known oil and gas rights ownership patterns has to be translated into criteria which can be used in the Plan to define various zones of use and management.

Since it is the Agency's present policy to discourage oil and gas operations on its lands, the Plan proposed for the 67,000 acres of Allegany State Park provides no accommodation to such activities. In its present form, the Plan does not advocate, or support the exercise of privately-held oil and gas rights within Allegany State Park, however these legitimate rights do impact on the probability of carrying out various options considered for the plan. The converse of this observation may also be appropriate; where the park plan dictates a high degree of preservation, intensive public use or the protection of scenic areas, the oil and gas permit review process will have to attempt to bring these plan components to fruition, within the limits provided by the proper exercise of environmental review and permitting requirements.

It is an accepted fact that mineral rights owners may file for permits to conduct the necessary operations to develop their mineral estates including access to the sites and to the extent their legal rights permit the disruption of the overlying surface lands. Consequently permit processes and environmental reviews must address the extent to which the state can impose land use regulations in the park without effecting a taking, including limiting access to surface lands and ingress and egress routes, proposals for pipelines, limiting the number of drilling sites, and imposing reclamation and restoration measures. The implementation of a program to address this issue is one of the most critical aspects of the Allegany State Park planning process.

The oil and gas industry in Allegany State Park is characterized by a vast array of conditions, impacts and relationships to the park and its master plan. It is hard to understand this without referring to examples from the range of experiences OPRHP staff has encountered. These include the following recent experiences: Negotiations with international firms who have excellent legal, geological, engineering and environmental staff resources. In contrast, State staff have also tried to trace operators who have no known mailing address, regarding the condition of their derelict site and equipment. Long abandoned wells with no known owner may present a safety and environmental hazard, while sophisticated high-tech monitoring and control mechanisms are also under the preview of the same limited State staff. Records of transactions come in telemetered, computerized format and on century old, disintegrating documents in County Courthouse cellars. The risks run from the abandoned and unknown to the over-documented paper-chase and unfamiliar space age equipment.

The conditions found in the Allegany State Park oil and gas development reflects this range of conditions. In the public park lands of central and western New York State, the Agency has discovered more than 250 abandoned drill holes, of which 4/5 are located in Allegany state Park. Such abandoned uncased well holes present a continuing hazard to people and animals and to the quality of surface water and shallow aquifers. Such open conduits also allow valuable subsurface hydrocarbons to escape to the surface, thus reducing reservoir pressures.

The Agency has developed the equipment and a low-cost method that is technically adequate to plug such abandoned and

uncased wells. As new sites were discovered, these methods have been used to plug abandoned wells found at the site. Although the program to plug abandoned wells currently is not funded, the clean-up effort must remain a high agency priority.

The clean-up responsibilities for derelict wells and equipment also has been advanced where NYS DEC can direct their programs toward these important public needs. DEC notes, regarding their exercise of oil, gas, and gas storage well plugging permits, that by law all wells drilled must be plugged before abandonment. Proper well plugging is a beneficial action with the sole purpose of environmental protection, and constitutes a routine agency action.

OGS also has helped trace and redress problems associated with permit holders who are negligent in the condition of their sites on park lands. PSC reviews pipeline conditions and safety and will act to protect the public and park resources. Under certain situations, the Departments of Labor and Health may also be involved in safety and water pollution issues. The Department of Transportation may have concerns regarding the use of public roads. Finally, the Attorney General's office has represented the state agencies involved, including Parks, when disputes with oil and gas rights require legal resolution.

The review of the condition, safety and performance of the existing oil, gas and gas storage and transmission companies in Allegany State Park is shared by all of the above agencies; however, it has been recognized the OPRHP will have to take the lead in the identification of problems and in the coordination of these efforts. New project proposals represent some of these problems; however, current permitting requirements and performance documentation allow more control and systematic review.

The fact that approximately half of Allegany State Park is constrained by the mineral rights which are held by private parties requires a careful consideration of what these rights entail. Since no other economically important mineral resources are known in this area, it will be assumed that the park plan will primarily address oil and gas development, exploration and management, and gas storage and transmission line systems. The rights which are being discussed include those areas where Parks owns only the surface or a combination of the surface and only a part of the sub-surface, comprising approximately 40% of the park, and the approximate 10% inholdings where private parties own both the surface and sub-surface.

In New York State, unless rights have been previously separated, the owner of a tract of land owns the oil and gas beneath that land just as he or she owns all the minerals and other resources in the sub-surface. The land owner may grant ownership of the resources beneath the land to another person or interest. The earth may be divided horizontally as well as vertically, as when title to the surface rests with one person while title to the sub-surface is held by another person.

Where sub-surface rights are held by other than the surface land owner, that owner must recognize those rights. When oil and gas rights are held, the owner of those rights has a just claim or privilege to move on to the surface land and operate a hydrocarbon exploration and development program. These rights apply to activities on specific tracts, but they are not exclusive rights to surface use nor do they provide any privileges on adjacent or proximal tracts where no rights are held. Because of this, any geological or geophysical studies, surveys, mapping, tests or other programs that are proposed by private entities to be conducted on public (surface rights) lands should have prior approval of the agency that manages the lands for the public. Such approval is now needed for any programs which would use state park lands or other resources. A DEC rights developer and the landowner have equal responsibility to consider and reasonably accommodate each other's interest and stewardship.

In western New York State, most of the lands which are now a part of the state park system, were tested by the wildcatter's drill for oil and gas resources prior to the acquisition of those lands into the system. This testing, and in some cases development, was financed by private interests. Those private interests either owned rights or else obtained a lease to explore for and remove any oil or gas from beneath the lands involved. Most likely these oil and gas rights were obtained initially from the surface landowner. In New York state, "an ownership state," a landowner may have obtained the oil and gas rights when the land was acquired. In some other states, sub-surface oil resources belong to the landowner only after they are possessed via pumping.

In such ownership states as New York and Pennsylvania, sub-surface oil and gas rights may be separated from the ownership and title of the surface. In cases as the lands of western New York, ownership changed over the years, or the sub-surface oil and gas rights were carried along with the title to the land. As some of those lands were acquired for the park system (except where the oil and gas rights were reserved by the owner), the public gained ownership of any sub-surface hydrocarbons. However, in those cases in which the drill bit had proven that the sub-surface rights had some value, those rights were excepted and separated from the title and, in many instances, sold, traded or leased independent of surface ownership and use.

Managers of public lands in ownership states will encounter two main forms of non-public rights: reserved and excepted. Reserved rights usually are easy to determine; they appear in the deed as part of the process which transferred the land to public ownership. Excepted rights were separated from the ownership of the land prior to the existing deed. Excepted oil and gas rights are almost always a problem to unravel and authenticate. One of the major efforts of the Office of General Services, as administrator for the agency's leasing program, has been to search the titles of all lands where oil and gas rights were excepted from public park lands prior to their acquisition. Such effort requires dedicated and professional "detective" work. The managers of public land generally will need such title search services.

Where oil and gas or other mineral rights have been granted or reserved to a party other than the surface owner, and nothing is expressly stated concerning the use of the surface by the owner of the mineral estate, the courts have generally held that the owner or lessee of the mineral estate is entitled to use so much of the surface as necessary for the reasonable exploitation of his mineral rights. Reasonable use of the mineral estate has been held to include all those activities required in order that the owner or lessee may locate, extract and remove the minerals and realize a proper return from their extraction and removal. The doctrine of reasonably necessary surface use is basic to the issue of whether or not the owner or lessee of the mineral estate may be liable for damage caused to the surface in connection with the oil and gas development. The owner or lessee of the mineral estate is entitled to use the surface of the premises without liability for surface damage caused by his operations, so long as such use and the manner of its exercise are reasonably necessary to effectuate the development of the oil and gas.

The number, manner and extent of the particular uses of the surface by the owner of the mineral estate may be limited or enumerated by the document creating the mineral estate. However, if such document is silent as to particular uses, the right of the owner or lessee to use as much of the surface as is reasonably necessary will be implied. Although there may be nothing in the mineral right document expressly giving the right to drill wells, erect derricks, construct tanks, in order to give effect to the reservation of the mineral estate, the grantor had the right to enter upon the surface of the estate with all the usual and necessary appliances and remove minerals. The right to enter and make reasonable use of the surface was implied from the nature of the mineral rights.

Conceptually, ownership of a mineral estate traditionally includes the right of access and the right to use that part of the surface which is reasonably necessary to explore for and develop the underlying minerals although there are variations in each individual deed. The sub-surface estate has traditionally been considered dominant in disputes over what is and is not considered reasonable. However, the owner of sub-surface rights also has responsibilities pertaining to protection of the surface.

There has been a recent trend for courts to rule against sub-surface owners for not giving "due regard" to the rights of the surface owner, unreasonable use of the surface, or not accepting reasonable or least destructive alternatives. Legislation easing or clarifying those issues, guided by the experience of other states, had been discussed in the Allegheny State Park Master Plan scoping sessions. Options requiring special legislation include lapse statutes, adoption of a "least destructive alternative" doctrine, the adoption of formal rules and regulations governing oil and gas development in state parks, surface owner consent statutes, or strict liability statutes. No such legislation has been advanced.

It is clear, however, that the State must be concerned that mineral right owners will challenge the mining land use regulations as a taking of mineral rights if their exercise of these rights are unduly restricted. If these owners successfully seek compensation for a taking, the State could be responsible for condemnation costs in the hundreds of millions (this issue will be discussed in the next section of this report).

The potential for guiding the proper exercise of mineral rights while protecting the park's resources and users, lies in the powers of the surface landowners to manage the entry and surface use of property through permits designed to protect the public, resources and the environment as exercised under the State's police powers. The proper exercise of the police power by the State does not require compensation. The State's power to regulate for the purpose of protecting the health, safety or welfare of the public is extremely broad, particularly in its determination of what is public welfare. Limitations on the exercise of mineral rights requires the balancing of equities among the private mineral rights owners and public rights, including the park's surface rights.

Proper conditions guiding the access to the mineral estate will be of great importance in OPRHP's enforcement of its proper police powers. The location of the survey, drillings, access and well site management functions are the proper domain of the surface landowners, so long as access to the sub-surface is not denied. This issue is progressed through a special use permit request filed by the mineral estate owner with OPRHP. Other agencies also will have permit requirements, such as DEC's drilling permit. This proposal is reviewed and changes may be stipulated to improve the environmental, safety or other aspects of the proposed oil and gas project. Environmental review of these permits will be coordinated by OPRHP acting as a SEQRA lead agency, as specified in an MOU between OPRHP and DEC. While these activities are not denying access to oil and gas rights in Allegheny State Park, they will be most important in properly guiding the proposed project and protecting the resources and programs which will be managed in furtherance of the Allegheny Master Plan.

OPRHP's exercise of a coordinative role in the enforcement of its surface access permit may also be of incidental benefit to the owners of mineral rights. An attempt to coordinate the development of many individual access roads that may be proposed by several oil and gas rights owners can allow the proposed development to be advanced with less total road construction, less impact, and a system that is better suited for later surface uses for park trails. A clear understanding of the activities that are and are not permitted allows Park's staff to provide for the safety of park patrons and the security of those development sites, contributing to safety and reduced liability.

The expertise of State staff who review Park's surface access proposal and DEC's drilling permit stipulations can reduce erosion, preserve sensitive areas and protect the sub-surface resources which are of direct economic value to the mineral estate owner.

Acquisition via negotiation or eminent domain and additional lease proposals are unlikely solutions for the broader issue of mineral rights in Allegheny State Park. It is understandable that there is a tension between environmental groups who favor prohibiting the exercise of all mineral rights in the park and the mineral estate owners who believe they are entitled to fully exercise their rights. To date, OPRHP has negotiated surface land use and access plans with those owners planning to extract minerals. In anticipation of increased mineral development and possible litigation, the state is seeking a middle position, one that will preserve the park and provide a uniform policy of land use regulations which does not restrict the mineral holders' rights to the extent that the state must pay compensation for taking private lands for public use.

While acquisition of all rights is the most comprehensive means of controlling park lands, several issues impose sequential constraints on feasible programs of acquisition. The methods required to achieving this goal will be very costly or difficult. The first problem is to determine which rights are privately owned. The complex nature of mineral rights ownership discussed in the previous section complicates this issue. Acquisition could involve extensive deed searches or the enactment of a recording lapse statute.

Estimation of actual value of the mineral rights is also difficult since the entire matter is speculative. In order for OPRHP to negotiate a sale, the agency must know the value of the interest to be purchased and cannot exceed that value in a negotiated purchase. In order to arrive at that value, representative market sales in the immediate area of the purchase is needed and/or some other information (seismic data, proven well reserves, etc.) must be acquired to justify monetary conclusion. There are only limited sales of mineral rights and many of these would be difficult to verify.

The cost of the valuation process may exceed the value of the rights being acquired. In some cases, if the oil and gas are thought to be of value, exploratory drilling which is costly and involves surface disturbance may be necessary. Exploration activity to determine such a value may be inconsistent with the other plans for the park. In one case, the Forest Service conservatively estimated that one acre on their property would cost \$5 million for exploratory drilling of one area. In addition, it was estimated that more than \$1 million would be required to evaluate each ore body discovered.

Even gifts of mineral rights have been problematic to the donor because of the difficulty of establishing a value which will serve to satisfy tax audits. As a minimum, a process should be established to allow for the valuation of a few strategic acquisitions and the acceptance of gifts of mineral estates.

The above described situation could be considerably exacerbated if the State were to appropriate the mineral rights as permitted in the enabling legislation. The valuation process must be as accurate and comprehensive as possible since it is likely that the appropriation will go to the Court of Claims for adjudication. If the state begins an appropriation, it must pay whatever the court awards. In prior experience the Court of Claims, the statewide average of awards is 115 percent over the final advance payment, while the Bay State awards (surface rights) in Allegheny State Park averaged 500 percent over the final advance payment.

The claims that may have to be defended in an appropriation may be extraordinarily high. The oil and gas industry has ample success stories where properties of great value were

discovered next to unproductive fields. These success cases will become the basis for most claims against the State. Disputes may involve the location, quantity and quality of the underground reserves, as well as the hypothetical business cost of their recovery. Analysis will probably involve the economics of future sales of the oil and gas or storage rights. Claims will be backed by economists who forecast scarcity and the escalation of the value of fuels and lubricants. Innovative recovery techniques will be argued, even for currently uneconomic fields.

Finally, special requirements accompany the exercise of eminent domain by OPRHP. Hearings demonstrating the specific need for the property would be costly and the results would be uncertain. Each property owner could require the analysis of different specific park needs. In some cases the decision to condemn could be disputed and perhaps reversed after significant State costs.

The only advantage that the use of eminent domain offers is a quick settlement resulting in State ownership. Once filed, a property taken by eminent domain is owned by the State; however, years of costly disputes and potentially extreme settlements in the Court of Claims would follow. New York State does not have the resources to risk such an effort on a scale which is significant enough to help resolve Allegany State Park's overall management and planning needs.

Pursuant to the energy policies of the 1970s, OPRHP started several programs to conserve and improve the Agency's energy situation. Most of these activities contributed significant savings and reduced energy consumption. One of the energy program elements that was attempted and later rejected was the careful selection of State Parks-owned gas and oil rights which could be considered for leasing.

The outcome of the 1970s leasing attempts is worth some discussion. On the positive side, OPRHP and OGS did develop property management and permit processes that continue to guide the agency to this date. The reality of working with real examples probably contributes greatly to the quality of the current permitting process. As a negative, it was discovered that the small parcels which fit into the management and ownership "crazy quilt" are very vulnerable to wild market changes. These operations are hard to control, especially when the speculation involves schemes to entice development on surrounding parcels. The state's small lease could trigger completely different projects involving several parcels. No-lease policies may, however, also contribute to speculation since the state's adjoining underground resources could also be vulnerable to loss to neighboring production fields.

It was concluded that only through a straight-forward "no lease" of state mineral rights policy could a rigorous and clearly understood permit management program be instituted and imposed by OPRHP. This program is proposed to continue as a part of the Allegany State Park Master Plan.

A comprehensive solution based on the exercise of the existing powers of the state as a surface landowner is the only viable alternative. This control and coordination will be administered through the issuance of permits in the legitimate exercise of the State's police power. The environmental review process associated with these actions presents the most tangible program for protecting the park and its resources and allowing for required public involvement. The MOU executed by OPRHP and DEC on August 20, 1992 provides for the coordination of these review functions by OPRHP in its role as SEQRA lead agency.

Additional coordination with PSC (Public Service Commission), FERC and other agencies should help to identify where review processes conducted by these other agencies as a basis for their permitting functions, provide the opportunity and obligation to carry out the legitimate public

policies of the Allegany State Park Master Plan. OPRHP, in its coordinative role specified in the MOU, will also provide input for these external programs which have jurisdiction in the park.

The OPRHP permit provides a method for the applicant and regional field staff to review aspects of the park and its plan that may be impacted. The MOU then calls for coordination with DEC and other involved agencies and a determination of significance within twenty days of receiving a complete application. Pursuant to the provisions of SEQRA, an environmental review will then identify impacts, determine where mitigation is appropriate and set up the needed project oversight process.

Conclusion

The issues addressed and experienced derived through the master planning process for Allegany State Park can be applied to other federal, state and local park systems. Although it is unlikely that an individual park will be faced with all the concerns, it is likely that one or several may be applicable. The report provided a brief analysis of five of the major issues areas identified within the draft plan. Although each issue area was described separately, there is an interrelationship among all of them. The alternative actions or solutions are as complex as the issue itself. In many cases, there is no right answer that will satisfy everybody. The agency will have to determine a set of actions that will be in the best interest to the park, its natural, cultural and recreation resources, and to the citizens of New York.

Due to the level of public input and controversy surrounding the draft plan a considerable amount of time and effort will be required to complete the plan. The issue areas will have to be fully analyzed and proposed actions well supported and documented. Even after adoption of the plan, there will likely be a level of controversy that will continue. However, the information derived, types of analysis utilized, application of the GIS and alternative actions proposed can be useful in addressing similar issues in other parks.

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**LAKE CHAMPLAIN RECREATION
MANAGEMENT PROGRAM RESULTS
FROM THE RECREATION RESOURCES
INVENTORY, BOAT STUDY, AND
RECREATION USER SURVEYS**

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The New York State Office of Parks, Recreation and Historic
Preservation and the Vermont Department of Forest, Parks and
Recreation, through cooperative agreements with the National
Park Service and the U.S. Coast Guard, have developed a
recreation management program for Lake Champlain as part of
the Lake Champlain Basin Program.

The states of New York and Vermont have formed a
cooperative recreation research and management team and
have conducted:

- a) an inventory of public and private recreational resources
in the Basin;
- b) a day of aerial overflights to determine the number, types
and sizes of boats using the lake; and
- c) a series of recreation user surveys to determine use
patterns, perceived problems, boating-related
expenditures, and user characteristics.

Inventory results suggest that there are 1,600 recreation
resource facilities in the Basin counties in Vermont, and
2,419 in New York. Overflight data confirm that powerboats
outnumber sailboats by 2.5 to 1 ratio, and that power boats
under 21 feet in length are most common. Comparisons with
1980 overflight data show that certain zones of the lake have
experienced dramatic increases in the number of boats docked
or moored. User surveys were targeted at public access site
users, canal lock users and lakeside residents. Public access
site users launch boats from 20 to 40 times per year, mostly
for fishing purposes. The most popular fish sought are bass,
walleye, salmon and lake trout. Site users may spend an
average of \$50 per trip, are quite concerned about pollution in
the lake but support a continuation of chemical control of the
sea lamprey. Canal lock users are in much larger boats, tend to
be older and are more likely to be from New York or Canada
than Vermont. They recognize the value of the locks; over

three-fourths of them would be willing to pay a lock user fee
help offset operational and maintenance costs. Lake
Champlain residents said that bike trails, followed by beach
and hiking trails were facilities they would like to see more
fully developed in the Basin. Data from this cooperative
research effort will be incorporated into the Lake Champlain
Recreation Management Program. For example, using GIS
technology, inventory data will be used to identify where, as
how much more recreation facility development is needed in
the Basin. Overflight data will continue to document the rate
of growth in boating use of the lake. Results from the user
surveys will be useful in planning and management of the
lake's resources. Implementation of the program will consist
of adopting strategies that address issues and problems
encountered by planners, managers and recreationists on Lal
Champlain.

Introduction

Lake Champlain is the sixth largest body of freshwater in the
United States. It is bounded on the west by the Adirondack
Mountains of New York and on the east by the Green
Mountains of Vermont. The lake is 120 miles long from south
to north and is 12 miles at its widest near Burlington,
Vermont. Unlike most water courses, Lake Champlain flows
northward, discharging into the Richelieu River in Quebec,
which then empties into the St. Lawrence River. The lake has
435 square miles of surface water, over 70 islands, 587 miles
of shoreline, and a depth reaching 400 feet (mean depth of the
lake is 64 feet). Lake Champlain's drainage basin is 8,234
square miles, of which only a small portion lies in Quebec
(Fig. 1). (Lake Champlain Recreation Management Plan -
Workplan and Implementation Strategy, 1992).

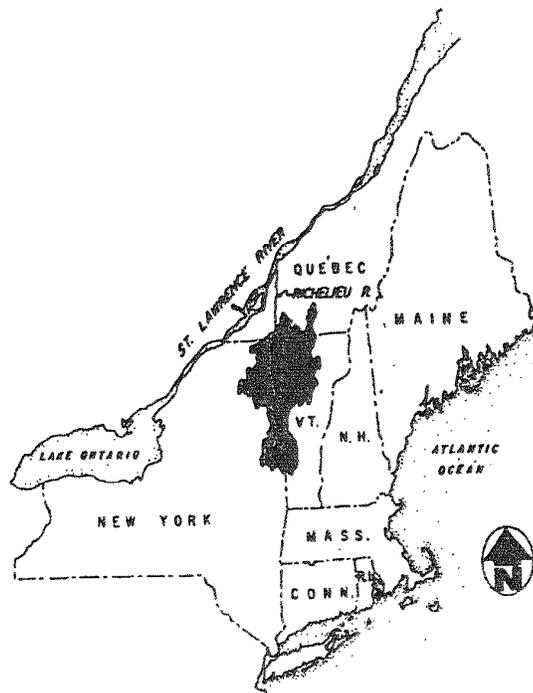


Figure 1. Lake Champlain drainage basin.

Lake Champlain is a unique and historically significant natural resource that attracts thousands of residents and visitors each year to participate in diverse recreational opportunities. Increased use and sometimes competing and conflicting uses, and development continues to pressure the Lake's natural and recreational resources. Whether it is user conflicts, overuse, lack of boat storage, or inadequate boating access, these issues and problems have been recognized for many years, but were not as pressing as they are today. No use is more vital and visible than recreation on Lake Champlain.

The Lake Champlain Special Designation Act of 1990 established the Lake Champlain Basin Program (LCBP) to develop a long-term, cooperative management plan and program to protect and enhance the lake and its drainage basin for future generations to enjoy its full benefits. Over the five-year planning process, research studies, planning, monitoring, demonstration and implementation projects, and educational activities are being conducted for the purpose of developing a plan for pollution abatement and restoration of the lake.

As part of the LCBP, the Lake Champlain Recreation Management Program is a cooperative effort between the New York State Office of Parks, Recreation and Historic Preservation, New York Department of Environmental Conservation, and the Vermont Department of Forests, Parks and Recreation. Funded by the National Park Service and the U.S. Coast Guard, the program is charged with developing a Recreation Management Plan (Lake Champlain Recreation Management Plan, Draft 1991) for Lake Champlain as part of the broader effort to develop a Comprehensive Pollution Prevention, Control and Restoration Plan, as required under the Lake Champlain Special Designation Act of 1990.

The Recreation Management Program has been guided by a workplan developed through consensus by recreation professionals, managers and user groups. The overall goal is to sustain the unique natural resources for future generations while continuing to meet the public need for recreational opportunities. Use levels and the types of recreation activities affect the quality of the recreation experience as well as the ability of the resource base to withstand use without being degraded. The absence of a resource management plan increases the risk of degradation to the resource due to frequent use beyond capacity limits.

The initial phase for developing the Recreation Management Plan included obtaining basic information on recreation use, supply, demand, issues and user characteristics. Previous studies and planning efforts either focused on certain sections of Lake Champlain or never collected comprehensive information on recreational users for the entire lake (Dunnington 1978; Lake Champlain Committee 1990; Vermont Agency of Natural Resources 1988 and Vermont Special Legislative Subcommittee 1989). The focus of this paper centers around the assessment phase of the planning process and includes the Recreation Resources Inventory, the Boat Study and a series of Recreation User Surveys. Other important components of the planning process include demonstration projects, public involvement and education. All information and data gathered throughout the planning process will be used to determine management strategies to address the issues and concerns of the recreationists.

The Lake Champlain Recreation Resources Inventory

The Recreation Resources Inventory is a compilation of information on all public, private and commercial recreation facilities available in the Lake Champlain Basin. Examples include: marinas, campgrounds, boat launches, state and municipal parks, and ski areas. It will enable planners, resource managers and the general public to access accurate data on the recreation resources in the Basin. The overall objective of the Recreation Resources Inventory is to provide

baseline information in determining where and what exists for public recreational use in the Lake Champlain Basin.

Collected separately within the two states of New York and Vermont, the end result will be to have one comprehensive basin-wide inventory. In addition to an attribute database, information will be transfigured, utilizing coordinates, onto Geographic Information Systems (GIS) to better access, query and analyze the data. Through the use of GIS, maps will be produced which will overlay recreation inventory information with other natural and cultural resource information.

Methodology

Within Vermont, attribute information on recreation facilities was inventoried and entered onto the PARADOX database system with codes and formats that are in accordance with the Lake Champlain Basin Program's GIS standards. PARADOX is compatible with various database programs allowing for information to be easily gathered and disseminated by computer disc.

The data collection process involved the following methodology:

- 1) Identify existing information sources from: Regional Planning Commissions, Health Department, Tax Department, Travel and Tourism, Historic Preservation Division, Forests and Parks, Trade Associations, and commercial publications.
- 2) Determine the quality of data from these sources and utilize it based on the following general criteria:
 - Information that is complete and verified is entered into the database.
 - Information that is incomplete, yet deemed verified is entered into the database and improved with a questionnaire completed by a site manager.
 - Information that is incomplete and unverified is rejected in favor of a questionnaire completed by a site manager. The questionnaire is used primarily to verify known information and to complete unknown information. It is a comprehensive form which addresses all aspects of a particular site. For easy data input, the questionnaire directly correlates to the database.
- 3) Determine the best methodology to digitize attribute information into the GIS system. Existing and ongoing GIS efforts and the quality and quantity of information regarding area facilities were reviewed and determined for inclusion into the data layer. Staff developed working relationships with agencies and organizations conducting similar inventories to exchange data and share workloads. A pilot study with the above factors taken into account was then implemented and the GIS workplan for the Basin developed based on the results of this pilot study.

New York maintains a statewide recreation inventory that is continually being updated. An intensive effort was directed for the Lake Champlain Basin which includes Clinton, Washington, and Essex Counties (Warren County, which is also part of the Basin, will be updated at a later date). Existing New York facilities inventory data was compared with New York State Department of Equalization and Assessment (E&A) data. E&A data includes a subcategory of information that identifies recreational facilities as well as mailing addresses for each of these sites. Utilizing this data, a facilities inventory form was sent to each site within the three counties. The data obtained from these two sources was then combined and sent to the county planning boards in Essex, Clinton and Washington Counties to verify the location of each site. Direct contact was then needed to identify any new recreation sites, verify the facility data, and update incomplete data. This direct contact was performed by a field person who verified the data by phone as well as directly visiting the sites. Any new sites found were added to the database. All data collection was completed by September 15, 1992. The data has been inputted and integrated into GIS data files.

Results

The following are some selected results from the Vermont and New York Recreation Resources Inventory that illustrate the ways in which the data can be displayed and utilized.

Approximately 1,600 recreation sites were identified within the eight counties on the Vermont side of the Lake Champlain Basin and 2,419 sites were identified within the four counties on the New York side of the Basin. The majority of the sites inventoried in Vermont are of state and federal jurisdiction (Fig. 2).

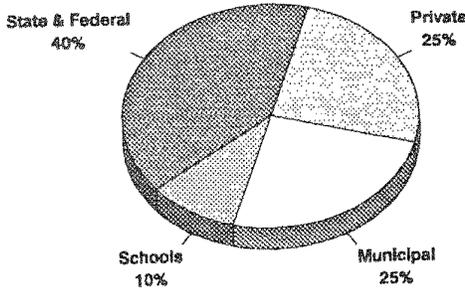


Figure 2. Ownership of Vermont recreation facilities in the Lake Champlain Basin.

Examples of recreation facilities within each group are:

- State facilities: state parks, forests, wildlife management areas, fish and wildlife access points and historic sites.
- Private facilities: golf courses, summer camps, ski areas, riding stables, marinas and campgrounds.
- Municipal facilities: town beaches, parks and picnic areas.
- School facilities: ball fields, playgrounds, tennis courts and recreation trails.

Eleven counties were inventoried with little variation in the distribution of facilities, however, higher concentrations are found in the more populated areas, such as Chittenden County (Fig. 3).

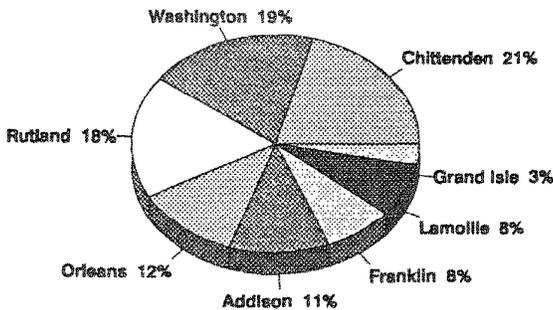


Figure 3. Percentage of Vermont recreation facilities by county in the Lake Champlain Basin.

Figure 4 illustrates the types of recreation facilities available in Clinton County, New York. Whereas figure 5 illustrates the breakdown of amenities available at the particular recreation facilities, for example there are 1,836 moorings available at boating facilities in Clinton County, New York.

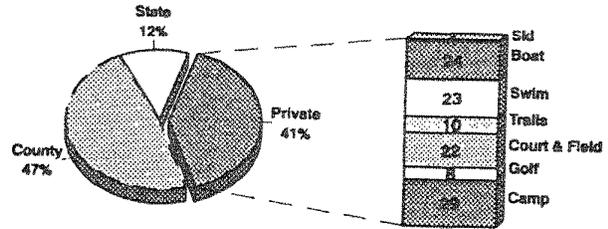
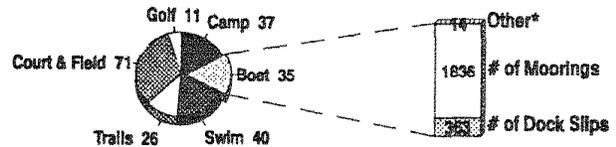


Figure 4. Type of recreation facilities available in Clinton County, New York.



* Other includes cartop launches, boat rentals, transient access

Figure 5. Amenities available at recreation facilities in Clinton County, New York.

Future efforts will focus on continuing analysis, the development of a series of technical documents which will outline specific issues or categories of information and a comprehensive report.

Conclusions

Based on preliminary results, the inventory has provided comprehensive baseline information in identifying recreational facilities in the Lake Champlain Basin. Initial results have revealed areas of facility and site concentrations, however, further analysis is needed to identify what types of sites are found in these particular areas. Synthesized with other components of the program such as the user surveys and the boat study, management strategies will be developed to identify where exactly sites need to be developed, managed and improved upon. Using GIS, resources will be easily visualized and related to other information. This will enable proficient determination of management implications.

This information will not only be valuable in assessing recreation supply and demand within the Basin but also assisting in open space and land use planning at all levels of government, project assessment and providing an easily usable means to more fully inform the public of recreation opportunities.

The Lake Champlain Boat Study

As part of developing the Lake Champlain Recreation Management Plan, lakewide information about boating and various other recreational uses was identified as a top priority. Funding was made available through the U.S. Coast Guard to undertake a "boating census for Lake Champlain.

The overall objective of the Lake Champlain Boat Study was to collect baseline information on boating use patterns on the lake by obtaining the following information:

- 1) the total number of boats on the lake in each management zone;
- 2) the type (power, sail, commercial, other, or unknown) and size of boat (0' to 21'; 22' to 32'; 33' to 55' and over);
- 3) the distance of the boat from the shoreline (closer or further than 1,000 feet from any shoreline);
- 4) the activity that the boat was engaged in (at dock or shore, moored, moving, fishing, waterskiing, anchored, or unknown);
- 5) the density of moorings in certain bays of the lake; and
- 6) comparison of similar information from 1980 to 1992 to determine boating trends for these areas.

Methodology

The study included black and white aerial photography at a scale of 1:8,000 covering Lake Champlain and its shoreline (including Canadian waters) for a total of approximately 800 flight miles. Photography was obtained on July 25, 1992 between 9:30 a.m. and 2:30 p.m. when the ground was not obscured by haze, smoke or dust, when clouds or shadows of clouds were not present, and when wind speed was not greater than 15 mph or 13 knots (the threshold on Lake Champlain where waves are still manageable for small craft and wind speed optimum for sailing). This "snapshot" of Lake Champlain during a hot, summer weekend day provided a good estimate of how many boats utilize the lake on a typical summer weekend day.

At the time that the aerial photographs were received, the photos were divided into the 34 lake management zones currently used by the Vermont Department of Fish and Wildlife and the New York Department of Environmental Conservation (Fig. 6). The photos in each management zone were laid out together in a mosaic to determine where overlap occurred (to assure that no boats were counted twice and to determine which photos had the best detail where overlap did occur).

The photos were interpreted using a 7x hand lens with a built in millimeter scale for determining boat length to an accuracy of +/- two feet. As a general technique, the shoreline was first scanned to determine the number of motorboats less than 21 feet at the dock or shore, then for motorboats 22 to 32 feet, and so on. The same shoreline was then scanned to determine the number of sailboats in the various size categories at dock. This process was repeated to cover each category of boat size, type and activity in the zone less than 1,000 feet from shore. Finally, boats in the zone further than 1,000 feet from shore were counted.

As a follow up to actual counting, the 1992 photos were compared with aerial photos taken in 1980 for Shelburne Bay and to Malletts Bay, Vermont (Lindsay 1980). The 1980 photos were recounted and analyzed according to the 1992 methodology to obtain comparable information. The 1980 photos were taken around mid-day on a Saturday in July, 1980. The weather in 1980 was comparable to the weather when the 1992 photos were taken on Saturday, July 25, 1992 around 10:30 a.m. The major difference between the two sets of aerial

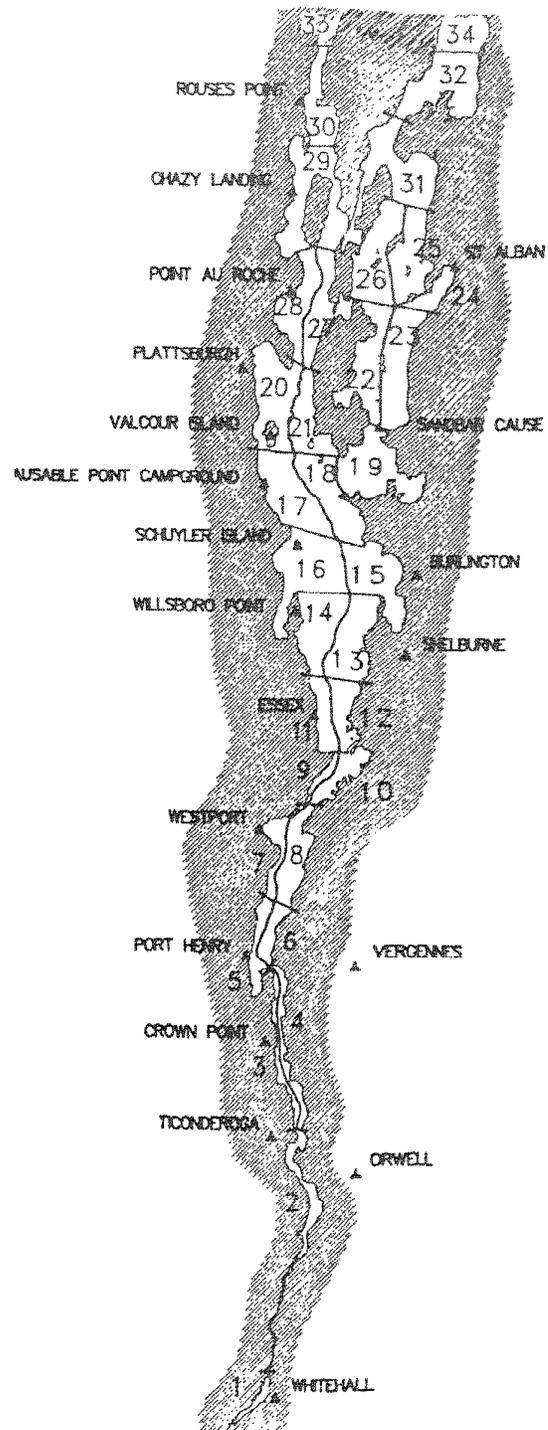


Figure 6. Thirty-four management zones as established by the New York Department of Environmental Conservation and the Vermont Fish and Wildlife Department.

photos was the scale of the photos (1:12,000 for 1980; 1:8,000 for 1992). This made the interpretation of the boat length a little more difficult and could account for a large error rate in the boat size categories.

The project was flown with three planes to capture maximum boat activity and to obtain the photography within the time constraints set forth for the project. Approximately 1,000 photos were interpreted and analyzed to collect the information necessary to meet the study objectives.

Lakewide Results

A total of 12,425 boats were counted from the aerial photographs, of which 62.0% (7,760) were motorboats, 25.4% (3,153) sailboats, and 10.4% (1,296) other boats including personal watercraft (jet skis), sailboards, dinghies, canoes, kayaks and airplanes. Less than 1% (16) of the boats were commercial vessels (Fig. 7).

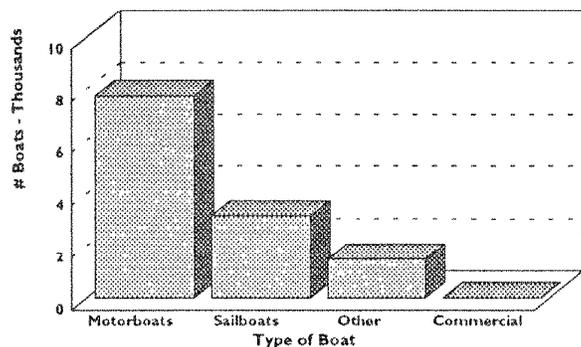


Figure 7. Total number of boats by type of boat during Lake Champlain Boat Count on July 25, 1992.

Of the total number of boats, 49.1% (6,099) of the vessels were motorboats 21 feet and smaller; 11.3% (1,409) were motorboats between 22 feet and 32 feet; 15.5% (1,929) were sailboats between 22 feet and 32 feet; 7.1% (888) were sailboats 21 feet and smaller; and 11.9% (1,484) were other boats less than 21 feet. Only 252 (2.1%) motorboats and 336 (2.7%) sailboats were greater than 33 feet in length when examining the data in aggregate [there were only 5 pleasure vessels over 54 feet in length and 15 commercial vessels over 54 feet in length] (Fig. 3).

In spite of the fact that the photos were timed to show maximum boat activity, 86.4% of the boats were not in use. They were either docked (6,805; 54.8%) or moored (3,481; 28.0%). There were 447 (3.6%) boats at anchor in protected bays and coves. No boats were engaged in waterskiing on the entire lake when the photos were taken. Sailboards, canoes, kayaks, and personal watercraft made up a small percentage of vessels utilizing the lake as did commercial vessels (i.e., barges, ferry boats). One reason that so few boats were in actual use (13.6%) could have been partially due to the weather. This day, July 25, 1992 was the first nice, summer weekend day in a string of eight rainy weekends and people may not have been ready for boating activities on this particular day.

The majority of boats (11,297; 92.2%) were located within 1,000 feet from the shoreline. This makes sense because this is where most boats were docked, moored or at anchor. Of the boats that were moving and engaged in fishing almost twice as many boats were greater than 1,000 feet from shore (1,029; 8.4%) than within 1,000 feet from shore (583; 4.7%).

Motorboats and Sailboats

Most of the motorboats found on Lake Champlain were 21 feet or less in length (6,099; 78.6%). There were 1,409 (18.2%) motorboats between 22 and 32 feet, 248 (3.2%) motorboats between 33 and 54 feet, and 4 (0.7%) motorboats over 54 feet counted on Lake Champlain (Fig. 8).

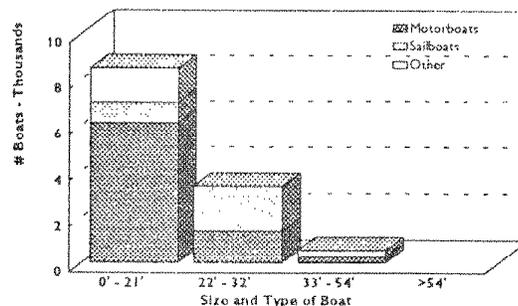


Figure 8. Motorboat and sailboat size during Lake Champlain Boat Count on July 25, 1992.

In contrast, most sailboats found on Lake Champlain were between 22 and 32 feet (1,929; 61.2%). There were 888 (28.2%) sailboats 21 feet and less in length, 335 (10.6%) sailboats between 33 and 54 feet, and one sailboat greater than 54 feet in length counted on Lake Champlain. The greater percentage of sailboats in the larger categories is indicative of the size of the lake and the availability of great sailing opportunities on Lake Champlain for these larger vessels (Fig. 8).

Management Zone Results

Lake Champlain was divided into 34 management zones (See fig. 6) to assist in determining recreational use patterns in various areas of the lake. At some point in the planning process it may be necessary to combine some of the zones together to develop implementable management strategies for certain areas of the lake.

Overall, the highest use areas were concentrated around population centers, such as Colchester, Burlington, Shelburne, Charlotte, Plattsburgh, Vergennes and St. Albans; near the U.S. and Canadian border (where most Canadians enter via the Richelieu River); and in Missisquoi Bay (Canadian waters) [See Table 1]. The southern area (Zones 1-7) of Lake Champlain received relatively little use in comparison to the northern zones.

Ratio of Motorboats to Sailboats

The ratio of the number of motorboats to sailboats for the entire lake was 2.5 motorboats for every sailboat. There were some areas of the lake where motorboats definitely outnumbered sailboats and these tended to be in the southern parts of Lake Champlain (Zones 1-6) where the lake is narrow and more river-like, and in the very northern zones (Zones 31-33). Other areas of Lake Champlain where there were more motorboats than sailboats were in the Inland Seas area (Zones 22, 23, and 25).

Sailboats congregated in protected bays and coves for safe moorings and anchorage. The management zones where there were an almost equal number of motorboats to sailboats were Converse Bay and McNeils Cove (Zone 12), Willsboro and Corlear Bay (Zone 16), Valcour Island and Cumberland Bay (Zone 20), and Shelburne Bay and Burlington Harbor (Zone 15). Zone 15 was the only area that actually had more sailboats than motorboats.

Table 1. Management zones with the highest total boat counts.

Management Zone	Total Boat Count
Zone 19 – Malletts Bay (VT)	1569
Zone 15 – Burlington Harbor and Shelburne Bay (VT)	1082
Zone 20 – Valcour Island and Cumberland Bay (NY)	968
Zone 29 – Monty Bay, Trombley Bay, King Bay, Chazy River (NY) and Isle La Motte Passage, Alburg Passage (VT)	961
Zone 34 – Missisquoi Bay	589
Zone 33 – Richelieu River	563

Comparison of 1980 and 1992 Photos for Shelburne Bay to Malletts Bay

Aerial photography taken on July, 1980 was analyzed using similar techniques for the 1992 photography for Shelburne Bay and Burlington Harbor (Zone 15) and Malletts Bay, Vermont (Zone 19). There was a dramatic increase in the number of boats either docked or moored in Shelburne and Malletts Bays when comparing boat usage primarily within 1,000 feet from the shore.

There were also many more boats on the water and away from their docks or moorings in 1980 than in 1992 (even though there were a lot more boats in the two bays in 1992). In Malletts Bay, 6% (64) of the boats in 1980 were moving and fishing compared to 4% (59) in 1992. For Shelburne Bay and Burlington Harbor, 10% (51) of the boats were moving and fishing while in 1992 only 3% (25) of the boats were moving and fishing. There was a significant increase in the number of boats anchored (in effect overnight camping on the water) between 1980 and 1992 for these two areas.

One of the major differences between the two zones was the fact that in Shelburne Bay the number of large sailboats increased dramatically from 1980, while Malletts Bay lost large sailboats. Both zones had increases in larger motorboats, but Malletts Bay saw a 253% increase in motorboats 22 to 32 feet in length.

In inner and outer Malletts Bay (Zone 19) there were 1,045 boats in 1980 and 1,534 boats in 1992, representing an increase of 47% (489 boats) over the 1980 count (See Table 2). Specific trends noted included: 1) an 83% increase in the number of motorboats; 2) an 109% increase in boats 22 to 32 feet in length; 3) an 101% increase in the number of boats docked; and 4) an 194% increase in the number of boats anchored.

Table 2. Comparison of boat counts between 1980 and 1992 for Malletts Bay and Shelburne Bay.

Type	Malletts Bay Boat Counts				Shelburne Bay Boat Counts			
	1980	1992	Diff.	% Change	1980	1992	Diff.	% Change
Motorboats	481	879	398	83	220	311	91	41
Sailboats	328	364	36	11	135	373	238	176
Commercial	0	0	0	0	2	4	2	100
Other	236	291	55	23	121	172	51	42
Size								
0' - 21'	682	893	211	31	323	460	137	42
22' - 32'	276	931	655	237	117	283	166	142
33' - 54'	87	65	22	-25	33	113	80	242
> 54'	0	0	0	0	5	4	1	-20
Activity								
Docked	393	790	397	101	238	396	158	66
Moored	570	630	60	11	172	419	247	144
Moving	56	54	2	-4	46	22	24	-52
Fishing	8	5	3	-38	3	3	0	0
Waterskiing	0	0	0	0	2	0	2	-2
Anchored	18	53	35	194	15	20	5	33
Unknown	0	0	0	0	0	0	0	0
Distance from Shore								
< 1,000'	965	1494	529	55	438	836	396	91
> 1,000'	80	38	42	-53	37	24	13	-35
Total	1045	1534	489	47	478	860	382	80

The total number of boats found in Shelburne Bay and Burlington Harbor (Zone 15) in 1980 was 478, and in 1992 the number of boats was 860; representing an increase of 80% (384 boats) over 1980. Sailboats increased 176% from 1980 (1980 - 135; 1992 - 373), as did the number of boats that were moored (an increase of 144%). The most dramatic increases were in the size categories with a 142% increase in the number of boats 22 to 32 feet in length (1980 - 117; 1992 - 283) and a whopping 240% of boats 33 to 54 feet in length (1980 - 33; 1992 - 113).

Conclusions

The use of aerial photography to document boat use on Lake Champlain proved to be a valuable technique for a lake this size. It is important to remember that the boat survey information was the result of photo "interpretation." The information will be used as baseline information since the lake was flown only once during the course of the summer.

Recreational boating and fishing on Lake Champlain have become popular as indicated by the number of boats counted on the lake during the 1992 summer. There is reason to believe that the number of boats counted may be low due to the recession. It was reported that boating was down in 1992 and that many marinas had space available. During the late 1980s most marinas had long waiting lists for dock and slip space.

If the total of 12,425 boats were spread out evenly over the entire 172,800 acres of Lake Champlain, the lake would seem almost empty. But, when examining use in each of the 34 management zones the numbers indicate otherwise. Even though there was not much use in the southern zones of Lake Champlain, the Broad Lake, the Inland Sea and Malletts Bay receive a tremendous amount of use. Boating was concentrated around population centers, protected bays, coves and islands, and where there are summer camps and marinas. The zones surrounding these high use zones will probably see increased boat traffic as these areas reach capacity thresholds.

Most of the boats were small motorboats less than 21 feet in length or sailboats between 22 and 32 feet in length. The actual percentage of boats in use was found to be relatively small and use was probably weather-dependent. Boating occurred both near the shore and out in the open water with sailboats generally using the expanses of the open water further from shore. The greatest increase in the number of boats in Malletts Bay and Shelburne Bay were in the larger watercraft sizes (22' - 54' in length).

Pleasure boating, sailing and fishing were the most popular activities. There were a number of other types of watercraft using Lake Champlain many of which were dinghies used to reach moored or anchored boats. There were no boats engaged in waterskiing on this particular day; however, waterskiing does occur near the shore and in many bays on the lake. Canoeing, kayaking, jetskiing and sailboarding were not significant widespread uses on this day. Their use does occur at specific locations on the lake that meet the needs of the user.

There were quite a few popular overnight anchoring areas, and this use has increased dramatically over the last ten years. In Vermont, the number of moorings have proliferated in some areas, while the number of marinas have stayed relatively the same. A few Vermont marinas have expanded to add more dock space and moorings. There have been few new marinas permitted along the New York shoreline, but individual moorings have not been as popular.

The Lake Champlain Recreation User Surveys

Another part of the initial phase for developing a recreation management plan for Lake Champlain was obtaining basic information on recreation supply, demand, issues and specific user characteristics. A series of recreation user surveys provided the baseline information necessary to assess the overall recreation demand for the Lake Champlain Basin.

The New York State Office of Parks, Recreation and Historic Preservation and the Vermont Department of Forests, Parks and Recreation conducted recreation user surveys during the summer of 1992. The surveys targeted public access site users, canal lock users and residents adjacent to the shoreline of Lake Champlain. The surveys were designed to identify important recreational issues and to determine management strategies to ensure sustainable recreational use of Lake Champlain. Specifically, the surveys assessed recreation user groups' needs, concerns and problems relating to use of Lake Champlain.

Many of the questions in the surveys were similar for all three recreation user groups, however, there were also specific questions targeted for each user group. The following were some of the broader issues addressed in the surveys:

- socio-economic characteristics of recreation user groups;
- boating-related expenditures;
- extent of recreational conflicts;
- type and size of boats utilizing Lake Champlain;
- types and amounts of recreational activities occurring on Lake Champlain;
- locations needing improved and/or additional public access to Lake Champlain;
- areas of the lake that are overused and congested;
- lake users' knowledge of boating safety and navigation.

Methodology

The following briefly describes the methodologies used for the three survey efforts:

Canal lock user survey methodology. This study was conducted between Lake Champlain Canal Locks #11 and #12 in the town of Whitehall, New York with the cooperation of the New York Department of Transportation Waterways Division (jurisdiction transferred to the NYS Thruway Authority). Survey forms were distributed by lock attendants at Lock #11 and picked up at Lock #12 and visa versa. Canal lock users were also given the option to return the survey through the mail.

The canal lock user surveys were distributed during the summer of 1992 (July 1 to Sept. 20). Distribution occurred on both weekdays and weekends during operating hours. Approximately 500 surveys were distributed and 114 were returned, representing a 23% response rate.

Public access site survey methodology. This study was conducted at eleven public access sites in New York and thirty-one in Vermont. These access sites are free of charge and are open twenty four hours a day. They have facility capacities that range from cartop sites with parking for 5-10 cars to large launch facilities that can accommodate over 100 cars and trailers. Surveys were distributed during the 1991 and 1992 boating seasons (from mid-May to mid-September). Surveys were distributed on weekdays as well as on weekend days and throughout the length of each day. Data was obtained from both sides of the lake using similar survey forms with slight variations to accommodate situations unique to either New York or Vermont. Boaters completed self-addressed, stamped surveys that had been left on windshields of parked vehicles or distributed at New York State campgrounds by entry gate personnel. If people were present at a site, survey forms were given to each person or group. Approximately 3,200 surveys were distributed (2,200 in Vermont and 1,000 in New York) and 900 were returned. Of these returns, 220 came from New York and 680 came from Vermont.

Resident survey methodology. This survey included distribution to both New York and Vermont residents within close proximity to the shoreline of Lake Champlain. A list of New York residents within one-half mile of the shoreline was obtained from the Office of Equalization and Assessment data. From this, a mailing list was developed based on a 5% sample of the total number of New York residents. The questionnaire

along with a postage-paid, self-addressed envelope was then mailed to residents living near Lake Champlain. In Vermont, questionnaires along with a postage-paid, self-addressed envelope were handed out at every tenth household with lake front property. This provided a 10% random sampling of Vermont residents adjacent to the lake.

Both surveys were distributed during the summer of 1992. A total of 947 surveys were distributed to New York residents and 465 surveys to residents of Vermont. Of the total questionnaires distributed, 412 were returned representing a 29% response rate. Of these returns, New York had a total of 255 returns while Vermont had a total of 157.

Initial Results

The survey data was coded and translated into a form appropriate for computer analysis utilizing the Statistical Package for Social Sciences (SPSS). The following are selected results from each of the Recreation User Surveys:

Canal lock user survey results. Boats powered by inboard motors (34%) were the most frequently used type of craft for traveling through the canal locks. Inboard/outboard motors (31%) were the next most commonly used type and only 6% were powered by outboard motors. The majority of boats traversing through the locks were greater than 23 feet in length (80%). More than half (58%) were 28 feet or longer in length (Fig. 9). Approximately three-fourths of the boats had greater than 200 horsepower engines and 43% of the boats had two or more engines.

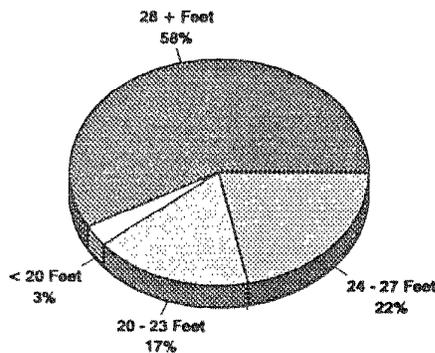


Figure 9. Length of boat utilized on the Lake Champlain Canal system during the summer of 1992.

The average age of respondents was 51, 82% of the respondents were older than 40. Most of the people per group fell in the 40-59 age group (43%) where the average number of people per group was 2.2. Over 71% of canal lock users have a total 1991 household income of over \$50,000, while 22% of these earn over \$100,000.

Thirteen percent of lock users resided in Canada, while 44% lived in New York and only 6% resided in Vermont. Significant percentages came from other states near New York, including New Jersey, Connecticut, and Massachusetts (Fig. 10).

More than three-fourths of canal lock users (76%) would be willing to pay a lock user fee to help off-set operational and maintenance costs. Of those who agreed to pay a user fee, over half (56%) stated that they would be willing to pay more than \$30 per season, while 60% indicated that they would be willing to pay more than \$10 per day for use of the Lake Champlain canal system.

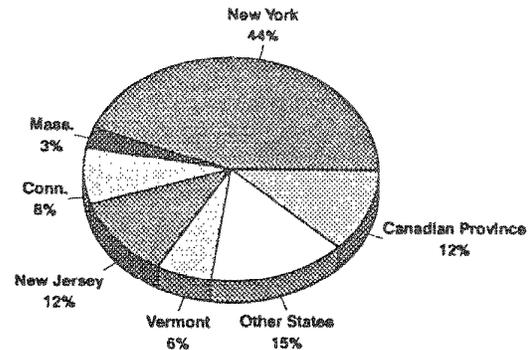


Figure 10. Permanent place of residence of the Lake Champlain canal lock users during the summer of 1992.

Boaters used the canal locks an average of 11 days during the 1992 boating season, with 49% of those using the locks more than one day per season. Twenty-three percent of lock users stated that if a user fee is charged it would impact the number of times that they would utilize the canal system. If fees were charged, users claimed that they would use the locks an average of only 7 days per boating season.

Public access site survey results. The primary purpose for visiting these sites is to launch boats, mostly to fish on the lake. Overall, 68% of boating trips were to fish, with the remainder delegated to pleasure powerboating, sailing, canoeing, kayaking, jetskiing, etc. (Fig. 11). Other nonboat-ing uses of the sites are passive activities such as just looking at the lake, picnicking or sunbathing. A few people were observed using the sites to swim, hike or on rare occasions, to drink. About one-quarter of site use occurred between 7:00 AM and noon, 56 percent between noon and 6:00 PM and less than 20 percent after 6:00 PM. Each weekend day contributed 22 percent of total use of the sites. Tuesdays were the least used days, contributing only 6 percent to total use and the other days each contributed 11 to 14 percent. The most popular fish sought by fishermen were bass, walleye, salmon and lake trout. However, 37 percent of fishermen were out for general fishing, with no specific species in mind.

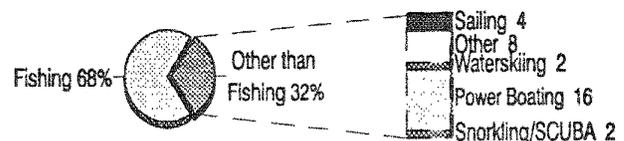


Figure 11. Primary purpose for launching boats at Lake Champlain public access sites.

Boaters were asked to comment on any delays they encountered while launching or retrieving boats at the launch sites. Take out delays were longer than launch delays; Sunday users were more likely to experience delays than users on any other day. Conflicts were seldom seen or reported and in many cases, boaters helped each other launch or retrieve boats from the water. It is not uncommon for site users to launch boats 20 to 40 times per year. The average was 21 times for site users on the New York side of the lake and 36 times for users on the Vermont side. Data from Vermont respondents indicated that spring users tend to visit the sites more per year than summer users.

Boaters were provided with a list of facilities/improvements that might be found at public access sites and asked to indicate those which they felt should be provided (if not available) or improved. Overall, restrooms were most often selected, followed by docks, launch ramps, parking capacity and lighting. Vermonters indicated that restrooms, docks and launch ramp improvements were the most needed, while New York boaters tended to be more concerned with site maintenance and supervision.

Site users were asked to indicate their boating-related expenditures on the day they received a survey. Total expenditures averaged \$51.52 with the most common expenses being for gas and oil for boats (\$16.00) and food and beverages brought along on the trip (\$17.00). Over 80 percent of all respondents reported these kinds of expenses. Fishing equipment expenses, reported by only one-third of the respondents, averaged \$22.50. Restaurant and bar expenditures were reported by even fewer respondents but averaged about \$30.00 per trip, followed by lodging expenses (\$217), entertainment (\$44) and boat repairs and parts (\$60). Restaurant expenses were reported much more often by New York public access site users (over 40 percent) than by their Vermont counterparts (15 percent). Furthermore, their expenses were nearly twice those of Vermonters. Entertainment and lodging expenses associated with the trip were also reported more often by New Yorkers than by Vermonters. These expenses were mostly made near the lake.

Public access users indicated the number of days they utilize each zone of the lake per year from a map of thirty-four management zones. Those areas receiving the highest percentage of use per year by New York public access site users were Zone 20 (Plattsburgh and Valcour Island) and Zone 28 (Point Au Roche). Zone 20 had an average of 10.9 days of use per year, while Zone 28 received an average of 13.9 days of use per year. Those areas that had the highest percentage of use per year by Vermont public access site users were Zone 19 (Malletts Bay) and Zone 15 (Burlington and Shelburne Bay).

Resident survey results. Residents were asked the number of days per year that they participated in specific activities on Lake Champlain (Table 3). The most popular activities were swimming, fishing and power boating. Only 15% of the respondents participated in camping. Twenty-two percent of residents spent more than 60 days swimming per year and 38% swam between five and twenty days per year. Forty-three percent of those who fished did so between five and twenty days per year. Twelve percent indicated that they fished for more than 60 days per year.

Over 84% of residents have not taken a boating safety course in the past five years. More than three-fourths of those residents surveyed indicated that they were familiar with the Standard Waterway Navigation Aids and the Navigation "Rules of the Road." Only 22% stated that they have had a courtesy boat inspection in the past year.

Table 3. Recreational activity participation by residents living adjacent to Lake Champlain during the summer of 1992.

Activity	Percent Participation
Swimming	72%
Fishing	56%
Power Boating	48%
Boat Touring	35%
Canoeing	34%
Waterskiing	33%
Rowboating	28%
Sailing	27%
Visiting Historic Sites	25%
Picnicking	24%
Snorkling/SCUBA	16%
Camping	15%
Other	8%

Residents were provided with a list of eight items and given the opportunity to indicate which of these activities/facilities were needed within the Lake Champlain Basin (Fig. 12). Of these, bike trails (30%) were identified the most followed by beaches (20%) and hiking trails (18%).

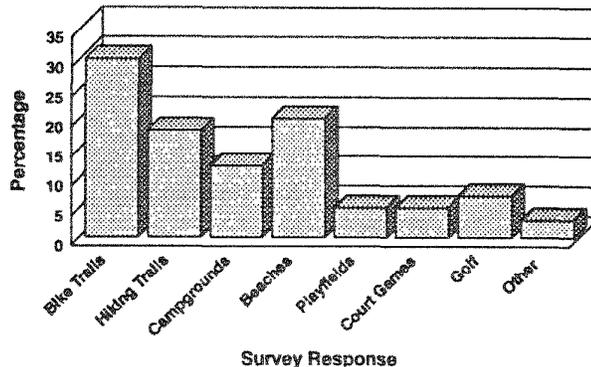


Figure 12. Non-boating activities and facilities needed within the Lake Champlain Basin identified by residents.

Residents were given the opportunity to write any additional comments they had regarding Lake Champlain. One of the largest concerns of the residents was water quality and pollution of the lake (16%). Another important issue was the need for control of aquatic nuisance plants (10%).

Discussion

The survey results presented here are only a sampling of the various types of information collected for each user group. Similar types of analysis can be conducted for each survey as well as cross relationships of questions by user groups and among user groups. For example, the marketing discussion (below) for canal lock users also can be developed for public access site users or combined for all survey groups. The following is a discussion of the selected results from each of the Recreation User Surveys:

Discussion of canal lock user survey results. From a marketing perspective, data from the canal lock user survey can be applied readily to the private as well as the public sector and utilized to promote the development of a tourism plan for the Lake Champlain region or to determine facility improvement needs. Some of the baseline data on canal usage is important to illustrate the type of market utilizing the canal system, such as the size and type of craft and specific user characteristics. This type of information can help direct the development of facilities along the canal system which that meet the users' needs such as restrooms, pumpouts, food and gasoline. While it was found that the majority of canal users fall within the above average income categories, there is a need to target lower income user groups.

Marketing strategies, specifically advertising, can be used to target specific user groups in an attempt to promote tourism within a particular region such as the Lake Champlain Basin. Survey results illustrate that the typical canal user is a transient on a multi-day trip from outside of the Basin. Of those lock users surveyed, 23% had a permanent place of residence within Albany, Saratoga and Rensselaer counties in New York State. Only a small percentage of Vermonters actually utilized the canal system. This type of information provides insight as to which specific areas can be targeted for advertising and which areas may have a potential for increased tourism.

Survey results also suggest considerable support for user fees to help off-set operational and maintenance costs. About three-quarters of lock users supported the idea of charging user fees at the locks and about the same percentage indicated that if a fee was imposed that it would not impact the number of times they utilize the canal system. One of the most frequent responses to the open-ended question indicated that user fees for public facilities should be administered.

Discussion of public access site survey results. One of the largest concerns indicated by public access site users was the need for improvements at public access sites. Restrooms and docks are lacking at many Vermont sites and launch ramps need improvement. Users also provided comments on which locations on Lake Champlain needed additional and/or improved access. These are in Shelburne Bay, Burlington Harbor, Malletts Bay, Southeast Inland Sea, Valcour Island, Plattsburgh, Ticonderoga and Point Au Roche. These needs directly correspond with users responses on lake utilization (locations where users concentrated boating activities). More specific comments on what amenities were needed or improved at particular sites provides resource managers with a good indication of how sites can be improved to better meet the needs of users.

Baseline data on boating-related expenditures is important for assessing the economic impacts associated with recreation as well as providing a foundation for promoting sustainable tourism development within the Lake Champlain Basin. For example, the differences reported between New York and Vermont site users for restaurant, entertainment and lodging expenses probably caused by the fact that, relative to Vermont, few people live close to the lake on the New York side. This information provides insight as to where money is being spent as well as indicating those areas where demonstration projects could be funded to further enhance tourism development.

Discussion of resident survey results. To better understand recreational behavior of residents the survey asked residents to select activities in which they participated within the Lake Champlain Basin. The top five activities included swimming, fishing, power boating, boat touring and canoeing. Based on this data it would be reasonable to assume that more public access to the lake for swimming may be needed. This assumption is further supported by other survey findings as beach and swimming areas were chosen as the

second most needed facility/activity within the Lake Champlain Basin. In addition, the Recreation Resources Inventory results indicate that swimming areas and beaches are lacking on Lake Champlain. About six percent of residents participating in the survey claim that they do not have access rights to Lake Champlain. Since fishing is a popular activity engaged in by residents, it may seem appropriate to increase public access for shore-based fishing.

The residents were asked a series of questions about boating safety and navigation rules. It was found that over three-quarters of residents have not taken a boating safety course in the past five years, while over 60% agreed that a boating safety course should be a requirement to operate a power boat on Lake Champlain. This survey data gives strong support to the idea that a comprehensive boater education program may be needed for Lake Champlain. An emphasis on education, particularly at access sites, such as safety booklets and on-site information bulletins, may be an alternative to a mandatory boating safety course.

Conclusion

Surveys are a useful way of soliciting public opinions from specific user groups, particularly recreationists on Lake Champlain. The recreation user surveys reported here are part of a larger survey effort occurring within the Basin. In 1993 surveys are being directed at snowmobilers, ice fishermen, marina users, Canadian canal lock users, park users and divers on Lake Champlain. Integration of the survey information from all recreation user groups will provide a comprehensive view of recreationists' needs and concerns relating to Lake Champlain.

Analysis of the survey results can lead to a determination of recreation management strategies and actions for specific areas of concern on Lake Champlain. Baseline information obtained from the surveys enable a determination of use capacities for particular management units of the lake; this includes the recommendation and development of normative standards for particular activities and use levels for certain areas of concern. Additionally, information on usage of the lake obtained directly from the surveys will help identify areas that are overused and will assist in identifying areas of the lake to relieve congestion. Survey results can also help identify any potential recreation opportunities.

Overall Management Implications

Results from this study (Recreation Facilities Inventory, Boat Study, Recreation User Surveys) will be integrated with other ongoing components of the Lake Champlain Recreation Management Program, including involvement with town and county planners and specific recreational organizations within the Lake Champlain Basin. Full analysis of all information will provide insight into necessary management strategies needed to sustain diverse high quality recreational experiences on Lake Champlain. The information collected thus far provides insight for a number of potential management implications, including:

- The need to address management of the areas of Lake Champlain that are experiencing high levels of boating use, moorings and anchoring to alleviate existing or potential use conflicts through congestion. Future access strategies should be explored to spread use to other less utilized areas of the lake.
- The management zones surrounding high use areas will likely see increased boat usage as these areas reach capacity thresholds.
- The tremendous amount of increase in boats in Shelburne Bay, Burlington Harbor and in Malletts Bay from 1980 indicates that boating will continue to be a popular activity and is likely to increase as the population of the basin increases and the economy recovers.

- The increase in moorings and boating use near designated navigation routes for the ferries indicates the need for better management in these areas and that boaters may need to be educated in the rules of the road.
- The proliferation of moorings and anchorage areas suggests that the states should address moorings through comprehensive management, towns developing mooring management zones (Vermont), and possibly regulating the placement of moorings. Moorings in some areas are conflicting with other uses and preventing safe navigation. Additional special anchorage areas may need to be designated on the charts for Lake Champlain to provide safe overnight anchorage.
- As most boat usage on the lake is generally small watercraft, the need for safe boating is extremely important on a lake this size. Boating education should be enhanced and include safe boat handling skills, rules of the road, navigation, and engine repair and maintenance.
- With the amount of use near the U.S./Canadian border it is important that information be bilingual in English and French and that Canadian boaters are provided with information on New York and Vermont boating and fishing laws and regulations.
- With the significant population increases in the Lake Champlain shoreland town populations (Holmes et al. 1993) and the increasing demands and needs being placed upon recreational facilities and public access sites, there may be a need to improve public access near population centers, to improve maintenance of existing recreational facilities and to redistribute use on Lake Champlain.
- Demand for non-boating activities and facilities to access and enjoy the Lake indicates a need for bike trails, swimming areas and public fishing access.
- There is an expressed need for improvements in interstate/country information exchange on the recreation facilities and opportunities available within the Lake Champlain Basin.
- There is a demonstrated need for additional information, such as, on-site information bulletins, signage, brochures, and detailed maps of the Lake Champlain region.
- Additional research is needed on the recreation-related economic impacts to support sustainable tourism development that is compatible with the character and environmental resources within the Lake Champlain Basin. For example, there may be growth potential for restaurant, entertainment and lodging facilities on the New York side of the lake but not on the Vermont side.
- Funding mechanisms and demonstration projects need to be explored as well as continuing coordination on an interstate/country basis to sustain diverse high quality recreational experiences on Lake Champlain.
- There is an expressed need indicated from the recreation user groups for devising a reciprocal fishing license for Lake Champlain.
- There is a strong interest, particularly by those residing within close proximity to the shoreline of Lake Champlain for controlling shoreland development. Similar interest is expressed by recreationists in favor of the government purchasing lands for preserving open space and recreation within the Basin.

Other management implications of the study results include the incorporation of results with other Lake Champlain Basin Program activities. The data obtained can be utilized by other Basin committees to help direct and support implementation projects and aid in the decision making process for future planning within the Lake Champlain Basin.

Summary

The information gathered by this effort has broad implications and applications to all levels of government (federal, state, local) and the private sector. In order to facilitate informed decisions, it is important that the information gathered gets disseminated in a timely and concise manner and is broadly distributed. Fact sheets will be prepared as the information is being analyzed. This will be followed by more comprehensive technical reports. Likewise, it is important to get feedback from the users of the information to help direct analysis that will be most relevant.

The development of the Lake Champlain Recreation Management Plan further represents the close cooperation between two states to address a regional issue. In addition, each state recognizes the need for communities on each side of the lake to work together in addressing recreation needs and protecting its natural and cultural resources.

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THE ROLE OF FEES IN THE PROVISION OF OUTDOOR RECREATION OPPORTUNITIES

This session was composed of a panel of speakers, each of whom presented a few ideas and perspectives, then opened the session to group discussion. The following are summaries of some of the panel members' comments.

BACKGROUND

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Introduction

Widespread charging of fees for public outdoor recreation is a relatively new concept in the United States. With vast amounts of land open for settlement, the idea of use fees for Federal land was not considered appropriate. In a few cases (i.e. Hot Springs National Park in the 1890_s), a fee was charged to offset the costs of developing and operating facilities. However, until the 1950_s a tradition of rarely if ever charging for outdoor recreation seemed to many people a birthright of living in the United States. In order to understand these feelings today, it is important to look back to what led to the present situation.

History of Fees

Prior to World War II, fees for outdoor recreation on Federal land were charged in a somewhat haphazard manner, reflecting the lack of any overall multi-agency legislative guidance. The only two land management agencies with large land holdings and recreational developments were the National Park Service (NPS) and the US Forest Service (USNFS). Only the NPS had any significant fee activity in the first part of this century and that was mostly entrance fees.

Implementation of entrance fees into NPS areas predates the establishment of the agency by eight years. A product of the automotive age, and originally intended to cover the costs of the "damage" caused by the new invention, fees were collected at Mount Rainier National Park for auto permits in 1908. By 1915, fees were levied for entrance to seven other parks including Yosemite, Yellowstone, and Glacier National Parks. Seasonal rates ranged from \$10 at Yellowstone to \$2 at Glacier, with a lower fee charged for single entries (Mackintosh 1983). In 1917, the first year of operation of the NPS, enough fees were collected that 5 of the 16 newly established parks had a surplus over operation and maintenance costs (Mackintosh 1983).

The importance of fees was such that the first NPS Director testified before Congress in 1917 that park entrance fees and other revenues would eventually be "sufficient to cover all NPS operation and maintenance costs" (Mackintosh 1983). Congress would only be called upon for additional appropriations when NPS needed funds for capital development costs.

There was a strong motivation at that time for the NPS to collect these entrance fees. They were placed in a special treasury account and could be spent with no Congressional oversight. In 1918, Congress changed the legislation and required that all the monies collected go to the general fund of the United States Treasury (Mackintosh 1983).

¹Principal Investigator of "Measuring the Effects of Recreation Fee Programs" ork unit, whose preliminary work is excerpted.

For the next twenty years there was little interest by the NPS in collecting fees. However, in 1939, President Franklin Roosevelt made fee collection an executive policy. In 1939 through 1942 the NPS specified forty parks where fees could be collected. In announcing this change, Secretary of Interior Ickes said that:

those who actually visit the national parks and monuments should make small contributions to their upkeep for the services those visitors receive which are not received by other citizens who do not visit the parks that are available to them, but who contribute to the support of these parks (National Park Service 1987).

Independent Office Appropriations Act of 1952

In 1951, Congress passed a bill of significant importance to this discussion. Title V of the Independent Office Appropriations Act of 1952 was the first national attempt to codify cost recovery for Government services. It required each agency head to develop and implement regulations that would set "fair and equitable fees" for "services or products provided to persons" (31 USC Sec. 9701). The bill included language that required consideration of four factors: 1) direct and indirect costs to government; 2) value to the recipient; 3) public policy or interest served; and 4) other pertinent factors. The act further stated that "It is the sense of the Congress that each service or thing of value provided by an agency (except a mixed-ownership government corporation) to a person (except a person on official business of the United States Government) is to be self-sustaining to extent possible" (31 USC Sec. 9701). These are the first guidelines that were codified in specifying some basic criteria for cost recovery that also applies to outdoor recreation fees.

Fees in the Fifties and Sixties

In the expanding economy of the fifties, there was little interest in fees as a revenue source and little interest in changes to the system. However, the Bureau of the Budget issued Circular A-25 in 1959 that applied to all Federal agencies. It stated "a reasonable charge...should be made to each identifiable recipient for a measurable unit or amount of Government service or property from which he derives a special benefit." Exploding recreational use on all Federal lands led to a call by recreation professionals and others to develop an overall recreational strategy for the country's public lands.

The result was the formation of a blue ribbon review commission called the Outdoor Recreation Resources Review Commission (ORRRC). Among the various recommendations concerning recreation and recreational facilities, the commission also addressed the issue of fees. It recommended to the President and Congress that:

[p]ublic agencies should adopt a system of user fees designed to recapture at least a significant portion of the operation and maintenance costs of providing outdoor recreation activities that involve the exclusive use of a facility, or require special facilities (ORRRC 1962).

Land and Water Conservation Fund Act

The ORRRC report laid the foundation for legislation that would increase funding for recreational opportunities at the Federal and State level. In 1964, the Land and Water Conservation Fund Act (LWCFA) was passed (P.L. 88-578). It authorized fees for both entrance to and use of facilities in all seven Federal land management agencies. In the act, the Cabinet-level official overseeing the agency was given authority to designate outdoor recreation areas at which entrance fees and user fees could be charged. Revenue from the fees went into a special Land and Water Conservation Fund for use in acquiring and developing recreation land.

As the LWCFA was amended over the years, several fee options were established for both entrance and campground use. Entrance to an area (only in NPS and some F&WS areas at present) may be by payment of a single-visit entrance fee, a

site-specific annual permit, an annual Golden Eagle Passport, lifetime Golden Age or lifetime Golden Access Passport. The single-visit entrance fee is good for one to fifteen days for a "more or less continuous stay within a designated area." The period of time of a "single visit" (usually five days) is recommended by the site administrator and reviewed and approved by the Agency head. The Golden Eagle Passport is an annual pass for admission to all "Designated Fee Areas" (presently only NPS and F&WS sites). Golden Age Passports are available free to all United States citizens 62 years of age and older. They provide for a waiver of entrance fees where charged, along with a 50 percent discount on certain user fees (i.e. camping, guided tours, parking). Golden Access Passports are free and are issued to blind or permanently disabled visitors. They also provide for a 50 percent discount on Federal user fees and a waiver of any entrance fees.

The attempt by Congress to set uniform standards and maintain one account for all fees collected was soon modified by numerous bills and amendments to the LWCFA. For the Corps of Engineers, the major problem was the issue of fees for entrance to Corps projects. In 1968, the Rivers and Harbors Act was amended to prohibit the collection of entrance fees, ending the collection of such fees at Corps projects. In addition, a 1972 amendment to the LWCFA allowed entrance fees to be collected only at NPS and USFS sites. Fees collected by the Corps for camping were to be placed in a separate account for appropriation only to the Corps, "without prejudice to appropriations from other sources for the same purposes, for any authorized outdoor recreation function of the agency by which the fees were collected" (United States Congress 1987).

With the country in the throes of "stagflation" in 1979, the NPS was faced with a cut of \$12 million in operating funds and was ordered by the Office of Management and Budget to make up the difference by raising fees (Mackintosh 1983). The agency proposed making up the deficit with increases averaging 74% over 1978 levels in entrance and other fees. Congress and the public reacted very negatively to the proposal, and a legislative moratorium was passed in Congress that froze fees for all agencies at their January 1, 1979, levels. In addition, in one of many modifications to the LWCFA, Congress accidentally suspended collection of all camping fees at all Federal agencies. This led to a summer of major problems for field personnel, as fees were an important method of controlling overcrowding and vandalism.

Fees for the Eighties

In 1982, the General Accounting Office (GAO) prepared a report titled "Increasing Entrance Fees - National Park Service" that recommended Congress: 1) repeal the statute which froze all NPS entrance fees and 2) amend the LWCFA to remove the \$10 limit on the price of a Golden Eagle Passport. At the same time, the Office of Management and Budget put pressure on NPS to obtain at least 25% of their operations and maintenance funds from user and entrance fees. Based on those two factors, the NPS proposed that the Congressional moratorium on fees be repealed, entrance fees be increased at areas where fees were presently collected, and additional parks be authorized to collect entrance fees. However, the bill that was introduced included a provision that would allow fees to be charged for hunting and fishing on Federal lands. Because of significant opposition from both the public and Congress, the bill was quickly withdrawn (United States Congress 1987). Also, because of the controversy surrounding that bill, fees were left unchanged from the previous level.

One amendment to the LWCFA (P.L. 93-303) in the 1970s included a provision that the Corps (and only that agency) provide one free campsite in every project that had Corps fee campgrounds. Other Federal and State agencies that lease Corps lands at a project and develop recreational facilities are exempt from this prohibition. The amendment also prohibited all agencies from collecting fees for "drinking water, wayside

exhibits, roads, overlook sites, visitor centers, scenic drives, toilet facilities, picnic tables, or boat ramps." For the past six years, the administration has proposed legislation to Congress that would allow the collection of fees at day use areas and remove the requirement for free campsites. The fees to be charged for day use areas are not entrance fees but rather are for use of beaches, picnic areas, and similar highly developed facilities. This requires yet another amendment to the LWCFA and the Rivers and Harbors Act. Congressional opposition to the proposal has stymied any of these efforts.

Fees or Free?

Behind all the arguments is a philosophical shift in the past ten years by public officials who feel that those who benefit the most should pay the most. While we all benefit from and pay for the existence of Yellowstone National Park, those actually using the facilities derive greater benefits than those who do not. Therefore, it is argued that they should pay more than those who only read about the park in *National Geographic*. Countering this line of reasoning are those who feel that charging fees closes recreation opportunities to certain socioeconomic classes and ethnic groups. They feel that by pricing outdoor recreation opportunities based on the user's ability or willingness to pay takes away from the quality of life for segments of the population. Further, it is argued that those in the middle class are being made to pay twice for their recreation; once as part of income taxes and then again at the fee booth.

The shift from totally free to partially subsidized outdoor recreation has not been a quick or easy one. Perhaps the most vocal persons have been those most immediately impacted. In 1988 the Congressionally mandated implementation of entrance fees for many more NPS areas and the increases in fees at existing fee areas led to some initial opposition by different groups in the travel and tourism sector. They were accustomed to use of public outdoor recreation areas without paying any direct fees. Yet the new fees are a small percentage of the average daily travel cost for most users (when adjusted for inflation) and less than some of the entrance fees that were established in the 1970s.

With the passage of the LWCFA in 1965, the Corps briefly charged entrance fees at some projects. Public and Congressional opposition were very strong concerning entrance fees at Corps project. Less than two years later, the LWCFA was amended to forbid the Corps to collect entrance fees. Presently, entrance fees are collected only by NPS and some US Fish and Wildlife Service refuges. For the past five years, as part of the President's legislative initiative, there has been a proposal to charge fees for some Corps recreation day use areas. During the same period of time there has been a Presidential legislative initiative for the USFS that would allow charging of entrance and day use fees at recreation areas under their jurisdiction. However, strong opposition from both special interest groups and Congress has blocked such passage. Any type of fees for day use and entrance fees would require an amendment to the LWCFA.

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Notes: A comprehensive bibliography on fees for outdoor recreation is awaiting publication as a WES Miscellaneous Publication. Copies are available from the author.

PRICES AND PRICING FOR OUTDOOR RECREATION OPPORTUNITIES

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Each speaker's time is limited in a roundtable discussion such as this, so I want to confine my remarks to selected issues surrounding the psychology of pricing leisure services. My comments are not intended to be comprehensive but rather to offer a few observations and to tell you about my own research as it applies to pricing public leisure services.

The issue of pricing for recreation opportunities continues to fluster public administrators. Pricing appeals to these decision makers because it fulfills a variety of important management priorities. Prices can be used to alter demand, to track public interest, or to generate additional revenues (Monroe, 1979).

Unfortunately, the application of prices may have potentially negative consequences. It is widely believed that prices are associated with public outcry, displacement of user groups, and political intervention (McCarville, Driver, and Crompton, 1992; Driver and Koch, 1986). It is little wonder that pricing initiatives are often viewed with considerable dread by those who institute them in the public sector.

The perspective taken in this paper is that prices need not be restrictive. They need not displace or outrage those we hope to serve. Imaginative and strategic application of prices can fulfill public management priorities without compromising service delivery. Insights gathered from the social psychological and recreation literature are used here to suggest how pricing might best be undertaken.

First, price strategies must offer choices to potential users. The phenomenon known as psychological reactance helps explain users' desire for choice. Any threat to users' sense of freedom or choice can result in psychological reactance. Response to such threats range from an increased desire for the lost behavioral option (in this case free access to an outdoor facility) to hostility and aggressive behavior (Iso-Ahola, 1980). Consequently, when prices are instituted and users have no choice but to pay them or lose access to valued resources, reactance is likely to occur. Complaint behavior, vandalism, and displacement are manifestations of this phenomenon.

Meaningful choices within a pricing strategy may eliminate much of the psychological reactance arising from new price levels. One classic strategy used to provide options for both the consumer and the service provider is that of differential pricing. This strategy recognizes that all programs and resources possess many characteristics and that price levels should be varied for different product mixes.

Differential pricing has unlimited potential and we should take full advantage of the flexibility it provides. We may smooth demand by charging higher fees during peak periods and by offering substantial discounts during slower periods. We may charge higher fees for consumptive activities and lower fees for those activities which are less consumptive. Our options are limited only by our own imaginations. The funds such strategies provide then offer the administrator added flexibility in making program decisions. Programs offered offer the administrator added flexibility in making program decisions. Programs offered at premium rates may be used to subsidize those offered at discount prices. In this way, the manager may fulfill a variety of goals and the user is offered personally relevant price options. The user is the final arbiter as to the price level he or she will pay. If time and convenience are

priorities, then the user may choose to pay higher fees for "prime-time" usage. If the user lacks financial resources but possesses large quantities of free time, then he or she may be more willing to use a resource during a slow period enjoying a financial discount in the process (Becker, 1975). Such choices reduce public rejection of fees and reduce displacement of those least able to pay rising prices.

Second, pricing strategies must recognize the importance of user expectations. Adaptation level theory (Helson, 1964) suggests that users will internalize past price levels. Past prices will therefore create internal standards against which all new prices are compared (Monroe and Petrosius, 1981). Prices which deviate from these expected price levels may be rejected by users. In other words, as objective price levels and outcry will result.

In a series of studies McCarville and Crompton (1987a,b) and McCarville, Crompton and Sell (1993) found that reference price levels may be altered through managerial initiatives. Consequently, administrators should take steps to elevate price expectations as objective price levels rise. In this way, unfavorable comparisons between old and new prices may be avoided. We found that information regarding the cost of providing a program or the consequences of paying a fee may alter price expectations by as much as a third. It seems that users expect to pay more for public services once they are told how much it costs to offer those same services. Users may also be willing to pay more if they are made aware that the fees will be returned to the site at which they were gathered (Miles and Fedler, 1986). Each of these studies suggests that any effort to alter prices should also include measures designed to justify the new price in terms of cost and to articulate the consequences of paying the fee (both for the user and for the site).

Third, and finally, pricing strategies must recognize that tolerance for price changes will vary from program to program (Howard and Selin, 1987). Social norms, program characteristics, and user idiosyncrasies may all influence this tolerance. For example, community notions of equity or fairness may demand that selected programs not be priced under any circumstances. Noble (1987) reported that plans to charge a nominal fee for visiting the Statue of Liberty had to be abandoned as a result of community outcry. In the case of Lady Liberty, it seems that any admission fee was too high a price to pay. There are similar cases in all our park settings. Users simply do not expect to pay, nor will they abide paying, for selected services. The nature of such services may vary from setting to setting but it is clear that any attempt to price them will result in considerable dissatisfaction for all. Administrators are advised to survey users to discover local views and opinions before prices are instituted. Pricing strategies can then be implemented accordingly.

I know that some of you may consider this to be an exercise of dubious value. You may feel that your users will be glad to report that they are unwilling to pay any price for any service at any time. Research suggests, however, that our users aren't as unreasonable or short-sighted as we have traditionally believed. Users typically expect and are willing to pay fees for access to many types of resources. Howard and Selin (1987) found that those who registered in several traditional leisure programs classes were quite tolerant of increased charges for those classes. Consequently, tolerance patterns should be established on a program by program basis before prices are actually instituted.

It is hoped that this short review offers some insight into the pricing of public leisure opportunities. The ultimate goal of any price in the public sector is to improve level of service for our user groups. In the past, we have tended to charge fees from a "take it or leave it" perspective. We often select arbitrary fee levels and hope that our users will be happy (or at least quiet) about paying them. This approach is doomed to

failure. It will indeed result in displaced users, vandalism, and inevitable political intervention. I suggest rather that we offer relevant choices for users while recognizing the standards they use to judge our efforts. All our pricing efforts must also include information campaigns which outline the need and benefit (for the consumer) of charging fees. Our pricing efforts are much more likely to succeed as a result.

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